

REPUBLICA DE COLOMBIA

Organización y
Digitalización CSA Ltda.



CSA836246

Industria y Comercio
SUPERINTENDENCIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 10-081459- -00000-0000

Fecha: 2010-07-06 16:51:41 Dep. 2020 DIR.NUEVASCR
Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI
Act. 411 PRESENTACION Folios: 112

PATENTE DE INVENCION

EXPEDIENTE No.

10-81459

Contiene los documentos relativos a la solicitud de registro de:

Título: UNA BEBIDA SALUDABLE Y UN MÉTODO PARA MEJORAR LA ESTABILIDAD DE UNA BEBIDA.

Solicitante : RAISIO NUTRITION LTD.

De RAISIO, FINLANDIA.

Apoderado: MAURICIO JARAMILLO

Bogotá, D.C., Julio de 2010

T.H.
05-07-2010

PETITORIO			
FORMULARIO UNICO DE PC ENTRADA EN F		SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO	
		 No. 10-081459- 00000-0000	
		Fecha: 2010-07-06 16:51:41 Dep. 2020 DIR.NUEVASCR Tra. 11 PATENTEIYII Eve: 378 FASENACIONALI Act. 411 PRESENTACION Folios: 112	
SOLICITUD DE :			
☒ Patente de Invención.		☐ Patente de Modelo de Utilidad	
☒ Capítulo I		☐ Capítulo II	
② SOLICITANTE (71)	Nombre: RAISIO NUTRITION LTD.		IDENTIFICACION
	Dirección: Raisio Kaari 55 FI-21200		
	Teléfono: Fax:		C.C. ☐ NIT ☐
	E-Mail:		C.E. ☐ Otro ☐
	Domicilio: Raisio, Finlandia		Número
③ REPRESENTANTE O APODERADO	Nombre: MAURICIO JARAMILLO CAMPUZANO		IDENTIFICACIÓN
	Dirección: Calle 67 No. 7 – 35 Oficina 1204 Bogotá D.C., Colombia		
	Teléfono: 3192900 Fax: 3210295		C.C. ☒ NIT ☐
	E-Mail: mjaramillo@gpzlegal.com		C.E. ☐ Otro ☐
			Número 80.421.942 TP 74.555 C.S.J.
④ INVENTOR (ES) (72)	Nombre: 1. Päivi KUUSISTO 2. Taneli AROLA		C.C. ☐ NIT. ☐
	Dirección: 1. Myllynkiventie 1 C 51, FI-21100 2. Tavinkuja 3, FI-21420		
	Domicilio: 1. Naantali, Finlandia 2. Lieto, Finlandia		
⑤ PCT (86) Solicitud internacional No.: PCT/FI2008/000139 Fecha: 5/12/2008 Publicación Internacional No.: WO/2009/071737 Fecha: 11/06/2009			
⑥ TITULO (54) UNA BEBIDA SALUDABLE Y UN MÉTODO PARA MEJORAR LA ESTABILIDAD DE UNA BEBIDA VER FOLIO 115			
⑦ Clasificación Internacional (51) A23L 2/02 (2006.01), A23L 1/10 (2006.01), A23L 2/52 (2006.01), A23L 1/30 (2006.01)			
⑧ Prioridad		(33) País de Origen	(32) Fecha
SI ☒ NO ☐		Finlandia	5/12/2007
			20070944
⑨ Comprobante de pago No. Fecha:			
Instrucciones para el diligenciamiento del presente formulario, ver reverso de esta página.			

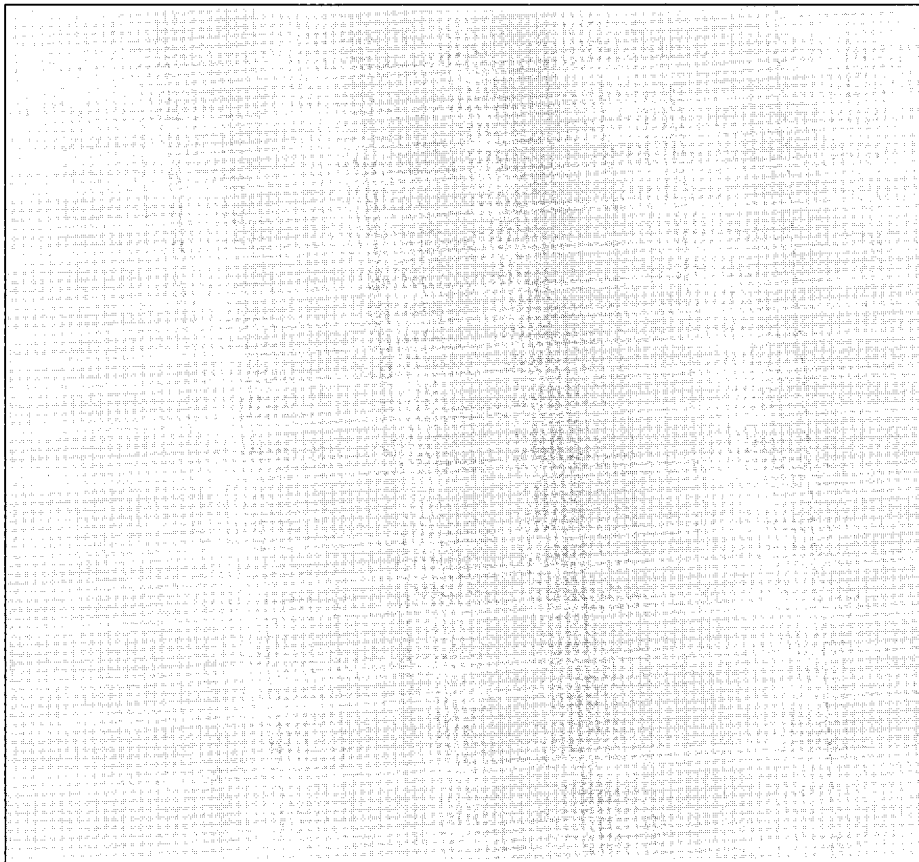
10

Anexos

- ☒ Comprobante de pago de la tasa de presentación de la solicitud
- ☒ Documento que acredite la existencia y representación legal cuando el solicitante sea persona jurídica
- ☒ Poderes, si fuere el caso.
- ☒ Documento de cesión del inventor al solicitante o a su causante
- ☐ Declaraciones
- ☒ Copia de la solicitud internacional (resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción simple de la primera solicitud, si se reivindica prioridad
- ☐ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA)
- ☐ Traducción del examen preliminar internacional efectuado por la IPEA
- ☐ De ser el caso, copia del contrato de acceso
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
- ☐ De ser el caso, certificado de depósito del material biológico
- ☐ Arte final 12 x 12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud
- ☐ De ser el caso, modificaciones efectuadas a la solicitud internacional

11

FIGURA CARACTERISTICA:



12

Solicito la concesión de la patente

NOMBRE:

MAURICIO JARAMILLO CAMPUZANO

FIRMA:

C.C. 80.421.942 de Usaquén T.R. 74.555 C.S.J.

Instrucciones para el diligenciamiento del presente formulario, ver reverso de esta página.

