

LISTADO DE SECUENCIAS

<110> Archer Daniels Midland

<120> PROTEINA AMILASA MALTOTRIOSIA TERMOESTABLE

<130> CP.0201.US00

<160> 32

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> Bifidobacterium moukalabense amilasa maltotriosa con péptido señal de queratinasa de Bacillus licheniformis

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35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu
 50 55 60
 Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly
 65 70 75 80
 Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
 85 90 95
 Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn
 100 105 110
 Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr
 115 120 125
 Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
 130 135 140
 Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
 145 150 155 160
 Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
 165 170 175
 Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
 180 185 190
 Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
 195 200 205
 Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
 210 215 220
 Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
 225 230 235 240
 Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
 245 250 255
 Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser
 260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Lys Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser
500 505 510
Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys
515 520 525
Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro
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Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr
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<220>

<223> variante amilasa maltotriosa

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Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln
35 40 45
Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu
50 55 60
Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly
65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
85 90 95
Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn
100 105 110
Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr
115 120 125
Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
130 135 140
Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
145 150 155 160
Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
165 170 175
Ser Asp Tyr Thr Asp Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
180 185 190
Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
195 200 205
Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
210 215 220
Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
225 230 235 240
Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
245 250 255
Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser
260 265 270
Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu
275 280 285
Met Asn Gln Ala Phe Lys Asp Lys Arg Ala Lys Leu Lys Gly Leu Lys
290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Arg Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

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Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

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Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

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<223> variante amilasa maltotriosa

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Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Leu Phe Gln Gln

35 40 45

Asn Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

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Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

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<223> variante amilasa maltotriosa

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Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Lys Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Asn Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Asn Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

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Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

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Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

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Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Asn Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Tyr Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Lys Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ser Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

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<223> variante amilasa maltotriosa

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Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

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Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gly Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Asp Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Lys Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Ala Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

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Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Gln Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Lys Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

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Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

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<211> 560

<212> PRT

<213> Secuencia artificial

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<223> variante amilasa maltotriosa

<400> 8

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

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Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu
 50 55 60
 Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly
 65 70 75 80
 Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
 85 90 95
 Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn
 100 105 110
 Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr
 115 120 125
 Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
 130 135 140
 Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
 145 150 155 160
 Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
 165 170 175
 Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
 180 185 190
 Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
 195 200 205
 Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
 210 215 220
 Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
 225 230 235 240
 Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
 245 250 255
 Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser
 260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asp Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser
500 505 510
Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys
515 520 525
Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro
530 535 540
Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr
545 550 555 560

<210> 9

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 9

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

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
 85 90 95
 Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn
 100 105 110
 Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr
 115 120 125
 Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
 130 135 140
 Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
 145 150 155 160
 Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
 165 170 175
 Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
 180 185 190
 Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
 195 200 205
 Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
 210 215 220
 Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
 225 230 235 240
 Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
 245 250 255
 Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser
 260 265 270
 Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu
 275 280 285
 Met Asn Gln Ala Phe Lys Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys
 290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 10

<211> 560

<212> PRT|

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 10

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Asn Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Asn Ala Cys Ser Ala Asp Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 11

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 11

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 12

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 12

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Ala Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ser Asp Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 13

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 13

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn Gln Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Lys Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 14

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 14

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Asn Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asp Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 15

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 15

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu
50 55 60
Gly Val Ala Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly
65 70 75 80
Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
85 90 95
Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn
100 105 110
Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr
115 120 125
Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
130 135 140
Tyr Asn Gly Ser Asp Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
145 150 155 160
Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
165 170 175
Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
180 185 190
Met Trp Asp Phe Asp Ser Glu Ser Asp Lys Val Gln Asp Ile Gln Ser
195 200 205
Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
210 215 220
Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
225 230 235 240
Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
245 250 255
Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser
260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asp Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser
500 505 510
Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys
515 520 525
Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro
530 535 540
Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr
545 550 555 560

<210> 16

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 16

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

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
85 90 95
Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn
100 105 110
Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr
115 120 125
Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
130 135 140
Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
145 150 155 160
Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
165 170 175
Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
180 185 190
Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
195 200 205
Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
210 215 220
Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
225 230 235 240
Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
245 250 255
Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Gly
260 265 270
Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu
275 280 285
Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys
290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Ser Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asp Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 17

