

LISTADO DE SECUENCIAS

<110> CODEXIS, INC.

<120> POLIPÉPTIDOS Y POLINUCLEÓTIDOS CETORREDUCTASA

<130> CX8-195W01

<140>

<141> 2020-09-24

<150> US 62/906,268

<151> 2019-09-26

<160> 414

<210> 1

<211> 759

<212> ADN

<213> Secuencia Artificial

<220>

<223> KRED de tipo salvaje de Lactobacillus kefir

<400> 1

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ttggcaatcg cggataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg catccgatga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg cagtttccaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttgaggggtt cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggctat atcaagaccc cgctgggtcga tgatctggaa 600
ggtgctgagg aaatgatgtc acagcgtacg aaaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtatacc gcacagtga 759
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<210> 2

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> KRED de tipo salvaje de Lactobacillus kefir

<400> 2

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Met Thr Asp Arg Leu Lys Gly Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
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<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 4
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180 185 190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 5
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 5
atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180

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cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactgtacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 6
<211> 252
<212> PRT
<213> Secuencia Artificial

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<220>
<223> Variante modificada de KRED de Lactobacillus kefir

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<400> 6
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20        25        30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35        40        45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50        55        60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65        70        75        80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85        90        95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100       105       110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115       120       125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130       135       140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145       150       155       160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165       170       175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180       185       190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195       200       205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210       215       220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225       230       235       240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245       250

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<210> 7
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 7
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 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtc acacagtaca tccggggccc atcaagaccc cgcgaggagg tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 8
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 8
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160

Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Arg	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195				200						205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 9
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 9
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 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgaggg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtcga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 10
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 10
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala

50		55		60											
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85						90					95
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Arg	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150						155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165						170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180					185						190		
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230						235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245						250						

<210> 11
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 11
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 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta tttctgggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 12
 <211> 252
 <212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 12

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
      130     135     140
Ser Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
      180     185     190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
      195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
      210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
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<210> 13

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 13

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ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
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gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tggggcattca gcgcatgaaa aataaaggct tggggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgggtctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc cgcggtcga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 14

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 14

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
          20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
          35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
          50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
          85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
          100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
          115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
          130         135         140
Leu Gly Leu Val Gly Asp Pro Gly Leu Gly Ala Tyr Asn Ala Ser Lys
145          150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
          165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
          180         185         190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
          195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225          230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
          245         250

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<210> 15

<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 15
atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
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gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccctgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc cgcgcatga tgatctggaa 600
ggttgggagg aatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 16
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 16
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175

Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	His	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245					250							

<210> 17
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 17
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggggtg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 18
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 18
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala

65					70					75				80
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Val	Gly	Val
				85					90				95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Ser
			100					105					110	
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln
		115					120					125		
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser
	130					135					140			
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser
145					150					155				160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala
			165						170					175
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile
			180					185					190	
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser
		195					200					205		
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile
	210					215					220			
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr
225					230					235				240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln			
				245					250					

<210> 19
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 19
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcgggcccg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgcta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtcga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 20
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 20

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
      65      70      75      80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
      130     135     140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
      145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
      180     185     190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
      195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
      210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
      225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
```

<210> 21

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 21

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atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
```

```

atgagcagta ttggtgggct cgtaggcgat cgcacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc cgcggctcga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 22
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

```

<400> 22
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Gly Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 23
 <211> 756
 <212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 23

```
atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta tttgtgggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccggggccc atcaagaccg cgcggtcga tgatctggaa 600
ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactcgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 24

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 24

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
100          105          110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115          120          125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130          135          140
Cys Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145          150          155          160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165          170          175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180          185          190
```

Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245				250							

<210> 25
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 25
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tntagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat cgcacggttg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 26
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 26
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile

				85					90					95			
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser		
			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Val	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
				165					170					175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
			180					185					190				
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245					250								

<210> 27
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 27
 atgaccgatac gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtcag ggatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 28
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 28

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40					45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Leu	Arg	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 29

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 29

atgaccgatc	gtctgaagca	taaagtagcc	atcgtaaccg	gcgggacact	gggtatcggt	60
agggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccgt	cgtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaactg	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttctggggct	cgtaggcgat	ccgacgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540

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gtgcgtgtca acacagtaca tccggggcccc atcaagaccc cgcggtctga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 30
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 30

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Arg	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50				55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85				90						95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser
		100						105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130				135						140				
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165				170						175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180					185						190		
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195				200						205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245				250							

<210> 31
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 31

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atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccgt cgtgaacaat gcaggggatg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagacc cgcggtctga tgatctggaa 600
ggttggggagg aaatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
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<210> 32

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 32

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Asp Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180    185    190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
```

Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
210						215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 33
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 33
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cattggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagacct cgcggtctga tgatctggaa 600
 gggtgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtggacc gcacag 756

<210> 34
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 34
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser

			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Leu	Gly	Leu	Ile	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145				150						155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165					170					175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
		180						185				190					
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
	195					200					205						
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
			245					250									

<210> 35
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 35
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt ttagtagaggag ggtgcgaaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcgggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgtgtg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 36
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 36

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr		
1				5					10					15			
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala		
			20					25					30				
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala		
		35				40						45					
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala		
	50					55					60						
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala		
65					70					75					80		
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile		
			85					90						95			
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser		
		100						105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Cys	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165					170						175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
		180						185					190				
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
			245					250									

<210> 37
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 37
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggtctga tgatctgcag 600
 ggttgggagg aatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660

aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 38
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 38
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180 185 190
Thr Pro Arg Leu Asp Asp Leu Gln Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 39
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 39

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atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggtt tacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgta acacagtaca tccggggccc atcaagacca ggcggctcga tgatctggaa 600
ggttggggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 40

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 40

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Arg Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
```

Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 41
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 41
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggtctga tgatctgcgg 600
 gggtgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 42
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 42
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg

Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35				40						45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50				55						60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85				90						95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165				170						175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
		180						185					190			
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Val	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245				250								

<210> 45
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 45
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccgt cgtgaacaat gcagggatgg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggtcga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 46
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 46
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Met Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
 180 185 190
 Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
 195 200 205
 Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 47
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 47

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atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc cgcggtctcg tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 48

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 48

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Leu Gly Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240

```

Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 49
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 49
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagacca atcggctcga tgatctggaa 600
 gggtgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 50
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 50
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile

130		135		140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys				
145		150		155
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu				
	165		170	175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys				
	180		185	190
Thr Asn Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln				
	195		200	205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala				
	210		215	220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly				
225		230		235
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln				240
	245		250	

<210> 51
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 51
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctgttg 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 52
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 52
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30

Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35					40					45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50					55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
			180					185					190			
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Leu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195				200						205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245					250							

<210> 53
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 53

atgaccgatc	gtctgaagca	taaagtagcc	atcgtaaccg	gcgggacact	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccgt	cgtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccggtc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttctggggct	cgtaggcgat	ccgacgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtca	acacagtaca	tccgggcccc	atcaagaccc	cgcggtctga	tgatctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ttaaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 54
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 54
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
 180 185 190
 Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
 195 200 205
 Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 55
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 55
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120

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gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgta acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggctgtg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 56

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 56

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
          20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
          35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
          50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
          85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
          100          105          110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
          115          120          125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
          130          135          140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145          150          155          160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
          165          170          175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
          180          185          190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
          195          200          205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215          220
Trp Leu Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225          230          235          240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
          245          250

```

<210> 57
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 57
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt thtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccgt cgtgaacaat gcagggacgg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtc acacagtaca tccggggccc atcaagacc cgcggtctga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 58
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 58
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Thr Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys

145					150					155				160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala
				165					170					175
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile
			180					185					190	
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser
		195					200					205		Gln
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile
	210					215				220				Ala
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr
225					230					235				240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln			
				245					250					

<210> 59
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 59
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagtagagg ggtgcgaaa tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtag ttaagtccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 60
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 60
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45

Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
50						55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
130						135					140					
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
			180					185					190			
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Ser	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245					250							

<210> 61
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 61
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc atcggctcga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 62
 <211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 62

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130     135     140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
      180     185     190
Thr His Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
      195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
```

<210> 63

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 63

```
atgaccgatac gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
```

```

ttcggcccggtt tacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgtctctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggccc atcaagaccc cgcggtctga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 64
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

```

<400> 64
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Leu Gly Leu Val Gly Asp Pro Ser Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180    185    190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245    250

```

<210> 65
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 65

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atgaccgatc gtctgaagca taaagtagcc atcattaccg gcgggacact gggatatcgg 60
ttggcaatcg cggataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggccc atcaagaccc cgcggtctga tgatctggaa 600
ggttgggagg aatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 66
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 66

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu

```

				165					170					175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
			180					185					190				
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245					250								

<210> 67
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 67
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagtagagg ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattgg gagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggtctga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 68
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 68
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60

Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Gly	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Leu	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150						155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165						170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180						185					190		
Thr	Pro	Arg	Leu	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230						235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245						250						

<210> 69
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

atgaccgatc	gtctgaagca	taaagtagcc	atcgtaaccg	gcgggacact	gggtatcggt	60
ttggcaatcg	cgcataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgacctt	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaactg	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttctggggct	cgtaggcgat	ccgacgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtca	acacagtaca	tccggggccc	atcaagaccc	cgcggtctga	tgatctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ttaaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 70
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 70

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130     135     140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
      180     185     190
Thr Pro Arg Leu Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
      195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
```

<210> 71

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 71

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atgaccgatc gtctgaagca taaagtagcc atcattaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccggtta atctggatgg tgtttttttc 360
```