 Industria y Comercio SUPERINTENDENCIA SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISION DE NUEVAS CREACIONES EXTRACTO PARA PUBLICACION SOLICITUD DE PATENTE DE INVENCION PCT	
(21) N. De solicitud : (22) Fecha de solicitud : (30) Prioridad (31) No. Prioridad (32) Fecha 20070944 5/12/2007 (33) País Finlandia	(51) Int. Cl: A23L 2/02 (2006.01), A23L 1/10 (2006.01), A23L 2/52 (2006.01), A23L 1/30 (2006.01) (71) Solicitante (s) RAISIO NUTRITION LTD. (72) Inventor (es) 1. Päivi KUUSISTO 2. Taneli AROLA (74) Apoderado: Mauricio Jaramillo Campuzano
(85) Fecha limite inicio fase nacional: 05/07/2010 (86) Datos relativos a la presentación de la solicitud PCT Fecha de presentación de la solicitud: 5/12/2008 No. De solicitud: PCT/FI2008/000139	(87) Publicación internacional Fecha (dd/mm/aa): 11/06/2009 N. publicación: WO/2009/071737
(54) Titulo: UNA BEBIDA SALUDABLE Y UN MÉTODO PARA MEJORAR LA ESTABILIDAD DE UNA BEBIDA	

RESUMEN

La invención se refiere a una bebida, especialmente una bebida que es saludable y de sabor agradable y tiene buena estabilidad, y a un método para mejorar la estabilidad de una bebida.

Raisio

2403

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 8001760

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 10-081459- -00000-0000

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RECIBO OFICIAL DE CAJA : 10 - 53,516

FECHA : JUNIO 30 DE 2010

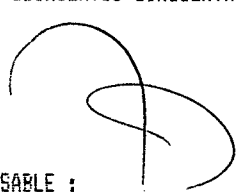
***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
SOMEZ PINZON ASEMARCA	CONSIGNACION	BANCO DE BOGOTA	062754387	329211632	30/06/2010	34,021,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	
		1 TRAMITES DE SOL. DE PATENTE DE IN	554,000.00
		TOTAL :	\$ 554,000.00

SON: QUINIENTOS CINCUENTA Y CUATRO MIL PESOS

RESPONSABLE : 

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 8001

CERTIFICACION DE EXCEDENTE : 10 - 53,520
FECHA : JUNIO 30 DE 2010

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 10-081459- -00000-0000

Fecha: 2010-07-06 16:51:41

Dep. 2020 DIR.NUEVASCR

Tra. 11 PATENTEIYII

Eve: 378 FASENACIONALI

Act. 411 PRESENTACION

Folios: 112

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
GOMEZ PINZON ASEMARCAS	CONSIGNACION	BANCO DE BOGOTA	062754387	329211632	30/06/2010	34,021,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-09	OTROS SERVICIOS DE PROPIEDAD I	
99		OTROS SERVICIOS ADMINISTRATIVOS	228,000.00
		TOTAL :	\$ 228,000.00

SON: DOSCIENTOS VEINTIOCHO MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

ESTA CERTIFICACION DE EXCEDENTE DE PAGO SOLO PODRA SER UTILIZADA
COMO PARTE DE LA CANCELACION DE UNA TARIFA VIGENTE Y NO PODRA SER
SUSTITUIDA POR NINGUN RECIBO.

Traducción Oficial del procedimiento notarial de autenticación de firmas en un documento de Poder Legal.

[El procedimiento que se traduce se encuentra en la esquina inferior derecha del documento de Poder Legal].

Por este medio se certifica la autenticidad de las firmas autógrafas de INGMAR WESTER y RIIKKA ROMAN, como también su autorización legal para firmar en nombre de la compañía RAISIO NUTRITION LTD.

Turku, 28 de mayo de 2010

Ex officio:

[Firma]

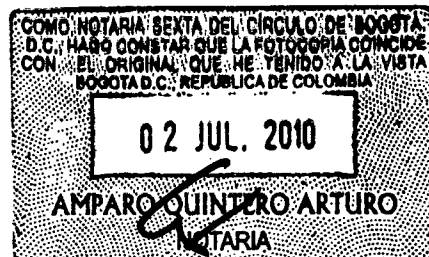
KAISA MYRSKY

Notario(a) Público(a)

[Sello en idioma finlandés]

DIEGO ECHEVERRI GARRIDO
TRADUCTOR E INTERPRETE OFICIAL
RESOLUCIÓN 1724 JUL. 7 DE 1989
MINISTERIO DE JUSTICIA
REPÚBLICA DE COLOMBIA

Esta traducción está refrendada con la firma y el sello de Diego Echeverri Garrido, C.C. 19.293.785 de Bogotá, Traductor Oficial, Resolución 1724 del 7 de julio de 1989, Ministerio de Justicia de Colombia. Traducción realizada en Bogotá, el 11 de junio de 2010.



PODER

POWER OF ATTORNEY

Yo(nosotros), abajo firmado (s)/ I (we), the undersigned:

RAISIO NUTRITION LTD

Domiciliado (s) en / Domiciled at:

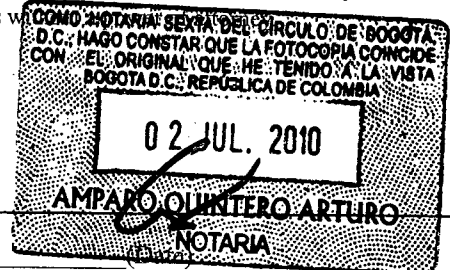
Raisio Kaari 55, FI-21200 Raisio, Finland

Por el presente nombro a: Mauricio Jaramillo Campuzano T.P. 74.555 and/or Paula Samper Salazar T.P. 56.190 and / or Patricia Arrazola Bustillo and/or José Luis Suarez Parra domiciliados en Bogotá, Colombia para que en obediencia a lo dispuesto por el parágrafo 1º del Artículo 543 del Código de Comercio, el primero como principal y los demás como suplentes, actúen en su orden, como mis (nuestros) representantes en todos los asuntos de propiedad industrial con facultad para recibir notificaciones y nombrar apoderados judiciales y extrajudiciales. El primer representante suplente reemplazará al principal en caso de ausencia o impedimento temporal o definitivo de aquél.

Además, confiero (conferimos) poder a los abogados para obtener la protección de mi (nuestra) propiedad industrial y contra la competencia desleal, a cuyo efecto autorizo(amos) a los dichos apoderados para que me (os) representen ante cualesquiera entidades o personas ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos de utilidad y diseños industriales; el registro de marcas de fábrica, colectivas, defensivas, de servicio, lemas comerciales, nombres comerciales, enseñanzas, denominaciones de origen, nombres de dominio, registros sanitarios, variedades vegetales y registros de todo tipo ante el ICA (Instituto Colombiano Agropecuario); su renovación, traspaso, cambio de nombre o domicilio, cancelación voluntaria, y el registro de licencias de uso de esos derechos; b) Las acciones de competencia desleal, acciones de infracciones, protección del consumidor, oposiciones, cancelación administrativa o judicial, nulidad, medidas cautelares, concesión de licencias, la tutela, la protección de secretos industriales, y en general los juicios civiles, penales, acciones administrativas o contencioso-administrativos relacionados con estos derechos; acciones y procesos que promovamos o se nos promuevan. Y para que en todos los asuntos arriba determinados, puedan sustituir este mandato, transigir, conciliar, admitir los hechos del proceso, desistir, cancelar, recibir, renunciar y ratificar los actos de agentes oficiosos.