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 17

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 18

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 18

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Asp Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Ala Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Lys Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 19

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 19

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Asn Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Asp Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Lys Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 20

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 20

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Ile Asp Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Ile Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 21

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 21

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser

85 90 95

Lys Leu Gly Thr Glu Thr Glu Phe Lys Asn Met Ile Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ser Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 22

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 22

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ala Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu
 50 55 60
 Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly
 65 70 75 80
 Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Asp Ser
 85 90 95
 Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn
 100 105 110
 Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr
 115 120 125
 Gly Ala Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
 130 135 140
 Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
 145 150 155 160
 Pro Gly Gly Ile Thr Asp Ser Asp Phe His Gly Cys Lys Arg Asn Ile
 165 170 175
 Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
 180 185 190
 Met Trp Asp Phe Asp Ser Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
 195 200 205
 Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
 210 215 220
 Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
 225 230 235 240
 Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
 245 250 255
 Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser
 260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser
500 505 510
Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys
515 520 525
Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro
530 535 540
Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr
545 550 555 560

<210> 23

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 23

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

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser
85 90 95
Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn
100 105 110
Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr
115 120 125
Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
130 135 140
Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
145 150 155 160
Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile
165 170 175
Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
180 185 190
Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
195 200 205
Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
210 215 220
Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
225 230 235 240
Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
245 250 255
Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser
260 265 270
Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu
275 280 285
Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys
290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Lys Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Lys Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 24

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 24

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Val Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asp Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 25

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 25

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ala Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ser Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Asn Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Thr Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asn Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 26

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 26

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Val Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu His Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Val Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Ser Asn Ile Ala Phe Ser

420 425 430

Arg Asp Ala Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asp Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 27

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 27

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Val Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Leu Thr Asp Trp Gln Asp Asp Gly Asp Asn Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Gln Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asp Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 28

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 28

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Val Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu

50 55 60

Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly

65 70 75 80

Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser

85 90 95

Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn

100 105 110

Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr

115 120 125

Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp

130 135 140

Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr

145 150 155 160

Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile

165 170 175

Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser

180 185 190

Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser

195 200 205

Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met

210 215 220

Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu

225 230 235 240

Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile

245 250 255

Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser

260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Val Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Asn Asn Ile Ala Phe Ser

420 425 430

Arg Asp Gly Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Thr Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Ala Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asp Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 29

<211> 560

<212> PRT

<213> Secuencia artificial

<220>

<223> variante amilasa maltotriosa

<400> 29

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Val Ala Ser Ala Gln Pro Glu

20 25 30

Ala Arg Thr Ser Ala Lys Lys Asp Val Gln Val Ile Ala Phe Gln Gln

35 40 45

Ser Trp Asn Thr Ile Ala Lys Glu Cys Thr Asp Thr Tyr Gly Pro Glu
 50 55 60
 Gly Val Gly Tyr Val Glu Val Ser Pro Pro Gln Glu Ser Ile Gln Gly
 65 70 75 80
 Thr Gln Trp Trp Thr Ser Tyr Gln Pro Val Ser Tyr Lys Leu Ala Ser
 85 90 95
 Lys Leu Gly Thr Glu Ala Glu Phe Lys Asn Met Val Lys Gln Cys Asn
 100 105 110
 Ala Ala Gly Val Asp Ile Ile Ala Asp Val Val Ile Asn His Thr Thr
 115 120 125
 Gly Ser Asp Val Ala Ala Gly Asp Gln Lys Gly Val Ala Gly Ser Asp
 130 135 140
 Tyr Asn Gly Ser Thr Gly Thr Tyr Pro Gly Phe Ala Thr Ser Gln Tyr
 145 150 155 160
 Pro Gly Gly Ile Thr Asp Ser Asp Phe His Asp Cys Lys Arg Asn Ile
 165 170 175
 Ser Asp Tyr Thr Asn Gln Gln Glu Val Gln Glu Cys Arg Leu Ser Ser
 180 185 190
 Met Trp Asp Phe Asp Thr Glu Ser Glu Lys Val Gln Asp Ile Gln Ser
 195 200 205
 Asp Tyr Leu Val Ser Leu Trp Asn Ala Gly Val Arg Ala Phe Arg Met
 210 215 220
 Asp Ala Val Lys His Ile Asn Thr Asn Ser Met Lys Ala Leu Lys Glu
 225 230 235 240
 Lys Phe Ala Gln Lys Ile Gly Lys Asn Ala Asn Asp Ile Tyr Trp Ile
 245 250 255
 Gln Glu Val Ile Gly Asn Ala Ser Glu Ala Ser Gly Ile Gln Pro Ser
 260 265 270