```

ggcaccgcgtc tggggcattca gcgcatgaaa aataaaggct tggggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 72

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 72

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 73

<211> 756

<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 73
atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggccc atcaagacc cgcggaagga tgatctggaa 600
ggttgggagg aatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 74
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 74
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys

			180					185					190				
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
			245					250									

<210> 75
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 75
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc ctcggaaaga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtggacc gcacag 756

<210> 76
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 76
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80

Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115				120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
			165					170						175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
		180					185						190			
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195				200						205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210				215						220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225				230					235						240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
			245					250								

<210> 77
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 77
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgggcctgg gggcatacaa cgcttccaag 480
 ggggcgggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 78
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 78

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Leu Leu Ser
100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130     135     140
Met Gly Leu Val Gly Asp Pro Gly Leu Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180     185     190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245     250
```

<210> 79

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 79

```
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
```

```

ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt ggcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 80
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

```

<400> 80
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 81
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 81

```
atgaccgatc gtctgaagca taaagtagcc atcattaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccgt ggtgaacaat gcagggattg ggggtattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgggcctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggccc atcaagacc cgcggaagga tgatctggaa 600
ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcacttgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 82

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 82

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Gly Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
```

	195					200				205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 83
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 83
 atgaccgatc gtctgaagca taaagtagcc atcggttaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaaatt tgtagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc atcggaaaga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtggacc gcacag 756

<210> 84
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 84
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95

Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	His	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195				200						205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 85
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 85
 atgaccgatac gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcataca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgggcctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc ctcggaaggg tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 86
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 86

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr	
1				5					10					15		
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35					40					45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50					55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Gly	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
		180						185					190			
Thr	Pro	Arg	Lys	Gly	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245					250							

<210> 87

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 87

atgaccgatc	gtctgaagca	taaagtagcc	atcgtaaccg	gcgggacact	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgcgc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccggggccc	atcaagacca	accggaaaga	tgatctggaa	600

```

ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

```

<210> 88
<211> 252
<212> PRT
<213> Secuencia Artificial

```

```

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

```

```

<400> 88
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Asn Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

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```

<210> 89
<211> 756
<212> ADN
<213> Secuencia Artificial

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<220>

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<223> Variante modificada de KRED de Lactobacillus kefir

<400> 89

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcccc atcaagacc atcggaaga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaacgccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactcgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
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<210> 90

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 90

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180    185    190
Thr His Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
```

210		215		220											
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 91
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 91
 atgaccgatc gtctgaagca taaagtagcc atcgtaaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt cgtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttctggggct cgtaggcgat ccgagcctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccg cgcggaagga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 92
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 92
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Leu Leu Ser
 100 105 110

Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Leu	Gly	Leu	Val	Gly	Asp	Pro	Ser	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150						155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195				200						205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 93
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 93
 atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccgt ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc ctcggaaggg tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggctgtg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 94
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 94
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr

1				5					10					15			
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala		
			20					25					30				
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala		
		35					40					45					
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala		
	50					55					60						
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala		
65					70					75					80		
Phe	Gly	Pro	Val	Thr	Thr	Val	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile		
				85				90					95				
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser		
		100						105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
	115						120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
				165				170						175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
		180						185					190				
Thr	Pro	Arg	Lys	Gly	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
	195					200						205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Leu	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245				250									

<210> 95
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 95
 atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcgga ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaactg ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccc atcggaagaa tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720

gcagaatttg tggtcgacgg cgggtggacc gcacag

756

<210> 96

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 96

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Leu	Leu	Ser
		100						105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	His	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 97

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 97

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccgt ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttctggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc ctcgaaaga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactcgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
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<210> 98

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 98

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Val Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100          105          110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115          120          125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130          135          140
Leu Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145          150          155          160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165          170          175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180          185          190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195          200          205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215          220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
```

225		230		235		240					
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln
			245				250				

<210> 99
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 99
 atgaccgatc gtctgaagca taaagtagcc atcggttaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagacc cgcggaagga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg cgtacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 100
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 100
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125

Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Arg	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 101
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 101
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaag tggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaa tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tgcgtttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcgggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaaccacct tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 102
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 102
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Ser Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala

<210> 104
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 104
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Gln Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
 180 185 190
 Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
 195 200 205
 Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 105
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 105
 atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcggt 60

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ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccctgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgctctggaa 600
ggttggggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 106

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 106

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Ala Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln

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<210> 107
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 107
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgaagctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 108
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 108
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140

Met	Gly	Leu	Val	Gly	Asp	Pro	Lys	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165						170					175
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 109
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 109
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 acgactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 110
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 110
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala

<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 112
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180 185 190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 113
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 113
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180

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cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
tgtactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 114

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 114

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Cys Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

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<210> 115
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 115
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtca acacagtaca tccgggcgcg atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 116
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 116
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160

Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195				200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215				220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 117

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 117

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacact	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcgggca	ctgattgtat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggccccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgcgc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtag	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcccc	atcaagaccc	cgcggaagga	tgatctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ttaaccacct	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 118

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 118

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
		20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40					45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Cys	Ile	Arg	Phe	Val	Gln	His	Asp	Ala

50		55		60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala				
65		70		75
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile				80
	85		90	95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser				
	100		105	110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg				
	115		120	125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile				
	130		135	140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys				
145		150		155
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu				
	165		170	175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys				
	180		185	190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln				
	195		200	205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala				
	210		215	220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly				
225		230		235
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln				240
	245		250	

<210> 119
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 119
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 gggggtgtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 120
 <211> 252
 <212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 120

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
      130     135     140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Gly Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
      180     185     190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
      195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
      210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
```

<210> 121

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 121

```
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg ggattattaa aagcgttgaa 300
```

```

gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 122

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 122

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
          20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
          35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
          50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ile Ile
          85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
          100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
          115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
          130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145          150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
          165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
          180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
          195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225          230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
          245         250

```

<210> 123

<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 123
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aatgatgtc acagcgttgg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 124
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 124
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175

Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Trp	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245					250							

<210> 125

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 125

```

atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtttt ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 126

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 126

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40					45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala

65					70					75				80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115				120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150						155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165					170						175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180					185						190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195				200						205			
Arg	Phe	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230						235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245					250							

<210> 127
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 127
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 gctgcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 128
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 128

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Ala Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180    185    190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245    250
```

<210> 129

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 129

```
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
```

```

atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatcgt tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggctcgacgg cgggtggacc gcacag 756

```

<210> 130

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 130

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Val Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 131

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 131

```
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaagtggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgcta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggccc atcaagaccg cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 132

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 132

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Val Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180    185    190
```

Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215				220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245				250							

<210> 133
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 133
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 ctgactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 134
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 134
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile

				85					90					95			
Lys	Ser	Val	Glu	Leu	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser		
			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165						170				175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
		180						185					190				
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
	195					200						205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
			245					250									

<210> 135
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 135
 atgaccgatac gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcgggcccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 136
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 136

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
		100						105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180						185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 137

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 137

atgaccgatc	gtctgaagca	taaagtagcc	atcgttaccg	gcgggacact	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaa	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgttgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540

```

gtgcgtgtca acacagtaca tccggggcccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 138
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 138

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Leu	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50				55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85				90						95	
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
		100						105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130				135						140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Leu	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180						185					190		
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 139
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 139

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgagttggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggccc atcaagaccg cgcggaagga tgatctggaa 600
ggttggggagg aaatgatgtc acagcgtagc ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
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<210> 140

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 140

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Leu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180    185    190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
```

Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
210						215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 141
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 141
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acggcgctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
 gggtgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 142
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 142
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ala Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser

			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115						120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
		130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
				165					170					175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
			180					185					190				
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195				200						205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245					250								

<210> 143
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 143
 atgaccgatac gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcggt 60
 ttggcaatcg ccgataaaatt tgtagaggag ggtgcgaaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcgaggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgct atcaagaccg agcgcaagga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 144
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 144

aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 146
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 146
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180 185 190
Thr Glu Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 147
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 147

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatactg cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttggggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
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<210> 148

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 148

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Cys Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
180         185         190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
```

Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 149
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 149
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 gggtgggagg aaatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 150
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 150
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg

		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
				165					170					175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys		
			180					185					190				
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195				200						205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230				235						240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245				250									

<210> 151
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 151
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaag tggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaa tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tgatctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 152
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 152
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15

Ser	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35					40					45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50					55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
		180						185					190			
Thr	Pro	Arg	Lys	Asp	Asp	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245					250							

<210> 153

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 153

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacact	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccggggcct	accaagaccg	agcgcaagga	tgatctggaa	600
ggttgggagg	aaatgatgtc	acagcgtagc	ttaaccctta	tggggccacat	tggcgaaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgac	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 154
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 154
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Thr Lys
180 185 190
Thr Glu Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 155
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 155

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atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgct accaagaccg agcgcaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 156

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 156

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Thr Lys
180         185         190
Thr Glu Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240

```

Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 157
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 157
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgctactaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggccc atcaagaccc cgcggaagga tgatctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 158
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 158
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile

130		135		140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Thr Lys				
145		150		155
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu				
	165		170	175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys				
	180		185	190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln				
	195		200	205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala				
	210		215	220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly				
225		230		235
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln				240
	245		250	

<210> 159
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 159
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacact gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccc cgcggaagga tcagctggaa 600
 ggttgggagg aatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 160
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 160
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30

Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala			
		35					40					45						
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala			
	50					55					60							
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala			
65					70					75					80			
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile			
				85					90					95				
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser			
			100					105					110					
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg			
		115					120					125						
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile			
	130					135					140							
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys			
145					150					155					160			
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu			
				165					170					175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys			
			180					185					190					
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln			
		195					200					205						
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala			
	210					215					220							
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly			
225					230					235					240			
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln							
				245					250									