In due compliance with the terms of paragraph 1st of article 543 of the Commercial Code, do hereby appoint Mauricio Jaramillo Campuzano T.P. 74.555 and/or Paula Samper Salazar T.P. 56.190 and / or Patricia Arrazola Bustillo and/or José Luis Suarez Parra domiciled at Bogotá, Colombia, the first as principal and the others as alternates, in the order of their appointment, as our representatives for all industrial property matters with faculty to receive notifications and to appoint attorneys in and out of the court. The first alternate shall replace the principal in case of his absence or temporal or definitive impediment.

In addition, we grant a Power of Attorney to obtain protection of my (our) industrial property and against the unfair competition, for which purpose I (we) authorize the said attorneys to represent me (us) before any authorities or persons, with or without jurisdiction, especially those administrative, administrative contentious and judicial, in all matters concerning the following: a) Obtainment of patents, utility models and industrial designs; the registration of trademarks, collective, defensive and service marks, slogans, commercial names, trade emblems, denominations of origin, domain names, public health registrations, vegetal varieties and all kind of registrations before the ICA (Instituto Colombiano Agropecuario); its renewal, assignment, change of name or domicile, voluntary cancellation, and the registration of licenses of use of the above rights; b) Actions of unfair competition protection, to the consumer, oppositions, administrative or Court cancellation, nullity, infringement, custom procedures, granting of licenses, the action for writ mandamus, the protection of trade secrets, and in general the civil, penal and administrative suits relating to those rights; actions and suits instituted by me (us) or against me (us). And that in all the above matters they may substitute this Power of Attorney, compromise, ratify acts done by representatives with



Dado y firmado hoy / Given and signed this 28 May 2010

En/in Raisio, Finland (Location signed)

Por/by Ingmar Wester Riikka Roman Legal Counsel (Print name of person signing)

Firma /Signature Ingmar Wester and Riikka Roman (Signature)

This is to certify the own hand signature(s) of Ingmar Wester and Riikka Roman and that he / she is / they are legally authorized to sign

for the company Raisio Nutrition Ltd

Turku, 28 of May 2010

Ex officio: [Signature]

APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Maa:

Land:

Suomi
Finland

Tämän yleisen asiakirjan:
Denna allmänna handling:

2. on allekirjoittanut
är undertecknad av

Kaisa Myrsky

3. toimiessaan
i egenskap av

tarkastajana, julkisena notaarina (notarius publicus).

4. Siinä oleva leima/sinetti on
är försedd med sigill/stämpel av

Turun seudun maistraatin sinettileima.

Todistetaan
Intygas

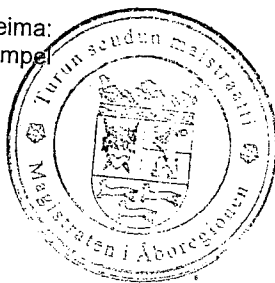
5. Turussa
I Åbo

6. 28 päivänä touko kuuta 2010
den 2010

7. Raija Ahvamaa, Turun seudun maistraatin julkinen notaari (notarius publicus)
av

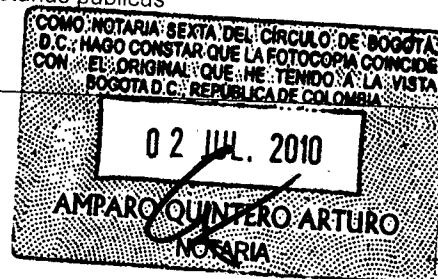
8. No T805 /2010
Nr

9. Sinetti/Leima:
Sigill/Stämpel



10. Allekirjoitus:
Underskrift

Raija Ahvamaa
Raija Ahvamaa
Henkikirjoittaja, julkinen notaari
Häradsskrivare, notarius publicus
Turku, Finland



Traducción Oficial de dos (2) procedimientos notariales de autenticación de firmas en un Documento de Traspaso.

[El primer procedimiento que se traduce se encuentra en la esquina inferior izquierda del Documento de Traspaso].

Por este medio se certifica la autenticidad de las firmas autógrafas de INGMAR WESTER y RIIKKA ROMAN, como también su autorización legal para firmar en nombre de la compañía RAISIO NUTRITION LTD.

Turku, 28 de mayo de 2010

Ex officio:

[Firma]

KAISA MYRSKY

Notario(a) Público(a)

[Sello en idioma finlandés]

[El segundo procedimiento que se traduce se encuentra en la esquina inferior derecha del Documento de Traspaso].

Por este medio se certifica la autenticidad de la firma autógrafa de TANELI AROLA.

Turku, 28 de mayo de 2010

Ex officio:

[Firma]

KAISA MYRSKY

Notario(a) Público(a)

[Sello en idioma finlandés]


DIEGO ECHEVERRI GARRIDO
TRADUCTOR E INTERPRETE OFICIAL
RESOLUCIÓN 1724 JUL. 7 DE 1989
MINISTERIO DE JUSTICIA
REPÚBLICA DE COLOMBIA

Esta traducción está refrendada con la firma y el sello de Diego Echeverri Garrido, C.C. 19.293.785 de Bogotá, Traductor Oficial, Resolución 1724 del 7 de julio de 1989, Ministerio de Justicia de Colombia. Traducción realizada en Bogotá, el 11 de junio de 2010.



GÓMEZ-PII

ASE

PLT/
FI2008/
000139
One set;
RR15

LETA

DOCUMENTO DE TRASPASO

ASSIGNMENT DOCUMENT

Yo, (nosotros), abajo firmado (s)

Domiciliado (s) en

Aquí llamado(s) CEDENTE, propietario (s) de los
siguientes derechos de propiedad intelectual:

I (we), the undersigned:

Taneli AROLA

Domiciled at:

Tavinkuja 3, FI-21420 Lieto, Finland

Hereinafter the ASSIGNOR owner of the
following intellectual property rights:

A HEALTHY DRINK AND A METHOD FOR IMPROVING STABILITY OF A DRINK

declara(n) por el presente instrumento que cede(n)
dicha invención a:

RAISIO NUTRITION LTD

sociedad organizada y existente bajo las leyes de:
FI

domiciliada en

Raisio Kaari 55, FI-21200 Raisio, Finland

(aquí llamada la CESIONARIA). Por el presente
acto, la CESIONARIA acepta dicho traspaso.

Dado y firmado hoy

en

Declares by this document that assigns the
mentioned invention to:

RAISIO NUTRITION LTD

A corporation organized and existent under the laws of
FI

and domiciled in

Raisio Kaari 55, FI-21200 Raisio, Finland

Which in this document will be called the
ASSIGNEE. The ASSIGNEE accepts the said
assignment.