Asn Tyr Leu Gln Asn Gly Thr Val Thr Gln Phe Gly Phe Lys Ser Glu

275 280 285

Met Asn Gln Ala Phe Asn Asp Lys Ile Ala Lys Leu Lys Gly Leu Lys

290 295 300

Asp Arg Leu Asp Lys Asp Ile Asp Ser Ala Gln Ala Asn Val Phe Val

305 310 315 320

Thr Asn Trp Asp Thr Ala Arg Asn Gln Gly Ala Leu Thr Tyr Lys Asp

325 330 335

Gly Ser Arg Phe Gln Leu Ala Asn Ala Phe Met Leu Ala Tyr Asp Tyr

340 345 350

Gly Thr Pro Arg Leu Leu Ser Asp Tyr Lys Trp Asp Val Asn Asp Asn

355 360 365

Gly Ala Pro Gly Ala Thr Asp Thr Lys Val Pro Asp Val Asp Met Gly

370 375 380

Ser Ala Cys Ser Ala Asn Ser Ser Asp Trp Asn Cys Glu Gln Arg Trp

385 390 395 400

Thr Ser Thr Arg Gly Met Ile Ala Phe His Asn Tyr Ala Gly Asp Ala

405 410 415

Ala Val Thr Asp Trp Gln Asp Asp Gly Asp Asn Asn Ile Ala Phe Ser

420 425 430

Arg Asp Ala Lys Gly Phe Ile Ala Ile Asn Asn Ser Lys Asp Asp Lys

435 440 445

Asn Ala Ser Tyr Thr Thr Ser Leu Ala Asp Gly Glu Tyr Cys Asp Val

450 455 460

Tyr Ala Val Met Asp Cys Ser Lys Ala Val Thr Val Lys Gly Gly Lys

465 470 475 480

Val Glu Thr Lys Ile Pro Ala His Ser Ala Ile Ala Leu Tyr Ala Gly

485 490 495

Ala Thr Lys Thr Ser His Pro Gln Ala Ser Ala Ala Lys Asp Pro Ser

500 505 510

Asp Pro Asp Ile Gly Gln Gln Asp Asp Glu Val Ser Ala Thr Asp Lys

515 520 525

Thr Val Thr Ile Tyr Tyr Lys Pro Ala Asp Ala Thr Gly Arg Pro Pro

530 535 540

Arg Ser Thr Thr Val Trp Ala Met Thr Gly Thr Ser Arg Lys Pro Thr

545 550 555 560

<210> 30

<211> 29

<212> PRT

<213> Bacillus licheniformis

<400> 30

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ser Ala Ser Ala

20 25

<210> 31

<211> 29

<212> PRT

<213> Secuencia artificial

<220>

<223> péptido señal de queratinasa de variante de Bacillus licheniformis

<400> 30

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Ala Ala Ser Ala

20 25

<210> 32

<211> 29

<212> PRT

<213> Secuencia artificial

<220>

<223> péptido señal de queratinasa de variante de Bacillus licheniformis

<400> 32

Met Met Arg Lys Lys Ser Phe Trp Leu Gly Met Leu Thr Ala Phe Met

1 5 10 15

Leu Val Phe Thr Met Ala Phe Ser Asp Val Ala Ser Ala

20 25