<210> 161

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 161

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacact	gggtatcgg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaggc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtca	acacagtaca	tccgggcccc	atcaagaccc	cgcggaagga	tgcgctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ttaaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 162
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 162
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Leu Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Pro Ile Lys
 180 185 190
 Thr Pro Arg Lys Asp Ala Leu Glu Gly Trp Glu Glu Met Met Ser Gln
 195 200 205
 Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 163
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 163
 atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120

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gcggatgtag gtgaaaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgta atctggatgg tgtttttttc 360
ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccgggcgcg atcaagaccc cacggaagga tgctctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggctcgacg cggttgacc gcacag 756

```

<210> 164

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 164

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Ala Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

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<210> 165
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 165
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaagtagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtc acacagtaca tccggggccc atcaagacc cgcggaagga tgctctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg cgtaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 166
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 166
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Val Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys

145		150		155		160									
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
		165		170		175									
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys
		180		185		190									
Thr	Pro	Arg	Lys	Asp	Ala	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195		200		205									
Arg	Thr	Arg	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
		210		215		220									
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230		235									240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245			250									

<210> 167
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 167
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaca gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgaagtagc cgccaaatca atcggcggca ctgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtagc ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 168
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 168
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Gln Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Val Ala Ala
 35 40 45

Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
50						55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
130						135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
			180					185					190			
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
210						215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245					250							

<210> 169

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 169

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacaat	gggtatcgg	60
ttggcaatcg	cgcataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaagtagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tgatctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ttaaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgac	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 170

<211> 252

<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 170
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Val Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Pro Arg Lys Asp Asp Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 171
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 171
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240

```

ttcggcccggtt tacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aatgatgtc acagcgtagc ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 172

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 172

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
          20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
          35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
          50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
          85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
          100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
          115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
          130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145          150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
          165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
          180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
          195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225          230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
          245         250

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<210> 173
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 173
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaca gggatatcgg 60
ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaagtagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggcgc atcaagaccg agcggaagga tcagctggaa 600
ggttgggagg aatgatgtc acagcgtacg ttaaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 174
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 174
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Gln Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Val Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu

				165					170					175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
			180					185					190				
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
			245					250									

<210> 175
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 175
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt ttagtagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggcttg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttgttaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcccc atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ttaacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 176
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 176
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60

Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Val	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145				150						155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
			165						170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Pro	Ile	Lys	
		180						185					190			
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
	195					200						205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225				230						235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
			245						250							

<210> 177

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 177

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
gacactacca	cggaggaatg	gcgtaaaatc	ctgtccggtt	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgttca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600
ggttgggagc	agatgatgtc	acagcgtacg	ctgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgac	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 178

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 178

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
      130     135     140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
      180     185     190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Met Met Ser Gln
      195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
      210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
```

<210> 179

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 179

```
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
```

```

ggcaccgcgtc tggggcattca gcgcatgaaa aataaaggct tggggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccggggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catgggtgtg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 180

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 180

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Val Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 181

<211> 756

<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 181
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
tatactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
ggttgggagg aatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 182
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 182
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Tyr Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys

				180					185					190					
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln				
		195					200					205							
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala				
	210					215					220								
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly				
225					230					235					240				
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln								
				245				250											

<210> 183
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 183
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggacatggat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtggacc gcacag 756

<210> 184
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 184
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80

Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115				120						125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
			165					170						175		
Lys	Asp	Met	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
		180					185						190			
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195				200						205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210				215						220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
			245					250								

<210> 185

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 185

atgaccgatac	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggccccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600
ggttgggagg	aaatgatgtc	acagcgtagc	ctgaccacct	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgac	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 186

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 186

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245    250
```

<210> 187

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 187

```
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaa tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
```

```

ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt ggcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gggctctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggctcgacg cggttgacc gcacag 756

```

<210> 188

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 188

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Asp Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Gly Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 189

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 189

```
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg ggggtattaa aagcgttgaa 300
gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
ggttggggagg aaatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 190

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 190

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Asp Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
```

	195					200					205						
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245					250								

<210> 191
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 191
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaaatt thtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtttgaaggc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 gacactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtggacc gcacag 756

<210> 192
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 192
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95

Lys	Ser	Val	Glu	Asp	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 193
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 193
 atgaccgatac gtctgaagca taaagtagcc atcggttacgg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcgga ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcgggcccg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aagcaatgtc acagcgtagc gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggctcgacgg cgggtggacc gcacag 756

<210> 194
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 194

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40					45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
		100						105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180						185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 195

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 195

atgaccgatc	gtctgaagca	taaagtagcc	atcgttaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaaatc	ctgtccggtta	atctggatgg	tgtttttttc	360
ggcaccgcgc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgct	ccgactgcag	gggcatacaa	cgcttccaag	480
ggggcggtag	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600

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ggttgggagg aaatgatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 196
<211> 252
<212> PRT
<213> Secuencia Artificial

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<220>
<223> Variante modificada de KRED de Lactobacillus kefir

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```

<400> 196
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

```

<210> 197
<211> 756
<212> ADN
<213> Secuencia Artificial

```

```

<220>

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<223> Variante modificada de KRED de Lactobacillus kefir

<400> 197

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggcaattgc gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactgcacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 198

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 198

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ile
85     90     95
Ala Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195    200    205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
```

210	215	220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly		
225	230	235
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln		240
	245	250

<210> 199
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 199
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggcaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
 ggttgggagg aagcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 200
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 200
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110

Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150					155						160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165					170						175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180						185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Ala	Met	Ser	Gln
	195					200						205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230				235						240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245					250							

<210> 201
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 201
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattgc gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aatgatgtc acagcgtag ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 202
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 202
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr

1	Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20						25					30		
	Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40						45			
	Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
		50					55					60				
	Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65						70					75				80	
	Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95		
	Ala	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
			100						105				110			
	Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115						120				125				
	Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
		130					135					140				
	Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145						150					155				160	
	Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175		
	Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180						185					190		
	Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195						200					205			
	Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
		210					215					220				
	Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225						230					235				240	
	Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250							

<210> 203

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 203

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atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcgcca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagctcga tcgcggggct cgtaggcgat ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aatgatgtc acagcgtagc gcgacccta tgggccacat tggcgaaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720

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gcagaatttg tggtcgacgg cgggtggacc gcacag

756

<210> 204

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 204

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85				90						95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
		100						105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Ala	Gly	Leu	Val	Gly	Asp	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180						185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
	195						200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 205

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 205

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtagccaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttggggagg aaatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactcgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 206

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 206

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ala
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
```

225		230		235		240					
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln
			245				250				

<210> 207
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 207
 atgaccgatc gtctgaagca taaagtagcc atcggttaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattgc gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aagcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 208
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 208
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Ala Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125

Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 209
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 209
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggcaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccggtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgtc ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aagcagcttc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 210
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 210
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala

<210> 212
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 212
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Ala Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
 180 185 190
 Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Ala Met Ser Gln
 195 200 205
 Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 213
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 213
 atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcggt 60

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ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccctgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagctcga tcatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttggggagg aaatggcttc acagcgtacg gcgaccctta tgggccacat tggcgaaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 214

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 214

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Ala Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln

```

<210> 215
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 215
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
 ggttgggagg aaatggcttc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 216
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 216
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140

Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Ala	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 217
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 217
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcgaggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggcagccgc gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcget ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aagcaatgtc acagcgtacg ctgaccacct tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 218
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 218
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala

		35					40				45								
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala				
	50					55					60								
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala				
65					70					75					80				
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Ala	Ala				
				85					90					95					
Ala	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser				
			100					105					110						
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg				
		115					120					125							
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile				
	130					135					140								
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys				
145					150					155					160				
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu				
				165					170					175					
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys				
			180					185					190						
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Ala	Met	Ser	Gln				
		195					200					205							
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala				
	210					215					220								
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly				
225					230					235					240				
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln								
				245					250										

<210> 219

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 219

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggcaattgc gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcgcga tcgcggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgttca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggtgctgagg aagcaatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 220

<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 220
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ile
85 90 95
Ala Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ala Ile
130 135 140
Ala Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Ala Glu Glu Ala Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 221
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 221
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180

```

cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattgc gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtca acacagtaca tccggggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatggcttc acagcgtagc ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 222

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 222

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20        25        30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35        40        45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50        55        60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65        70        75        80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85        90        95
Ala Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100       105       110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115       120       125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130       135       140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145       150       155       160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165       170       175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180       185       190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Ala Ser Gln
195       200       205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210       215       220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225       230       235       240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245       250

```

<210> 223
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 223
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggcaattgc gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtc acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggtgctgagg aagcagcttc acagcgtacg ctgaccacct tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 224
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 224
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ile
 85 90 95
 Ala Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160

Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Ala	Glu	Glu	Ala	Ala	Ser	Gln
		195				200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 225
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 225
 atgaccgatc gtctgaagca taaagtagcc atcggttaccg gcgggacaat gggatatcggg 60
 ttggcaatcg ccgataaaatt ttagtagaggag ggtgcgaaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaaagc cgccaaatca atcggcgaggca ctgatgttat tgcgtttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcgcgg cgggcggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggtgctgagg aagcaatgtc acagcgtacg ctgaccacct tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cggggcaacc gcacag 756

<210> 226
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 226
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala

50		55		60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala				
65		70		75
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile				80
	85		90	95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser				
	100		105	110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg				
	115		120	125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ala Ala				
	130		135	140
Ala Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys				
145		150		155
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu				160
	165		170	175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys				
	180		185	190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Ala Glu Glu Ala Met Ser Gln				
	195		200	205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala				
	210		215	220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly				
225		230		235
Ala Glu Phe Val Val Asp Gly Gly Ala Thr Ala Gln				240
	245		250	

<210> 227

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 227

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	cgcataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcgcg	tcgcggggct	cgtaggcgct	ccgactgcag	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ctgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 228

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 228

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85      90      95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ala Ile
130     135     140
Ala Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180     185     190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195     200     205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245     250
```