Given and signed this (date)

28 May 2010

In (location)

Raisio, Finland

This is to certify the own hand signature(s) of

Ingmar Wester and Riikka Roman

and that he / she is / they are legally authorized to sign

for the company Raisio Nutrition Ltd

Turku, 28 of May 2010

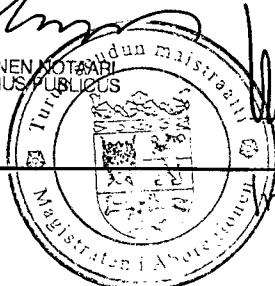
Ex officio:

Cedente / Assignor

TANELI AROLA

Cesionario / Assignee

KAISA MYRSKY
TARKASTAJA, JULKINEN NOTARI
INSPEKTOR, NOTARIUS PUBLICUS



Ingmar Wester

Riikka Roman
Legal Counsel

This is to certify the own hand signature(s)

of Taneli Arola

Turku, 28 of May 2010

Ex officio:

KAISA MYRSKY
TARKASTAJA, JULKINEN NOTARI
INSPEKTOR, NOTARIUS PUBLICUS



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Maa: Suomi
Land: Finland

Tämän yleisen asiakirjan:
Denna allmänna handling:

2. on allekirjoittanut Kaisa Myrsky
är undertecknad av

3. toimiessaan tarkastajana, julkisena notaarina (notarius publicus).
i egenskap av

4. Siinä oleva leima/sinetti on Turun seudun maistraatin sinettileima.
är försedd med sigill/stämpel av

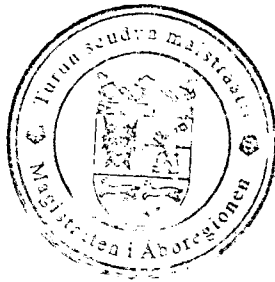
Todistetaan
Intygas

5. Turussa 6. 28 päivänä touko kuuta 2010
i Åbo den 2010

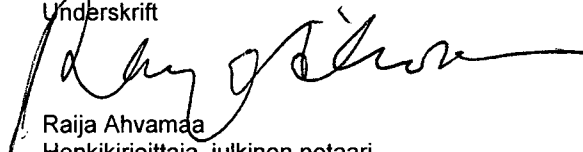
7. Raija Ahvamaa, Turun seudun maistraatin julkinen notaari (notarius publicus)
av

8. No T803 /2010
Nr

9. Sinetti/Leima:
Sigill/Stämpel



10. Allekirjoitus:
Underskrift


Raija Ahvamaa
Henkikirjoittaja, julkinen notaari
Häradsskrivare, notarius publicus
Turku, Finland

Traducción Oficial de dos (2) procedimientos notariales de autenticación de firmas en un Documento de Traspaso.

[El primer procedimiento que se traduce se encuentra en la esquina inferior izquierda del Documento de Traspaso].

Por este medio se certifica la autenticidad de la firma autógrafa de PÄIVI KUUSISTO.

Turku, 28 de mayo de 2010

Ex officio:

[Firma]

KAISA MYRSKY

Notario(a) Público(a)

[Sello en idioma finlandés]

[El segundo procedimiento que se traduce se encuentra en la esquina inferior derecha del Documento de Traspaso].

Por este medio se certifica la autenticidad de las firmas autógrafas de INGMAR WESTER y RIIKKA ROMAN, como también su autorización legal para firmar en nombre de la compañía RAISIO NUTRITION LTD.

Turku, 28 de mayo de 2010

Ex officio:

[Firma]

KAISA MYRSKY

Notario(a) Público(a)

[Sello en idioma finlandés]


DIEGO ECHEVERRI GARRIDO
TRADUCTOR E INTERPRETE OFICIAL
RESOLUCIÓN 1724 JUL. 7 DE 1989
MINISTERIO DE JUSTICIA
REPÚBLICA DE COLOMBIA

Esta traducción está refrendada con la firma y el sello de Diego Echeverri Garrido, C.C. 19.293.785 de Bogotá, Traductor Oficial, Resolución 1724 del 7 de julio de 1989, Ministerio de Justicia de Colombia. Traducción realizada en Bogotá, el 11 de junio de 2010.



GÓMEZ-PINZÓN ZULETA

ASEMARCAS

DOCUMENTO DE TRASPASO

Yo, (nosotros), abajo firmado (s)

Domiciliado (s) en

Aquí llamado(s) CEDENTE, propietario (s) de los
siguientes derechos de propiedad intelectual:

ASSIGNMENT DOCUMENT

I (we), the undersigned:

Päivi KUUSISTO

Domiciled at:

Myllynkiventie 1 C 51, FI-21100 Naantali, Finland

Hereinafter the ASSIGNOR owner of the
following intellectual property rights:

A HEALTHY DRINK AND A METHOD FOR IMPROVING STABILITY OF A DRINK

declara(n) por el presente instrumento que cede(n)
dicha invención a:

RAISIO NUTRITION LTD

sociedad organizada y existente bajo las leyes de:
FI

domiciliada en

Raisio Kaari 55, FI-21200 Raisio, Finland

(aquí llamada la CESIONARIA). Por el presente
acto, la CESIONARIA acepta dicho traspaso.

Dado y firmado hoy

en

Declares by this document that assigns the
mentioned invention to:

RAISIO NUTRITION LTD

A corporation organized and existent under the laws of
FI

and domiciled in

Raisio Kaari 55, FI-21200 Raisio, Finland

Which in this document will be called the
ASSIGNEE. The ASSIGNEE accepts the said
assignment.

Given and signed this (date)

28 May 2010

In (location)

Raisio, Finland

This is to certify the own hand signature(s)

of Päivi Kuusisto

Turku, 28 of May 2010

Ex officio:

KAISA MYRSKY
TARJAS PÄIKÖNEN NOTARI
INSPEKTOR, NOTARIUS PUBLICUS

Cedente / Assignor

This is to certify the own hand signature(s) of

Ingmar Wester and Riikka Roman
and that he / she is / they are legally authorized to sign

for the company Raisio Nutrition Ltd.

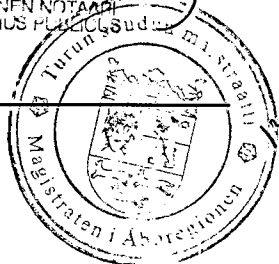
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APOSTILLE

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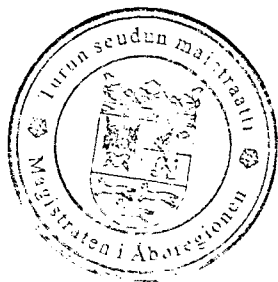
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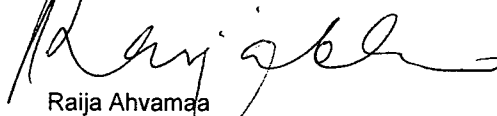
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(71) Applicant (for all designated States except US): **RAISIO NUTRITION LTD** [FI/FI]; Raisio Kaari 55, FI-21200 Raisio (FI).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KUUSISTO, Päivi** [FI/FI]; Myllynkiventie 1 C 51, FI-21100 Naantali (FI).
AROLA, Taneli [FI/FI]; Tavinkuja 3, FI-21420 Lieto (FI).

(74) Agent: **LALLI, Esko**; Raisio Nutrition Ltd, P.O. Box 101, FI-21201 Raisio (FI).

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(54) Title: A HEALTHY DRINK AND A METHOD FOR IMPROVING STABILITY OF A DRINK

(57) Abstract: The invention relates to a drink, especially to a drink that is healthy and tasty and has a good stability, and to a method for improving the stability of a drink.

15

A healthy drink and a method for improving stability of a drink

Field of Invention

5 The invention relates to a drink, especially to a drink that is healthy and soft tasting and has a good stability, and to a method for improving the stability of a drink.

Background of the invention

10 Oats have been traditionally consumed mainly as breakfast cereals and in bakery products. During the last years new types of oat products have been developed. Examples are non-dairy products, such as oat milk, oat based drinks, creams, desserts and fermented products such as yoghurt-like products.

15 Oat grain contains phytochemicals that can be classified as antioxidants. Antioxidants are substances that when present at low concentrations compared with those of an oxidizable substrate, delay or inhibit oxidation of that substrate. High consumption of antioxidant rich foods has been associated with reduced risk of chronic diseases like cardiovascular disease and cancer in epidemiological studies. The oat antioxidants consist mainly of phenolic compounds as well as tocopherols and tocotrienols. The processing methods of oat based
20 foods affect the content of antioxidants in the final oat based products. Some of the antioxidant compounds are for example sensitive to heat treatments.

It is well known that berries have generally higher content of antioxidant compounds than other food items, such as vegetables, fruits or cereals. The spectrum of the antioxidants
25 found in berries is also wide, including for example phenolic compounds such as flavonoids, phenolic acids and tannins. Main flavonoid subgroups in berries are anthocyanins, proanthocyanidins, flavonols and catechins. Flavonoid profiles vary between different berries. A high proportion of anthocyanins is found e.g. in blueberries and crowberries. A high proportion of ellagitannins is found e.g. in raspberries, strawberries
30 and cloudbberries. A high proportion of flavonols (such as quercetin, kaempferol, myricetin) is found e.g. in sea buckthorn berries, cranberries, lingonberries, black currants and gooseberries. The health effects of flavonoids have so far been mainly demonstrated *in vitro* and in animal studies. In human trials the results have been more variable. However, for flavonols, especially quercetin, there are sufficient intervention trials to indicate the
35 health effects among humans *in vivo*. Quercetin influences some carcinogenesis markers and has effects on plasma antioxidant biomarkers *in vivo* (Williamson and Manach, Am. J. Clin. Nutr., 2005;81:243S-255S).

EP0231729 discloses a process to manufacture products starting from whole flour of starch-containing cereal grains, such as wheat, barley, oat, rye, rice, maize or sorghum. The carbohydrates are enzymatically degraded while the remaining components of the whole flour are maintained substantially intact. The product prepared by the process has a fairly high dry matter content (33-46 %) and it is mentioned that the product can be used as powder drinks or in nutritional drinks.

EP0731646 discloses a homogenous and stable cereal suspension prepared from oats by a specific process. The suspension may be used as basis for or additive to ice cream, gruel, yoghurt and milkshake, or as health drink or snack between meals.

EP0883349 discloses an enzymatic process for forming a functional syrup from oat material or waxy barley. Especially non-dairy frozen confections are disclosed. Also the addition of the syrup into carbohydrate-loading beverages is mentioned.

WO00/30457 discloses an enzymatic process for producing a liquid oat base. The base can be added to other drink ingredients such as orange juice or milk or it can be dried into a powder.

Both EP1123012 and EP1383396 disclose an enzyme modified cereal suspension prepared by a specific process from grains e.g. oats, barley, rice, wheat, maize, rye, sorghum, triticale and pearl millet. The cereal suspensions can be used as milk substitute, as the basis for or an additive in the manufacture of ice cream, gruel, yoghurt, milkshakes and snacks.

WO03/075683 discloses a modified starch containing liquid and a preparation method thereof. The modified starch containing liquid may be used as such or as an ingredient for different food and feed products and compositions.

US6168821 discloses a beverage containing natural fiber, glucans and a flavoring agent. The glucans are substantially derived from a natural grain. The flavoring agent is preferably vanilla.

EP1816920 discloses an edible fiber composition in liquid form that contains soluble and non-soluble dietary fibers.

WO2004/093571 describes e.g. cereal milk based drinks in which the bitter, sour and/or astringent taste has been masked with plant sterol ester and/or plant stanol ester.

There are some oat based drink products containing berries or berry juices on the market e.g. drinks that contain strawberry juice, raspberry or blackberry. Strong tasting berry juices, such as sea buckthorn juice, have been added only in small quantities (0.3-1.3 %) into oat based drinks. Prior art does not disclose oat based drinks having strong tasting berry juices in higher concentrations.

Often the strong tasting berries, such as sea buckthorn berry, lingonberry, cranberry and black currant have also the highest content of a certain antioxidant compound, quercetin, among berries.

It would be beneficial to widen the range of berries used in oat based drinks for several health and nutritional reasons. Also increasing the concentration of the berry juice in the drinks will improve these effects. It would also be beneficial to have oat based drinks that would have improved taste and/or improved stability as well as increased content of different antioxidants compared to the content found in the processed oat based drinks in the prior art. It would also be an advantage to use natural antioxidants and to avoid adding antioxidants as artificial additives.

The present invention provides products meeting one or more of these requirements.

Summary of the invention

The present invention provides oat based non-dairy drinks with improved stability. The present invention is directed to oat based drinks containing berry juices. The present invention is directed to oat based berry drinks where the berry and the berry concentration has been chosen to favourably affect the stability of the drink.

The invention is more preferably directed to the use of berries having a high content of certain antioxidant compounds, especially flavonols, e.g. quercetin. The products of this invention contain both oat derived and berry derived antioxidants.

The invention is preferably directed to the use of strong tasting berries in the oat based berry drinks.

Preferably the invention provides oat based berry drinks with good stability, soft taste and containing strong tasting berries. Most preferably the invention provides oat based berry drinks with good stability, soft taste, a high content of quercetin and containing strong

tasting berries. The antioxidativity of the drink is higher than the antioxidativity of oat milks or oat suspensions.

5 The invention is further directed to a method for improving the stability of an oat based drink.

The characterising features of the present invention are set forth in the claims.

Detailed description of the invention

10

The present invention provides an oat based berry drink with improved stability. It was surprisingly found that certain berry juices favourably affect the structure and stability of the oat based berry drinks when used in sufficient concentrations. Certain other berry juices do not have this favourable effect or even have an opposite, deteriorating effect on
15 the stability of the oat based drinks. By improved stability is here meant that the particles of the drink are separating to a lower degree during a certain time period as compared to the corresponding drink containing water instead of the certain berry juices.

20 The berries used in the oat based berry drinks of the present invention preferably have a strong taste. It was found that the oat suspension softens the taste, especially of the strong tasting berries (i.e. berry juices), which otherwise taste strongly bitter. On the other hand, it was also noticed that the strong oat taste or oat aftertaste of oat drinks, even when the drinks contain quite high amounts of oat based material, is softened (neutralised) by the berry juices. One aim of the invention is soft (smooth) tasting products which can be
25 prepared even when higher concentrations of strong tasting berry juices are used than in the prior art.

30 Preferably the invention also provides oat based drinks with enhanced antioxidativity (radical scavenging activity). The enhanced antioxidativity is achieved with natural ingredients, berries, by combining oat derived antioxidants and berry derived antioxidants in the drink. Preferably berries containing more than 35 mg/kg (35 ppm) fresh weight quercetin are used. The drinks therefore are healthy, and further their shelf-life is improved due to the enhanced antioxidativity. The antioxidativity of the drink is at least doubled compared to a drink with corresponding content of oat based material without any berry
35 juice. Preferably the drink according to the invention contains at least 0.5 ppm quercetin.