<210> 229

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 229

```
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggcaattgc gagcgttgaa 300
```

```

cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcgcgga tcgcggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccggggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cggggcaacc gcacag 756

```

<210> 230

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 230

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ile
85          90          95
Ala Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ala Ile
130         135         140
Ala Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Ala Thr Ala Gln
245         250

```

<210> 231

<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 231
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtagccaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagctcga tcatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatggcttc acagcgtacg ctgaccacct tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 232
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 232
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ala
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175

Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Ala	Ser	Gln
			195				200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
			210			215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 233
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 233
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagctcgg cgatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggtgctgagg aagcagcttc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 234
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 234
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala

65					70					75				80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115				120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ala
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180					185					190			
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Ala	Glu	Glu	Ala	Ala	Ser	Gln
	195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210				215						220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
			245					250							

<210> 235
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 235
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaaagc cgccaaatca atcggcgcca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggcagccaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcgggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aagcagcttc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cggggcaacc gcacag 756

<210> 236
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 236

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35      40      45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50      55      60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ala
85      90      95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130     135     140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180     185     190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Ala Ala Ser Gln
195     200     205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Ala Thr Ala Gln
245     250
```

<210> 237

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 237

```
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggcaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
```

```

atgagctcga tcatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatggcttc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggctcgacg cggggcaacc gcacag 756

```

<210> 238

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 238

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Ala Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Ala Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Ala Thr Ala Gln
245         250

```

<210> 239

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 239

```
atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagctcgg cggcggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccggggcgc atcaagacc caggaagga tcagctggaa 600
ggttgggagg aagcagcttc acagcgtagc ctgaccacct tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactcgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 240

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 240

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ala
130    135    140
Ala Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
```

Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Ala	Ala	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215				220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245				250							

<210> 241
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 241
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagctcga tcgcgggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
 ggttgggagg aaatggcttc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cggggcaacc gcacag 756

<210> 242
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 242
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile

				85					90					95			
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser		
			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Ala	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165					170					175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
		180					185						190				
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Ala	Ser	Gln		
	195					200						205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210				215						220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230				235						240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Ala	Thr	Ala	Gln						
			245					250									

<210> 243
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 243
 atgaccgatac gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcgagg ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttccggcccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaaatc ctgtccggtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagg aatgatgtc acagcgtag ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cggggcaacc gcacag 756

<210> 244
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 244

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40					45			
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Ala	Thr	Ala	Gln				
				245					250						

<210> 245

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 245

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagctcgg	cgatggggct	cgtaggcgct	ccgactgcag	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 247

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
ggtgctgagg aaatggcttc acagcgtagc ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cggggcaacc gcacag 756
```

<210> 248

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 248

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Ile Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Thr Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Ala Glu Glu Met Ala Ser Gln
195    200    205
```

Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
210						215				220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Ala	Thr	Ala	Gln				
				245					250						

<210> 249

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 249

```

atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt thtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggcaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgct ccgactgcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
ggttgggagg aaatggcttc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cggggcaacc gcacag 756

```

<210> 250

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 250

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40					45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50				55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65				70					75					80	
Phe	Gly	Pro	Val	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Ala	Ile	
			85				90					95			
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser

			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Met	Gly	Leu	Val	Gly	Ala	Pro	Thr	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145				150					155						160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165					170					175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
		180					185					190					
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Ala	Ser	Gln		
	195					200					205						
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210				215					220							
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225				230				235							240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Ala	Thr	Ala	Gln						
			245				250										

<210> 251

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 251

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaaagc cgccaaatca atcggcgagg ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggacatggat 540
gtgctgttca acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 252

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 252

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr			
1				5					10					15				
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala			
			20					25					30					
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala			
		35				40						45						
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala			
	50				55						60							
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala			
65					70					75					80			
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile			
			85					90						95				
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser			
		100						105					110					
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg			
		115					120					125						
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile			
	130					135					140							
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys			
145					150					155					160			
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu			
			165					170						175				
Lys	Asp	Met	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys			
		180					185					190						
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln			
		195				200						205						
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala			
	210				215						220							
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly			
225					230					235					240			
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln							
			245					250										

<210> 253

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 253

atgaccgatc	gtctgaagca	taaagtagcc	atcgttaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaagtg	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ctgaccacct	tgggccacat	tggcgaaccg	660

aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 254
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 254
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245 250

<210> 255
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 255

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atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaagctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cgtactcgca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggat tgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
```

<210> 256

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 256

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Arg Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Ile Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
```

Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 257
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 257
 atgaccgatc gtctgaagca taaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtg ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagacc caggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 258
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 258
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg

Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35				40						45				
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50				55						60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85				90						95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Ile	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Ile	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165				170						175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
		180						185					190			
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
				245				250								

<210> 261

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 261

atgaccgatc	gtctgaagca	taaagtagcc	atcggtaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaaactgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaaatc	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgactctgg	gggcatacaa	cgcttccaag	480
ggggcggtag	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600
ggttgggagg	aaatgatgtc	acagcgtacg	ctgaccctta	tggggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 262
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 262
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
 180 185 190
 Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
 195 200 205
 Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
 245 250

<210> 263
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 263

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atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaaatc ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggat tgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

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<210> 264

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 264

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Ile Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Ile Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Pro Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240

```

Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
 245 250

<210> 265
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 265
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt thtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgagcgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggat thtaggcgct ccgatggcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccc cacggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 266
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 266
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile

130	135	140
Met Gly Ile Val Gly	Ala Pro Met Ala Gly	Ala Tyr Asn Ala Ser Lys
145	150	155
Gly Ala Val Arg Ile	Met Ser Lys Ser Ala	Ala Leu Asp Cys Ala Leu
165	170	175
Lys Asp Tyr Asp Val	Arg Val Asn Thr Val	His Pro Gly Ala Ile Lys
180	185	190
Thr Pro Arg Lys Asp	Gln Leu Glu Gly	Trp Glu Gln Ala Met Ser Gln
195	200	205
Arg Thr Ala Thr Pro	Met Gly His Ile Gly	Glu Pro Asn Asp Ile Ala
210	215	220
Trp Ile Cys Val Tyr	Leu Ala Ser Asp Glu	Ser Lys Phe Ala Thr Gly
225	230	235
Ala Glu Phe Val Val	Asp Gly Gly Trp Thr	Ala Gln
245	250	

<210> 267

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 267

atgaccgacc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggcggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgagcgaaga	agcaggcttg	acgagtctgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
tatactcaga	cggaggaatg	gcgtaaagtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccgatggcag	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccc	cacggaagga	tcagctggaa	600
ggttgggagg	aagcaatgtc	acagcgtagc	gcgacccta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgac	aatcgaaatt	tgcgacgggt	720
gcgaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 268

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 268

Met Thr Asp Arg Leu	Lys His Lys Val	Ala Ile Ile Thr	Gly Gly Thr
1	5	10	15
Met Gly Ile Gly	Leu Ala Ile Ala	Asp Lys Phe Val	Glu Glu Gly Ala
20	25	30	

Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala			
		35					40					45						
Lys	Ser	Ile	Gly	Gly	Thr	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala			
	50					55					60							
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Ser	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala			
65					70					75					80			
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile			
				85					90					95				
Lys	Ser	Val	Glu	Tyr	Thr	Gln	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser			
			100					105					110					
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg			
		115					120					125						
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile			
	130					135					140							
Met	Gly	Leu	Val	Gly	Ala	Pro	Met	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys			
145					150					155					160			
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu			
				165					170					175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys			
			180					185					190					
Thr	Pro	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Ala	Met	Ser	Gln			
		195					200					205						
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala			
	210					215					220							
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly			
225					230					235					240			
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln							
				245					250									

<210> 269

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 269

atgaccgatc	gtctgaagca	caaagtagcc	atcgtcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtctgaaagc	cgccaaatca	atcggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgagtctgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaagtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccgatggcag	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgttca	acacagtaca	tccgggcgcg	atcaagaccg	agcggaagga	tcagctggaa	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgaccctta	tgggccacat	tggcgaaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 270
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 270

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Met Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195    200    205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245    250

```

<210> 271
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 271

```

atgaccgacc gtctgaagca caaagtagcc atcattaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120

```

```

gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtcgggaaga agcaggctgg acgacgctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccgta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgta acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
ggttgggagg agatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 272

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 272

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Met Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 273
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 273
 atgaccgacc gtctgaagca caaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggacatggat 540
 gtgctgtgtc acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 274
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 274
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys

145		150		155		160									
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
		165		170		175									
Lys	Asp	Met	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180		185		190									
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195		200		205									
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
		210		215		220									
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230		235									240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245		250									

<210> 275
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 275
 atgaccgacc gtctgaagca gaaagtagcc atcattaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt thtagaggag ggtgcgaaa tagttattac tggctcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgat ccgacgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
 ggttgggagg aaatgatgtc acagcgtaag ctgaccacct tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 276
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 276
 Met Thr Asp Arg Leu Lys Gln Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45

Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
50						55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
130						135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Thr	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
		195					200					205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 277