Preferably the invention provides oat based drinks with good stability and enhanced antioxidativity. Also the taste of the drinks is soft and well-accepted by consumers. The

enhanced stability, soft taste and the enhanced antioxidativity are obtained by combining oat with certain berry juices. The oat based berry drinks comprise antioxidants from both the oat raw material and from the berries that have been used. The improved stability compared to the sole oat based drink is achieved by using certain berries. It has been found that certain berry juices, when used in sufficient concentrations improve the stability and structure of the oat based drinks while some other berry juices, such as blueberry juice and strawberry juice, do not have this effect.

DE 15 48 FAX +35 443

The invention is related to a drink which comprises berry juice, water and oat based material, which oat based material optionally contains starch, wherein

- the amount of oat based material is from 3 to 30 % by weight of the drink,
- the amount of berry juice is from 5 to 40 % by weight of the drink,
- the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry juice, crowberry juice, chokeberry juice and mixtures thereof, and
- the amount of starch is from 0 to 2.5 % by weight of the drink.

The "oat based material" comprises oat material with a reduced amount of starch compared to conventional oat flakes and oat flour. The starch content is from 0 to 40 % by dry weight, preferably from 0 to 30 % by dry weight, and most preferably from 0 to 20 % by dry weight of the oat based material. Typically, the oat based material comprises starch from 0.01 to 40 % by dry weight, more preferably from 0.05 to 30 % by dry weight, and most preferably from 0.1 to 20 % by dry weight of the oat based material. The amount of starch can be measured by AOAC official method 996.11. If the amount of starch is too high the stability of the drink will suffer or the product will even be undrinkable because of gel formation.

The oat based berry drink according to the present invention preferably comprises an oat suspension and berry juice.

The drink according to the invention preferably comprises an oat suspension which comprises the oat based material and at least part of the water e.g. at least 50 % by weight of the water, preferably all water. The drink is then prepared by adding the oat based material and at least part of the water, e.g. at least 50% by weight of the water, preferably all water, in the form of an oat suspension. Advantageously, the drink comprises the oat suspension in an amount from 60 to 95 % by weight, preferably from 65 to 94.5 %, more preferably from 70 to 94 % still more preferably from 75 to 93.5 %, most preferably from 80 to 93 % by weight of the oat based berry drink. Especially when using strong tasting

berry juices preferably an even higher amount of oat suspension may be used e.g. from 85 to 95 % by weight of the oat based berry drink.

As used here "oat suspension" refers to a suspension comprising oat based material and water. Suitable preparation methods for the oat suspension is disclosed e.g. in WO03/075683, EP0731646, EP1123012 and EP1816920.

Preferably the oat suspension has been prepared by method(s) that at least partly degrade oat starch. Preferably the oat suspension has been prepared by using enzymes that at least partly degrade the oat starch. Suitable enzymes include, but are not restricted to, various amylases, such as alpha- and beta-amylases, amyloglucosidases and pullulanases. Preferably at least 20 %, more preferably at least 50 % and still more preferably at least 80 % of the oat starch has been degraded compared to the starch amount in conventional oat flakes. Most preferably the oat starch has been totally degraded. Preferred oat suspensions contain starch degradation products, such as sugars (e.g. glucose, maltose) and maltodextrin. Also some undegraded starch may be present. The preferred oat suspensions contain also other oat derived components, such as proteins, fat and fibre. In addition to starch, also other oat derived components, such as protein or fibre components, may be partly or totally degraded by enzymatic or by other means.

Preferably the fibre component of the oat suspension, such as beta-glucan, has been at least partly degraded in the oat suspension preparation process. More preferably the fibre component of the oat suspension, such as beta-glucan, has been totally degraded. However, also oat suspensions containing beta-glucan may be utilised in the present invention.

Oat based material in the form of an oat powder made e.g. by drying an oat suspension (see e.g. WO00/30457) may also be used by suspending the powder in water, in berry juice or in their mixture.

As used here, by the term "berry juice" is meant the material that can be obtained from berries e.g. by pressing, steam-extraction or by other means used in the juice production. Berries are small fruits with multiple seeds that are called berries in the common language and that are suitable for human consumption. Often berries are juicy and have bright colour. Juices from fruits, such as citrus fruits, apples, bananas, pineapples, cherries and others that are in common language understood as fruits, are not included in the term "berry juice" here. Berries contain generally more antioxidant activity than fruits. The berry juice can originate from one kind of berries or be a mixture of juices from different berries. The pressing cake including seeds and peels/skins is conventionally removed from

the berry juices. The berry juice can be concentrated by removing water from it and if required, the concentrates can be diluted again. In this specification the berry juice is meant to mean the 100 % juice of berries i.e. the natural concentration of the juice obtained from berries.

5

Suitable berries that are used as raw material of the berry juice(s) in this invention are sea buckthorn berries, lingonberries, cranberries, red currants, black currants, gooseberries, bog whortleberries, crowberries and chokeberries. Preferred berries comprise sea buckthorn berries, lingonberries, cranberries, red currants, black currants and gooseberries.

10

More preferred berries are sea buckthorn berries, lingonberries, cranberries, red currants, and black currants. Even more preferred berries are sea buckthorn berries, lingonberries, cranberries and red currants. Still even more preferred berries are sea buckthorn berries, lingonberries and cranberries. Further more preferred berries are sea buckthorn berries and lingonberries. Most preferred berries are sea buckthorn berries.

15

As strong tasting berries can in this respect following berries be mentioned: sea buckthorn berries, lingonberries, cranberries, red currants, and black currants. More preferred berries are sea buckthorn berries and lingonberries, and most preferred berries are sea buckthorn berries.

20

The oat based berry drink can be prepared by conventional drink preparation methods. The preparation steps include mixing the raw materials. The preparation steps may also include homogenisation step(s) and heat treatment step(s). Heat treatments commonly known in the art, such as pasteurization or UHT-treatment, can be used. The preparation steps may also include fermentation, but preferably the oat based berry drinks according to the invention are not fermented.

25

The oat based berry drink comprises at least 5 % by weight and at most 40 % by weight, preferably at most 30 % and most preferably at most 20 % by weight berry juice or a mixture of berry juices chosen from the berries suitable for use in the present invention. Typically the oat based berry drink comprises from 5 to 40 %, preferably from 5.5 to 35 %, more preferably from 6 to 30 %, still more preferably from 6.5 to 25 % and most preferably from 7 to 20 % by weight berry juice or a mixture of berry juices chosen from the berries suitable for use in the present invention. The most preferred amount of strong tasting berry juices, especially sea buckthorn berry juice and lingonberry juice is from 5 to 15 % by weight of the drink. Other berry juices may also be added in addition, but preferably only the berries chosen in this invention are used.

30

35

The oat dry matter (oat based material) content of the oat based berry drink is 3-30 %, preferably 4-25 %, more preferably 5-20 %, most preferably 5-15 % by weight.

5 The amount of starch in the drink according to the invention is from 0 to 2.5 % by weight, preferably from 0 to 2.0 % by weight, more preferably from 0 to 1.5 % by weight, and most preferably from 0 to 1.0 % by weight. The amount of starch can be measured by AOAC official method 996.11. Typically, the amount of starch in the drink is from 0.01 to 2.5 % by weight, preferably from 0.03 to 2.0 % by weight, more preferably from 0.05 to 1.5 % by weight, and most preferably from 0.1 to 1.0 % by weight. Preferably the starch is
10 substantially derived from the oat based material.