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 277

atgaccgatc	gtctgaagca	caaagtagcc	atcggtaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	cggataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggtggca	ctgatgttat	tcgctttgtc	180
cagcacgatg	cgtcggaaga	agcaggctgg	acgtcgctgt	tcgacaccac	cgaggaggca	240
ttcggccccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaagtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcacccgtc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggat	ggtaggcgat	ccgatgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgttca	acacagtaca	tccgggcgcg	atcaagaccg	aacggaagga	tcagctggaa	600
ggttgggagg	agatgatgtc	acagcgtagc	ctgaccacct	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcgtctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 278

<211> 252

<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 278
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Met Val Gly Asp Pro Met Leu Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195 200 205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245 250

<210> 279
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 279
atgaccgatc gtctgaagca taaagtagcc atcgttaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtgag 120
gcggatgtag gtgaaaaagc cgccaaatca atcggcggca ctgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240

```

ttcggcccggtt tacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggacatggat 540
gtgctgtca acacagtaca tccggggcgcg atcaagaccg aacggaagga tcagctggaa 600
ggttgggagg aaatgatgtc acagcgtagc ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 280

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 280

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg Glu Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Met Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 281
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 281
 atgaccgacc gtctgaagca caaagtagcc atcggtaccg gcgggacaat gggatatcggt 60
 ttggcaatcg cggataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtcggaaga agcaggctgg acgtcgctgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacga cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgat ccgactctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggacatggat 540
 gtgctgtgtca acacagtaca tccggggcgcg atcaagaccg aacggaagga tcagctggaa 600
 ggttgggagg agatgatgtc acagcgtagc ctgaccacct tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 282
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 282
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Asp Pro Thr Leu Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu

				165					170					175			
Lys	Asp	Met	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
			180					185					190				
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
			245					250									

<210> 283
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 283
 atgaccgacc gtctgaagca gaaagtagcc atcggtaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagtagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcggcgaggca ctgatgttat tgcgtttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaaactgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggacatggat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
 ggttgggagg aatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 284
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 284
 Met Thr Asp Arg Leu Lys Gln Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Thr Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60

Ser	Glu	Glu	Ala	Gly	Trp	Thr	Lys	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	65	70	75	80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	85	90	95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser	100	105	110	
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	115	120	125	
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	130	135	140	
Met	Gly	Leu	Val	Gly	Asp	Pro	Met	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	145	150	155	160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	165	170	175	
Lys	Asp	Met	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	180	185	190	
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	195	200	205	
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	210	215	220	
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	225	230	235	240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					245	250		

<210> 285
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 285
 atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtctgaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaatata gagcgttgaa 300
 cgactacca cggaggaatg gcgtaaagtt ctgtccgcta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggctat ccggcgggccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtagc gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 286
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 286

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
      20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
      35      40      45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
      50      55      60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
      85      90      95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
      100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
      115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
      130     135     140
Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
      165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
      180     185     190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
      195     200     205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
      210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
      245     250
```

<210> 287

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 287

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atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtctgaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttaattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
```

```

ggcaccgcgtc tggggcattca gcgcatgaaa aataaaggct tggggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggctat ccgtcggccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtca acacagtaca tccggggcgcg atcaagaccg agcggaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

```

<210> 288

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 288

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Tyr Pro Ser Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245         250

```

<210> 289

<211> 756

<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 289
atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtctgaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccgatggcag gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgc atcaagacct cggctaaaga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756

<210> 290
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 290
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Pro Met Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys

				180				185					190				
Thr	Ser	Ala	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln						
				245				250									

<210> 291
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 291
 atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtctgaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagccgagg gcgtcattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct cccgatggcag gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtggacc gcacag 756

<210> 292
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 292
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80

Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Ala	Glu	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115				120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Ala	Pro	Met	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145				150						155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
			165					170						175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
		180					185						190			
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln	
	195					200						205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210				215						220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225				230					235						240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln					
			245					250								

<210> 293
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 293

atgaccgatc	gtctgaagca	caaagtagcc	atcgtcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	cgcataaatt	tgtagaggag	gggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtctgaaagc	cgccaaatca	atcgggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgagtctgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaagtt	ctgtccggtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgat	ccggcgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccg	agcggaagga	tcagctggaa	600
ggttgggagc	aggcaatgtc	acagcgtagc	gcgaccacct	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcatctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtggacc	gcacag			756

<210> 294
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 294

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Ala Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195    200    205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Trp Thr Ala Gln
245    250
```

<210> 295

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 295

```
atgaccgacc gtctgaagca caaagtagcc atcattaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaa tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcggtgga gtgatgttat tcgctttgtc 180
cagcacgatg cgtcgaaga agcaggctgg acgacgtgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcaggatgat gccgtattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtaaagt ctgtccggtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
```

```

ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt ggcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
ggttgggagg agatgatgtc acagcgtagc ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 296

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 296

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Asp Gly Arg Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Met Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 297

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 297

```
atgaccgacc gtctgaagca caaagtagcc atcattaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtcggaaga agcaggctgg acgacgctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggtgctg gcaaaattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtcgtggt ctgtccgtga atctggatgg tgtttttttc 360
ggcaccctgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggcgcg atcaagaccg aacggaagga tcagctggaa 600
ggttgggagg agatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756
```

<210> 298

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 298

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ala Gly Lys Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Arg Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Asp Pro Met Leu Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
```

	195					200						205					
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln						
				245					250								

<210> 299
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 299
 atgaccgacc gtctgaagca caaagtagcc atcattaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaaatt tntagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtcggaaga agcaggctgg acgacgctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggtgctg gccgtattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtga cgctggatgg tgtttttttc 360
 ggcaccgctc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgttca acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
 ggttgggagg agatgatgtc acagcgtacg ctgaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 300
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 300
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Leu Val Asn Asn Ala Gly Ala Gly Arg Ile
 85 90 95

<400> 302

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr	
1				5					10					15		
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35					40					45				
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50					55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Arg	Gly	Ala	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser	
		100						105					110			
Val	Thr	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Asp	Pro	Met	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
		180						185					190			
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					
				245					250							

<210> 303

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 303

atgaccgacc	gtctgaagca	caaagtagcc	atcattaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggatggc	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgctcggaaga	agcaggctgg	acgacgctgt	tcgacaccac	cgaggaggca	240
ttcggccccg	ttacgaccct	ggtgaacaat	gcagggatgg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaagtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgatgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccg	aacggaagga	tcagctggaa	600

```

ggttgggagg agatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

```

<210> 304
<211> 252
<212> PRT
<213> Secuencia Artificial

```

```

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

```

```

<400> 304
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Met Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Asp Pro Met Leu Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195         200         205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

```

<210> 305
<211> 756
<212> ADN
<213> Secuencia Artificial

```

```

<220>

```

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 305

```
atgaccgacc gtctgaagca caaagtagcc atcattaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtcggaaga agcaggctgg acgacgctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcaggtgagg gcgtcattaa aagcgttgaa 300
cggactacca cggaggaatg gcgtcgtggt ctgtccgtgg cgctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct cgtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
ggttgggagg agatgatgtc acagcgtacg ctgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756
```

<210> 306

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 306

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20        25        30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35        40        45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50        55        60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65        70        75        80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Glu Gly Val Ile
85        90        95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Arg Val Leu Ser
100       105       110
Val Ala Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115       120       125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130       135       140
Met Gly Leu Val Gly Asp Pro Met Leu Gly Ala Tyr Asn Ala Ser Lys
145       150       155       160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165       170       175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180       185       190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Glu Met Met Ser Gln
195       200       205
Arg Thr Leu Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
```

210		215		220											
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 307
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 307

atgaccgacc	gtctgaagca	caaagtagcc	atcattaccg	gcgggacaat	gggtatcgg	60
ttggcaatcg	ccgataaaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtcggaaga	agcaggctgg	acgacgctgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggttattaa	aagcgttgaa	300
cggactacca	cggaggaatg	gcgtaaagtt	ctgtccgtgg	cgctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	cgtaggcgat	ccgatgctgg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtgca	acacagtaca	tccgggcgcg	atcaagaccg	aacggaagga	tcagctggaa	600
ggttgggagg	agatgatgtc	acagcgtagc	ctgacccta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcgtctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 308
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 308

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40				45				
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55				60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65				70					75					80	
Phe	Gly	Pro	Val	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
			85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Trp	Arg	Lys	Val	Leu	Ser	
			100					105					110		

Val	Ala	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Asp	Pro	Met	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150					155						160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165					170						175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180						185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln
	195					200						205			
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230				235						240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
			245					250							

<210> 309
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 309
 atgaccgacc gtctgaagca caaagtagcc atcattaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt thtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtcgggaaga agcaggcttg acgacgctgt tcgacaccac cgaggaggca 240
 ttcgggcccg ttacgaccct ggtgaacaat gcagctgatg gccgtattaa aagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcga gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct cgtaggcgat ccgatgctgg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg aacggaagga tcagctggaa 600
 ggttgggagg agatgatgtc acagcgtag ctgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcgtctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 310
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 310
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr

1				5					10					15					
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala				
			20					25					30						
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala				
		35					40					45							
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala				
	50					55					60								
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala				
65					70					75					80				
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Ala	Asp	Gly	Arg	Ile				
				85				90						95					
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser				
		100						105					110						
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg				
		115					120					125							
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile				
	130					135					140								
Met	Gly	Leu	Val	Gly	Asp	Pro	Met	Leu	Gly	Ala	Tyr	Asn	Ala	Ser	Lys				
145					150					155					160				
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu				
				165				170						175					
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys				
		180						185					190						
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Glu	Met	Met	Ser	Gln				
		195					200					205							
Arg	Thr	Leu	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala				
	210					215					220								
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly				
225					230					235					240				
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln								
				245					250										