Preferably the weight ratio of oat dry matter (oat based material) to 100 % berry juice in the oat based berry drink is from 1:0.3 to 1:5, more preferably from 1:0.4 to 1:3, even more preferably from 1:0.5 to 1:2, and most preferably from 1:0.7 to 1:1. Especially when the
15 juice is made from strong tasting berries the ratio of oat dry matter (oat based material) to 100 % berry juice is preferably from 1:0.3 to 1:3, more preferably from 1:0.3 to 1:2, and most preferably from 1:0.3 to 1:1.2. The same ratio for juices of strong tasting berries may still more preferably be $1:\geq 0.4$ and $1:\geq 0.5$.

20 An especially preferred embodiment of the present invention is an oat based berry drink containing sea buckthorn berry juice.

The present invention is directed to oat based drinks having a viscosity of at most 700 mPas, preferably at most 500 mPas, more preferably at most 300 mPas, even more
25 preferably at most 200 mPas, and most preferably at most 100 mPas. The measurement was performed at 20 °C using a Brookfield Model LVDV II viscometer (spindle 2, 100 rpm).

The oat based berry drinks of the present invention may also comprise optional ingredients
30 such as stabilising agents, emulsifiers, colouring agents and flavouring agents. The drinks of the present invention can also contain other nutritionally beneficial components. Examples of such nutritionally beneficial components include plant sterols and/or plant stanols, n-3 fatty acids, probiotics, dietary fibre (e.g. soluble β -glucan) and mixtures thereof. Plant sterols and/or plant stanols are preferably added in a form of plant sterol
35 ester and/or plant stanol ester. Other examples of the beneficial nutritional components include beneficial minor components, for example vitamins and minerals, such as calcium. Some of the other nutritionally beneficial components, especially plant sterol ester and/or plant stanol ester and oils rich in n-3 fatty acids (e.g. containing at least 5 %, preferably at

least 10 %, more preferably at least 15 % n-3 fatty acids of the fatty acid content of the oil) also further enhance the favourable effects of the preferred berries on the structural stability of the oat based berry drinks. Further antioxidants may also be added such as in the form of green tea extract. The oat based berry drinks of the present invention may also
5 comprise other cereal material, such as wheat, rice or barley, or soy based material, such as soymilk or soy protein. Fruit and/or vegetable juice(s) may also be included in the drinks according to the invention. The drinks according to the invention may further contain berry juice(s) from one or more other berries than those mentioned as suitable for this invention.

10 In this specification the plant sterols include 4-desmethyl sterols, 4-monomethyl sterols and 4,4-dimethyl sterols (triterpene alcohols) and the plant stanols include 4-desmethyl stanols, 4-monomethyl stanols and 4,4-dimethyl stanols. Typical 4-desmethyl sterols are sitosterol, campesterol, stigmasterol, brassicasterol, 22-dehydrobrassicasterol and Δ^5 -avenasterol. Typical 4,4-dimethyl sterols are cycloartenol, 24-methylenecycloartenol and
15 cyclobranol. Typical stanols are sitostanol, campestanol and their 24-epimers, cycloartanol and saturated forms obtained by saturation of e.g. triterpene alcohols (cycloartenol, 24-methylenecycloartenol and cyclobranol). The terms "plant sterol" and "plant stanol" include all possible mixtures of named sterols and/or stanols as well as any individual sterol or stanol. Preferably the plant sterol and/or plant stanol are desmethyl sterols and/or
20 desmethyl stanols.

As used here, the term "plant sterol ester" or "plant stanol ester" refers to plant sterols or plant stanols having at least 60%, preferably at least 85%, most preferably at least 95% of the plant sterols and/or plant stanols in esterified form. In this invention the plant sterols
25 and/or plant stanols are esterified with an organic acid. Examples of suitable organic acids are fatty acids (2-24 carbon atoms, saturated, monounsaturated or polyunsaturated, including also special fatty acids, such as conjugated fatty acids, e.g. CLA, and EPA and DHA), hydroxybenzoic acids, hydroxycinnamic acids (ferrulic and coumaric acids), di- and tricarboxylic acids and hydroxy acids, and any mixture of said acids. Preferably the
30 plant sterols and/or plant stanols are esterified with fatty acids, most preferably with vegetable oil based fatty acids.

The preferred amount of plant sterol ester and/or plant stanol ester is 0.1 - 10 %, more preferably 0.3 - 9 %, even more preferably 0.5 - 8 %, most preferably 1 - 7 % by weight of the drink.

35 Examples of oils rich in n-3 fatty acids include fish oils and vegetable oils such as camelina oil, linseed oil or rapeseed oil. Preferred oils are of vegetable origin, thus making

the oat based berry drink suitable also for vegetarians. The preferred amount of oil having a fatty acid content of at least 5 %, preferably at least 10 %, most preferably at least 15 % n-3 fatty acids is 0.1 - 10 %, more preferably 0.5 - 9 %, even more preferably 0.8 - 8 %, most preferably 1 - 7 % by weight of the drink.

5

The drink according to the invention preferably contains no stabilising agent. The added berry juices as selected in this invention are effective enough to stabilise the drink when added in suitable amounts. However, it is possible to include also conventional stabilising agents, e.g. pectin, gums and modified starch, in the drink in order to further stabilise it.

10

The stabilising agent is then used in small amounts e.g. the total amount of stabilising agents is at most 1.0 %, preferably at most 0.7 %, more preferably at most 0.5 % and most preferably at most 0.3 % by weight of the drink.

15

The drink according to the invention preferably contains no flavouring agent. The tastes of the berry juice and the oat based material suitably balance each other when added in amounts according to the invention so that it is not necessary to add any flavouring agent, such as vanilla and/or almond. However, flavouring agents may be added e.g. when some other aroma of the drink is wanted.

20

Preferably, the drinks do not contain milk or gluten and are therefore suitable for lactose intolerant people or people having celiac disease.

25

The invention is also directed to a method for improving the stability of a drink comprising oat based material, which contains from 0 to 40 % by dry weight of starch, which comprises

- providing a berry juice selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry juice, crowberry juice, chokeberry juice and mixtures thereof, and
- mixing the oat based material, water and the berry juice to obtain a drink comprising the berry juice in an amount from 5 to 40 % by weight, the oat based material in an amount from 3 to 30 % by weight and the starch in an amount of 0 to 2.5 % by weight.

30

Preferably the oat based material and at least part of the water is added in the form of an oat suspension and more preferably the oat suspension is added in an amount from 60 to 95 % by weight of the drink.

35

The method is preferably applicable for preparing all drinks according to this invention.

25

Example 1**Stability of the drinks: oat based sea buckthorn berry drinks**

Oat based sea buckthorn berry drink with varying content of sea buckthorn berry juice.

5

The stability of the oat based berry drinks was tested using oat based sea buckthorn berry drinks with varying content of sea buckthorn berry juice. The drinks were prepared according to the recipes below.

10 The drink samples were prepared of oat suspension and sea buckthorn berry juice. The sea buckthorn berry juice did not contain seeds or the skins of the berries. The sea buckthorn berry juice was 100 % juice.

15 The oat suspension was prepared of oat flakes and water as described in WO 03/075683 example 2. The oat dry matter content of the oat suspension was 9.4 % by weight.