<210> 311

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 311

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atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcgg 60
ttggcaatcg cggataaatt tgtagaggag ggtgcgaaa tagttattac tggtcgtcac 120
gcggatgtag gtctgaaagc cgccaaatca atcgggtggc gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg ggggtggcaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggctat ccggcgggcc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggcgc atcaagaccg agcggaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720

```

gcagaatttg tggtcgacgg cgggtggacc gcacag

756

<210> 312

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 312

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Val	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Leu	Lys	Ala	Ala
			35				40					45			
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Ser	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ala
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Tyr	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
	195						200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln				
				245					250						

<210> 313

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 313

```
atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtctgaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggatgatcaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagctcga tcgcagggct ggtaggcgcc ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcactctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtggacc gcacag 756
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<210> 314

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 314

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
100          105          110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115          120          125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130          135          140
Ala Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145          150          155          160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165          170          175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180          185          190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195          200          205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215          220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
```

225		230		235		240					
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Trp	Thr	Ala	Gln
			245				250				

<210> 315
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 315
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt thtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgagcctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggctat ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 316
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 316
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125

Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Tyr	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 317
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 317
 atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcggatggca gtgatgttat tgcgtttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccggtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggctat ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 318
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 318
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala

<210> 320
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 320
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
 180 185 190
 Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
 195 200 205
 Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
 245 250

<210> 321
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 321
 atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcggt 60

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ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccggtt tacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtaaagtt ctgtccggtta atctggatgg tgtttttttc 360
ggcaccctgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggctat ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgcg atcaagaccg agcggaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgaccctta tgggccacat tggcgaaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

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<210> 322

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 322

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln

```

<210> 323
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 323
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgagcctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcaggggctg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggctat ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 324
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 324
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ala Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Lys Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140

Met	Gly	Leu	Val	Gly	Tyr	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165						170					175
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 325
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 325
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt thtagaggag ggtgcgaaa tagttattac tggtcgtcac 120
 gcggatgtag gtctgaaagc cgccaaatca atcgggtggca gtgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgagtctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggctat ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 326
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 326
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Leu Lys Ala Ala

<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 328
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195 200 205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245 250

<210> 329
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 329
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180

```

cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgatgatgt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggcgcg atcaagaccg agtcgaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtagc gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

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<210> 330

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 330

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20         25         30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35         40         45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50         55         60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65         70         75         80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85         90         95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100        105        110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115        120        125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130        135        140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145        150        155        160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165        170        175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180        185        190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195        200        205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210        215        220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225        230        235        240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245        250

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<210> 331
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 331
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatggt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgctgtgtc acacagtaca tccgggcgcg atcaagaccg agcggaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 332
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 332
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160

Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195				200					205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 333
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 333
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaa tagttattac tggtcggtcac 120
 gcggatgtag gtgagaaaagc cgccaaatca atcgggtggca gtgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggcttg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggctat ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtacacc gcacag 756

<210> 334
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 334
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala

50		55		60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala				
65		70		75
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile				80
	85		90	95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser				
	100		105	110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg				
	115		120	125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile				
	130		135	140
Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys				
145		150		155
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu				160
	165		170	175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys				
	180		185	190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln				
	195		200	205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala				
	210		215	220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly				
225		230		235
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln				240
	245		250	

<210> 335

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 335

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	cgcataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggc	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggctat	ccggccgccc	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtgtc	acacagtaca	tccgggcgcg	atcaagaccg	aggcgaagga	tcagctggaa	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 336

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 336

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20      25      30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35      40      45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50      55      60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65      70      75      80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85      90      95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100     105     110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115     120     125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130     135     140
Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145     150     155     160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165     170     175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180     185     190
Thr Glu Ala Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195     200     205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210     215     220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225     230     235     240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245     250
```

<210> 337

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 337

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atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcggt 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcggtgga gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggttaattaa gagcgttgaa 300
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```

cggactacca cggaggaatg gcgatgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca ggcgatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggctat ccggccgccg gggcatacaa cgcttccaag 480
ggggcgggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgcg atcaagaccg agtcgaagga tcagctggaa 600
ggttggggagc aggcaatgtc acagcgtacg ggcacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 338

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 338

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Tyr Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 339

<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 339
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccctgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct gccgccgccg gggcatacaa cgcttccaag 480
ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggcgcg atcaagaccg agcgcaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 340
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 340
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175

Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
			195				200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
			210			215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 341
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 341
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 342
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 342
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala

65					70					75				80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115				120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150						155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180					185						190		
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
	195					200						205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230						235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
			245					250							

<210> 343
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 343
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcggtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcgggcccg ttacgaccct ggtgaacaat gcagggatcg ggcgtattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgcta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcaactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcgcaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtagc gcgaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 344
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 344

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Arg Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195    200    205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245    250
```

<210> 345

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 345

```
atgaccgatac gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg cgcataaatt tctagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcggatggc gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggggcag gggtcattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
```

```

atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggcgcg atcaagaccg agcgcaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 346

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 346

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ala Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 347

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 347

```
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggggcag ggcgtattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttgctgggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgcg atcaagaccg agcgcaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756
```

<210> 348

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 348

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Leu Val Asn Asn Ala Gly Ala Gly Arg Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Ala Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
```

Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 349
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 349
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt tntagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggggcag gggtcattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaaagtt ctgtccgtca ctctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttgctgggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcgcaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 350
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 350
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ala Gly Val Ile

				85					90					95			
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser		
			100					105					110				
Val	Thr	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Ala	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145					150					155					160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165						170				175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
		180						185					190				
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln		
	195					200						205					
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln						
			245					250									

<210> 351

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 351

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	cgcataaatt	tgtagaggag	gggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttgctgggct	ggtaggcgct	ccggccgccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtca	acacagtaca	tccgggcgcg	atcaagaccg	aggcgaagga	tcagctggaa	600
ggttgggagc	aggcaatgtc	acagcgtagc	gcgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcatctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 352

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 352

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35					40					45			
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Ala	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Ala	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 353

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 353

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcgg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcggatggc	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggatcg	gggtcattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccggccgccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540

```

gtgcgtgtca acacagtaca tccggg'gcgcg atcaagaccg agcgcaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 354
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 354

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50				55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65				70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
			85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser
		100						105				110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115				120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130			135							140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145				150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
			165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180					185					190			
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
	195					200					205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210				215						220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230						235				240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
			245					250							

<210> 355
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 355

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atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaagctgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccgatggccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccgggcgcg atcaagaccg agcgcaagga tcagctggaa 600
ggttggggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756
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<210> 356

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 356

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Met Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195    200    205
```

Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
210						215				220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 357
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 357
 atgaccgatc gtctgaagca caaagtagcc atcgtcaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaaatt tntagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgtcgctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtaagggt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agcgcaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 358
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 358
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Val Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser

			100					105					110				
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg		
		115					120					125					
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile		
	130					135					140						
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys		
145				150					155						160		
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu		
			165					170					175				
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
		180					185					190					
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln		
	195					200					205						
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210				215					220							
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225				230				235							240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln						
			245				250										

<210> 359

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 359

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	cgcataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcgggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgtcgtctg	tcgacaccac	cgaggaggca	240
ttcggccccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtaagggt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccgatggccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtgtc	acacagtaca	tccgggcgcg	atcaagaccg	agcgcaagga	tcagctggaa	600
ggttgggagc	aggcaatgtc	acagcgtagc	gcgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcatctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 360

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 360

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr	
1				5					10					15		
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35				40						45				
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50				55						60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Ser	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Lys	Val	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Ala	Pro	Met	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
			180					185					190			
Thr	Glu	Arg	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					
				245					250							

<210> 361

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 361

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggt	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgaaaaagc	cgccaaatca	atcggtgga	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgtcgtgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtaagggt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccggtc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccggccgccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccggggcgcg	atcaagaccg	agcgcaagga	tcagctggaa	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgacccta	tgggccacat	tggcgaaccg	660

aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 362
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 362
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Ser Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Lys Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195 200 205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245 250

<210> 363
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 363

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atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgaaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaagctgt tcgacaccac cgaggaggca 240
ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtca acacagtaca tccggggcgcg atcaagaccg agcgcaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756
```

<210> 364

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 364

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Lys Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Arg Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195    200    205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
```

Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 365
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 365
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggggccg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 366
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 366
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ala Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg

Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35				40						45				
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50				55						60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85				90						95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser	
		100						105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165				170						175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
		180						185					190			
Thr	Asn	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					
				245					250							

<210> 369

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 369

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggc	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccggccgccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gttcgtgtca	acacagtaca	tccgggcgcg	atcaagacca	actcgaagga	tcagctgcc	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgaccctta	tggggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 370
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 370
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Asn Ser Lys Asp Gln Leu Pro Gly Trp Glu Gln Ala Met Ser Gln
195 200 205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245 250

<210> 371
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 371

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atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccgggcgcg atcaagaccg aatcgaagga tcagctgcc 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 372

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 372

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Ser Lys Asp Gln Leu Pro Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240

```

Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
 245 250

<210> 373
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 373
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggcggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 374
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 374
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Ala Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile

130	135	140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys		
145	150	155
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu		
	165	170
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys		
	180	185
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln		
	195	200
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala		
	210	215
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly		
225	230	235
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln		
	245	250

<210> 375

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 375

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atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggcttg acgaccctgt tcgacaccac cgaggaggca 240
ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttccgaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcget ccggccgccg gggcatacaa cgcttccaag 480
ggggcggtag gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcgcg atcaagacca actcgaagga tcagctgcc 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcgaatttg tggtcgacgg cgggtacacc gcacag 756

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<210> 376

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 376

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr		
1	5	10
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala		
	20	30

Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35					40					45				
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50					55					60					
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Pro	
				85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
			180					185					190			
Thr	Asn	Ser	Lys	Asp	Gln	Leu	Pro	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln	
	195						200					205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					
				245					250							

<210> 377

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 377

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggctcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggttccgaa	gagcgttgaa	300
cggactacca	cggaggaatg	gagtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggat	cgtaggcgct	ccggccgccg	gggcatacaa	cgcttccaag	480
ggggcggtag	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtca	acacagtaca	tccgggcgcg	atcaagaccg	aatcgaagga	tcagctgcc	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcacatctgac	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggctcgacg	cgggtacacc	gcacag			756

<210> 378
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 378
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Pro
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Ser Asp Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Ile Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
 165 170 175
 Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
 180 185 190
 Thr Glu Ser Lys Asp Gln Leu Pro Gly Trp Glu Gln Ala Met Ser Gln
 195 200 205
 Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
 210 215 220
 Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
 225 230 235 240
 Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
 245 250

<210> 379
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 379
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcggt 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120

```

gcggatgtag gtagagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgta atctggatgg tgttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgta acacagtaca tccgggcgcg atccgcaccg agtcgaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

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<210> 380

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 380

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Arg
180         185         190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 381
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 381
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgcgc tggggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggat ttagggcgct ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 382
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 382
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
 100 105 110
 Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Ile Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys

145		150		155		160									
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
		165		170		175									
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
		180		185		190									
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195		200		205									
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
		210		215		220									
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225				230		235									240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
			245			250									

<210> 383
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 383
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagtagagg ggtgcgaaa tagttattac tggctcgtcac 120
 gcggatgtag gtgagaaaagc cgccaaatca atcgggtggca gtgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggcttg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cgactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggat cgtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg aatcgaagga tcagctgcca 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaatatt tgcgacgggt 720
 gcgaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 384
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 384
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45

Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	50	55	60
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	65	70	75
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	85	90	95
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser	100	105	110
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	115	120	125
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	130	135	140
Met	Gly	Ile	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	145	150	155
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	165	170	175
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	180	185	190
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Pro	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln	195	200	205
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	210	215	220
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	225	230	235
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					245	250	

<210> 385

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 385

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcgg	60
ttggcaatcg	cggataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggca	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccgtgt	tcgacaccac	cgaggaggca	240
ttcggccccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcacccgtc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccggccgccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgcgtgtca	acacagtaca	tccgggcgcg	atcaagaccg	aatcgaagga	tcagctggag	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcattctgacg	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 386

<211> 252

<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 386
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Ala Gly Trp Thr Thr Val Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180 185 190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195 200 205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210 215 220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225 230 235 240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245 250

<210> 387
<211> 756
<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 387
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt thtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga agcaggctgg acgaccgtgt tcgacaccac cgaggaggca 240

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ttcggcccggtt tacgaccct ggtgaacaat gcagggattg gggttatcaa gagcgttgaa 300
cgactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgttttttc 360
ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggat cgtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtca acacagtaca tccggggcgcg atcaagaccg aatcgaagga tcagctggag 600
ggttgggagc aggcaatgtc acagcgtagc gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

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<210> 388

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 388

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
          20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
          35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
          50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Val Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
          85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
          100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
          115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
          130         135         140
Met Gly Ile Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145          150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
          165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
          180         185         190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
          195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210          215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225          230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
          245         250

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<210> 389
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 389
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacagc cggatatcgg 60
 ttggcaatcg cggataaatt ttagagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcaggctgg acgaccctgt tcgacaccac cgaggaggca 240
 ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatggt ctgtccgtta atcaggatgg tgtttttttc 360
 ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccggggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgaccctta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 390
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 390
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Ala Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95
 Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
 100 105 110
 Val Asn Gln Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
 115 120 125
 Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
 130 135 140
 Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
 145 150 155 160
 Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu

				165					170					175			
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys		
			180					185					190				
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215				220							
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230				235						240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln						
			245					250									

<210> 391
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 391
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacagc cggatatcgg 60
 ttggcaatcg ccgataaatt ttagtagaggag ggtgcgaaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaaagc cgccaaatca atcgggtggca gtgatgttat tgcctttgtc 180
 cagcacgatg cgtccgaaga agcaggcttg acgaccgtgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg aatcgaagga tcagctgcca 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 392
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 392
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Ala Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60

Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Val	Phe	Asp	Thr	Thr	Glu	Glu	Ala	65	70	75	80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	85	90	95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser	100	105	110	
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	115	120	125	
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	130	135	140	
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	145	150	155	160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	165	170	175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	180	185	190	
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Pro	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln	195	200	205	
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	210	215	220	
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	225	230	235	240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					245	250		

<210> 393
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 393

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	cgcataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggc	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccggtt	atctggatgg	tgtttttttc	360
ggcaccgctc	tgggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccggccgccc	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
gtgctgtgtc	acacagtaca	tccgggcgcg	atcaagaccg	agtcgaagga	tggcctggaa	600
ggttgggagc	aggcaatgtc	acagcgtacg	gcgaccctta	tgggccacat	tggcgaaccg	660
aatgacatcg	catggatctg	tgtgtacctg	gcactctgac	aatcgaaatt	tgcgacgggt	720
gcagaatttg	tggtcgacgg	cgggtacacc	gcacag			756

<210> 394
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 394

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr
1				5					10					15	
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala
			20					25					30		
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala
		35				40						45			
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala
	50					55					60				
Ser	Glu	Glu	Ala	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala
65					70					75					80
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile
				85					90					95	
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Ser	Lys	Asp	Gly	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 395

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 395

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcgggtggc	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	agcaggctgg	acgaccctgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
cggactacca	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360

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ggcaccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgca acacagtaca tccggggcgcg atcaagaccg agtcgaagga tcgcctggaa 600
ggttgggagc aggcaatgtc acagcgtagc gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

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<210> 396

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 396

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Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Ser Lys Asp Arg Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 397

<211> 756

<212> ADN
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 397
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga acgtggctgg acggacctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
caaactacta cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccgcgc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccgcaggccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccggggcgc atcaagaccg agtcgaagga tcagctggaa 600
ggttgggagc agctgatgtc acagcgtacg gcgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcattctgac aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 398
<211> 252
<212> PRT
<213> Secuencia Artificial

<220>
<223> Variante modificada de KRED de Lactobacillus kefir

<400> 398
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1 5 10 15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20 25 30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35 40 45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50 55 60
Ser Glu Glu Arg Gly Trp Thr Asp Leu Phe Asp Thr Thr Glu Glu Ala
65 70 75 80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85 90 95
Lys Ser Val Glu Gln Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
100 105 110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115 120 125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130 135 140
Met Gly Leu Val Gly Ala Pro Gln Ala Gly Ala Tyr Asn Ala Ser Lys
145 150 155 160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165 170 175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys

			180					185					190				
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Leu	Met	Ser	Gln		
		195					200					205					
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln						
			245					250									

<210> 399
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 399
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcggatggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agagggctgg acggacctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 aagactacta cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccgcaggccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc agctgatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcgaattttg tggtcgacgg cgggtacacc gcacag 756

<210> 400
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 400
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Glu Gly Trp Thr Asp Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80

Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Lys	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg	
		115				120						125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Ala	Pro	Gln	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
			165						170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
			180					185					190			
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Leu	Met	Ser	Gln	
		195				200						205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					
				245					250							

<210> 401
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 401
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgagaaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcgggctgg acgacgctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 atgactacta cggaggaatg gcgtgatgtt ctgtccgcta atctggatgg tgtttttttc 360
 ggcacccgctc tgggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
 ggggcgggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc agctgatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 402
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 402

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Ala Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Met Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Leu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Leu Met Ser Gln
195    200    205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210    215    220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225    230    235    240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245    250
```

<210> 403

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 403

```
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcggtgga gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga acgtggctg acgcgcctgt tcgacaccac cgaggaggca 240
ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggttaattaa gagcgttgaa 300
cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccctg agggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccggccgccg gggcatacaa cgcttccaag 480
```

```

ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt ggcactgaa ggactacgat 540
gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756

```

<210> 404

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 404

```

Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1          5          10          15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20          25          30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Arg Gly Trp Thr Arg Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Arg Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Glu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Ala Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
245         250

```

<210> 405

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 405

```
atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggtcgtcac 120
gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
cagcacgatg cgtccgaaga acgtggctgg acgcgcctgt tcgacaccac cgaggaggca 240
ttcggcccgg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
cgcactacta cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
ggcaccctgt agggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
atgagcagta ttatggggct ggtaggcgct ccgcaggccg gggcatacaa cgcttccaag 480
ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
gtgctgtgtc acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
ggttgggagc aggcaatgtc acagcgtacg gcgaccctta tgggccacat tggcgaaccg 660
aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
gcagaatttg tggtcgacgg cgggtacacc gcacag 756
```

<210> 406

<211> 252

<212> PRT

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 406

```
Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
1      5      10      15
Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
20     25     30
Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35     40     45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50     55     60
Ser Glu Glu Arg Gly Trp Thr Arg Leu Phe Asp Thr Thr Glu Glu Ala
65     70     75     80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85     90     95
Lys Ser Val Glu Arg Thr Thr Thr Glu Trp Arg Asp Val Leu Ser
100    105    110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Glu Gly Ile Gln Arg
115    120    125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130    135    140
Met Gly Leu Val Gly Ala Pro Gln Ala Gly Ala Tyr Asn Ala Ser Lys
145    150    155    160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165    170    175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180    185    190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Ala Met Ser Gln
```

		195					200					205					
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala		
	210					215					220						
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly		
225					230					235					240		
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln						
				245					250								

<210> 407
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 407
 atgaccgatc gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaaatt ttagaggag ggtgcgaaag tagttattac tggtcgtcac 120
 gcggatgtag gtgagaaagc cgccaaatca atcgggtggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga agcgggctgg acggacctgt tcgacaccac cgaggaggca 240
 ttcggcccggt ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcaccgctc tgggcatcca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccgcaggccg gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc aggcaatgtc acagcgtacg gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 408
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 408
 Met Thr Asp Arg Leu Lys His Lys Val Ala Ile Ile Thr Gly Gly Thr
 1 5 10 15
 Met Gly Ile Gly Leu Ala Ile Ala Asp Lys Phe Val Glu Glu Gly Ala
 20 25 30
 Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
 35 40 45
 Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
 50 55 60
 Ser Glu Glu Ala Gly Trp Thr Asp Leu Phe Asp Thr Thr Glu Glu Ala
 65 70 75 80
 Phe Gly Pro Val Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
 85 90 95

Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser
			100					105					110		
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Leu	Gly	Ile	Gln	Arg
		115					120					125			
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile
	130					135					140				
Met	Gly	Leu	Val	Gly	Ala	Pro	Gln	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys
145					150					155					160
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu
				165					170					175	
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys
			180					185					190		
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Ala	Met	Ser	Gln
		195					200					205			
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala
	210					215					220				
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly
225					230					235					240
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln				
				245					250						

<210> 409
 <211> 756
 <212> ADN
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 409
 atgaccgatac gtctgaagca caaagtagcc atcatcaccg gcgggacaat gggatatcgg 60
 ttggcaatcg ccgataaatt tgtagaggag ggtgcgaaag tagttattac tggctcgtcac 120
 gcggatgtag gtgagaaaagc cgccaaatca atcggatggca gtgatgttat tcgctttgtc 180
 cagcacgatg cgtccgaaga acgtggctgg acgacgctgt tcgacaccac cgaggaggca 240
 ttcggccccg ttacgaccct ggtgaacaat gcagggattg gggtaattaa gagcgttgaa 300
 cggactacca cggaggaatg gcgtgatgtt ctgtccgtta atctggatgg tgtttttttc 360
 ggcacccgtg agggcattca gcgcatgaaa aataaaggct tgggcgctag catcatcaat 420
 atgagcagta ttatggggct ggtaggcgct ccggccgcgc gggcatacaa cgcttccaag 480
 ggggcggtac gtatcatgtc gaaaagcgca gcgctggatt gcgcactgaa ggactacgat 540
 gtgcgtgtca acacagtaca tccgggcgcg atcaagaccg agtcgaagga tcagctggaa 600
 ggttgggagc agctgatgtc acagcgtagc gcgacccta tgggccacat tggcgaaccg 660
 aatgacatcg catggatctg tgtgtacctg gcatctgacg aatcgaaatt tgcgacgggt 720
 gcagaatttg tggtcgacgg cgggtacacc gcacag 756

<210> 410
 <211> 252
 <212> PRT
 <213> Secuencia Artificial

<220>
 <223> Variante modificada de KRED de Lactobacillus kefir

<400> 410

Met	Thr	Asp	Arg	Leu	Lys	His	Lys	Val	Ala	Ile	Ile	Thr	Gly	Gly	Thr	
1				5					10					15		
Met	Gly	Ile	Gly	Leu	Ala	Ile	Ala	Asp	Lys	Phe	Val	Glu	Glu	Gly	Ala	
			20					25					30			
Lys	Val	Val	Ile	Thr	Gly	Arg	His	Ala	Asp	Val	Gly	Glu	Lys	Ala	Ala	
		35					40					45				
Lys	Ser	Ile	Gly	Gly	Ser	Asp	Val	Ile	Arg	Phe	Val	Gln	His	Asp	Ala	
	50					55					60					
Ser	Glu	Glu	Arg	Gly	Trp	Thr	Thr	Leu	Phe	Asp	Thr	Thr	Glu	Glu	Ala	
65					70					75					80	
Phe	Gly	Pro	Val	Thr	Thr	Leu	Val	Asn	Asn	Ala	Gly	Ile	Gly	Val	Ile	
				85					90					95		
Lys	Ser	Val	Glu	Arg	Thr	Thr	Thr	Glu	Glu	Trp	Arg	Asp	Val	Leu	Ser	
			100					105					110			
Val	Asn	Leu	Asp	Gly	Val	Phe	Phe	Gly	Thr	Arg	Glu	Gly	Ile	Gln	Arg	
		115					120					125				
Met	Lys	Asn	Lys	Gly	Leu	Gly	Ala	Ser	Ile	Ile	Asn	Met	Ser	Ser	Ile	
	130					135					140					
Met	Gly	Leu	Val	Gly	Ala	Pro	Ala	Ala	Gly	Ala	Tyr	Asn	Ala	Ser	Lys	
145					150					155					160	
Gly	Ala	Val	Arg	Ile	Met	Ser	Lys	Ser	Ala	Ala	Leu	Asp	Cys	Ala	Leu	
				165					170					175		
Lys	Asp	Tyr	Asp	Val	Arg	Val	Asn	Thr	Val	His	Pro	Gly	Ala	Ile	Lys	
			180					185					190			
Thr	Glu	Ser	Lys	Asp	Gln	Leu	Glu	Gly	Trp	Glu	Gln	Leu	Met	Ser	Gln	
		195					200					205				
Arg	Thr	Ala	Thr	Pro	Met	Gly	His	Ile	Gly	Glu	Pro	Asn	Asp	Ile	Ala	
	210					215					220					
Trp	Ile	Cys	Val	Tyr	Leu	Ala	Ser	Asp	Glu	Ser	Lys	Phe	Ala	Thr	Gly	
225					230					235					240	
Ala	Glu	Phe	Val	Val	Asp	Gly	Gly	Tyr	Thr	Ala	Gln					
				245					250							

<210> 411

<211> 756

<212> ADN

<213> Secuencia Artificial

<220>

<223> Variante modificada de KRED de Lactobacillus kefir

<400> 411

atgaccgatc	gtctgaagca	caaagtagcc	atcatcaccg	gcgggacaat	gggtatcggg	60
ttggcaatcg	ccgataaatt	tgtagaggag	ggtgcgaaag	tagttattac	tggtcgtcac	120
gcggatgtag	gtgagaaagc	cgccaaatca	atcggtagga	gtgatgttat	tcgctttgtc	180
cagcacgatg	cgtccgaaga	acgtggctgg	acgacgctgt	tcgacaccac	cgaggaggca	240
ttcggcccgg	ttacgaccct	ggtgaacaat	gcagggattg	gggtaattaa	gagcgttgaa	300
caaactacta	cggaggaatg	gcgtgatgtt	ctgtccgtta	atctggatgg	tgtttttttc	360
ggcaccctgt	agggcattca	gcgcatgaaa	aataaaggct	tgggcgctag	catcatcaat	420
atgagcagta	ttatggggct	ggtaggcgct	ccgcaggccg	gggcatacaa	cgcttccaag	480
ggggcggtac	gtatcatgtc	gaaaagcgca	gcgctggatt	gcgcactgaa	ggactacgat	540
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<210> 412
<211> 252
<212> PRT
<213> Secuencia Artificial

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<220>
<223> Variante modificada de KRED de Lactobacillus kefir

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<400> 412
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Lys Val Val Ile Thr Gly Arg His Ala Asp Val Gly Glu Lys Ala Ala
35          40          45
Lys Ser Ile Gly Gly Ser Asp Val Ile Arg Phe Val Gln His Asp Ala
50          55          60
Ser Glu Glu Arg Gly Trp Thr Thr Leu Phe Asp Thr Thr Glu Glu Ala
65          70          75          80
Phe Gly Pro Val Thr Thr Leu Val Asn Asn Ala Gly Ile Gly Val Ile
85          90          95
Lys Ser Val Glu Gln Thr Thr Thr Glu Glu Trp Arg Asp Val Leu Ser
100         105         110
Val Asn Leu Asp Gly Val Phe Phe Gly Thr Arg Glu Gly Ile Gln Arg
115         120         125
Met Lys Asn Lys Gly Leu Gly Ala Ser Ile Ile Asn Met Ser Ser Ile
130         135         140
Met Gly Leu Val Gly Ala Pro Gln Ala Gly Ala Tyr Asn Ala Ser Lys
145         150         155         160
Gly Ala Val Arg Ile Met Ser Lys Ser Ala Ala Leu Asp Cys Ala Leu
165         170         175
Lys Asp Tyr Asp Val Arg Val Asn Thr Val His Pro Gly Ala Ile Lys
180         185         190
Thr Glu Ser Lys Asp Gln Leu Glu Gly Trp Glu Gln Leu Met Ser Gln
195         200         205
Arg Thr Ala Thr Pro Met Gly His Ile Gly Glu Pro Asn Asp Ile Ala
210         215         220
Trp Ile Cys Val Tyr Leu Ala Ser Asp Glu Ser Lys Phe Ala Thr Gly
225         230         235         240
Ala Glu Phe Val Val Asp Gly Gly Tyr Thr Ala Gln
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<210> 413
<211> 4205
<212> ADN
<213> Secuencia Artificial

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<220>

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<223> Secuencia del plásmido pJVFabI#2-Bla

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<210> 414

<211> 4205

<212> ADN

<213> Secuencia Artificial

<220>

<223> Secuencia del plásmido pJVFabI#5-Bla

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