The oat suspension, water and sea buckthorn juice were mixed (compositions given in Table 1) and warmed up to 60 °C. The mixture was homogenised at 60 °C in two phases using 150/50 bar pressure. Camelina oil (60 °C) was added to drink 6 and plant stanol ester (Benecol® Classic) (60 °C) to drink 7 prior to homogenisation. The drinks were allowed to cool to room temperature, mixed thoroughly and poured to measuring cylinders. The measuring cylinders were allowed to stand at 4 °C for 7 days. The stability of the drinks was compared to a reference oat drink containing same amount of oat based material (DM, dry matter) but no berry juice, oil or plant stanol ester. The stability was measured as % of separated material in the test drink of the separated material in the reference oat drink.

25

The oat dry matter content (oat based material) of the drinks was 7.7 % by weight. The berry juice content of the drinks was 1.3, 4, 5, 7 or 15 % by weight. One of the drinks (drink 6) contained also camelina oil (1.5 %) and one of the drinks (drink 7) plant stanol ester (1.5 %).

30

In the reference oat drink the volume of the separated material was 9 % after 3 days, 12 % after 4 days and 21 % after 7 days of the total volume of the reference oat drink. The volume of the separated material in the test drinks is compared to the volume of the separated material in the reference drink in Table 2.

35

Table 1. Recipes of the drinks (g/100g)

	drink 1	drink 2	drink 3	drink 4	drink 5	drink 6	drink 7	reference oat drink
Sea buckthorn berry juice	1.3	4	5	7	15	7	7	
Oat based material (DM)	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Water	91.0	88.3	87.3	85.3	77.3	83.8	83.8	92.3
Camelina oil						1.5		
Plant stanol ester							1.5	

Table 2. Stability results

Oat - sea buckthorn berry drinks	difference to the reference drink (%), 3 d	difference to the reference drink (%), 4 d	difference to the reference drink (%), 7 d
Drink 1	0,0	0,0	+4,8
Drink 2	0,0	0,0	+4,8
Drink 3	-11,1	-8,3	-4,8
Drink 4	-11,1	-16,7	-4,8
Drink 5	-22,2	-16,7	-14,3
Drink 6	-33,3	-33,3	-14,3
Drink 7	-44,4	-33,3	-19,0

- 5 After 3 days, the drinks having the lowest concentrations of sea buckthorn berry juice (drinks 1 and 2) had separated to the same extent as the reference drink (difference to the reference drink 0 %). Drinks 3 and 4, containing 5 % or 7 % sea buckthorn berry juice respectively, had better stability than the reference drink (11.1 % less separated material than in the reference drink). The stability was even more improved with higher content of
- 10 sea buckthorn berry juice (drink 5). Stability was even further improved by addition of camelina oil (drink 6; 33.3 % less separated material than in the reference drink) and even more with plant stanol ester (drink 7; 44.4 % less separated material than in the reference drink).
- 15 After 4 days, the drinks having the lowest concentrations of sea buckthorn berry juice (drinks 1 and 2) had separated as much as the reference drink. The drinks having a higher concentration of sea buckthorn berry juice were more stable than the reference drink. The drinks with camelina oil or plant stanol ester had the best stability also after 4 days.
- 20 After prolonged storage (7 days) the differences between the test drinks and the reference oat drink were smaller than at earlier time points. However, the drinks having sufficient amount of sea buckthorn berry juice or sea buckthorn berry juice together with camelina

oil or plant stanol ester still had better stability and contained less separated material than the reference oat drink.

It was found that sea buckthorn berry juice favourably affected the structure and stability of the oat based berry drinks when at least 5 % sea buckthorn berry juice was used compared to the reference oat drink of the same oat concentration. It was also found that adding camelina oil or plant stanol ester further improved the favourable effect that the sea buckthorn berry juice had on the stability of the oat based berry drinks.

10 Example 2

Stability of the drinks: oat based lingonberry drinks

The stability of oat based lingonberry drinks was compared to the stability of reference oat drink with a similar test procedure as in example 1 except that the stability of the drinks was measured after 4 days storage.

The oat based lingonberry drinks were prepared according to the recipes in Table 3. The oat suspension was prepared as in example 1 and the drinks were prepared in the same way as the drinks of example 1. The lingonberry content of the drinks was 4 % and 7 %. The same reference oat drink was used as in the example 1.

Table 3. Recipes of the drinks and stability results

Recipes (g/100g)	drink L1	drink L2	reference oat drink
Lingonberry juice	4	7	
Oat based material (DM)	7.7	7.7	7.7
Water	88.3	85.3	92.3
Stability results			
Difference to the reference drink (%), 4 d	+16.7	-25.0	

Lingonberry juice was found to have favourable effect on the stability of the oat based berry drinks when used in sufficient concentrations. 4 % lingonberry concentration had an adverse effect. When the lingonberry concentration was raised, the stability of the oat based lingonberry drinks was improved and was better than the stability of the reference oat drink.

Example 3**Stability of the drink: oat based cranberry drink**

5 The stability of an oat based cranberry drink was compared to the stability of reference oat drink with a similar test procedure as in example 1 except that the stability of the drink was measured after 4 days storage.

10 The oat based cranberry drink was prepared according to the recipe below (Table 4). The oat suspension was prepared as in example 1 and the oat cranberry drink was prepared in the same way as the drinks of example 1. The cranberry content of the drinks was 7 %. The same reference oat drink was used as in example 1.

Table 4. Recipes of the drinks and stability results

Recipes (g/100g)	drink C1	reference oat drink
Cranberry juice	7	
Oat based material (DM)	7.7	7.7
Water	85.3	92.3
Stability results		
Difference to the reference drink (%), 4 d	-16.7	

15 Also cranberry juice was found to have a favourable effect on the stability of the oat based berry drinks compared to the reference oat drink.

Example 4, comparative example**20 Stability of the drink: oat based blueberry drink**

The stability of an oat based blueberry drink was compared to the stability of reference oat drink with a similar test procedure as in example 1. The stability of the drink was measured after 3, 4 and 7 days storage.

25 The oat blueberry drink was prepared according to the recipe below (Table 5). The oat suspension was prepared as in example 1 and the drink was prepared in the same way as the drinks of example 1. The blueberry content of the drink was 7 %. The same reference oat drink was used as in example 1.

Table 5. Recipes of the drinks and stability results

Recipes (g/100g)	drink B1	reference oat drink
Blueberry juice	7	
Oat based material (DM)	7.7	7.7
Water	85.3	92.3
Stability results		
Difference to the reference drink (%), 3 d	+87.5	
Difference to the reference drink (%), 4 d	+50.0	
Difference to the reference drink (%), 7 d	+23.8	

Blueberry juice was found to have an adverse effect on the stability of the oat based berry drink. The blueberry concentration that was used in the test (7 %) was the same concentration that had been found to work well with the other berries. Blueberry did not have a favourable effect on the stability of the oat based berry drink.

Example 5, comparative example

Stability of the drink: oat based strawberry drink

The stability of oat based strawberry drink was compared to the stability of reference oat drink with a similar test procedure as in example 1 except that the stability of the drink was measured after 4 days storage.

The oat strawberry drink was prepared according to the recipe below (Table 6). The oat suspension was prepared as in example 1 and the oat strawberry drink was prepared in the same way as the drinks of example 1. Strawberry juice concentrate was used. The 100 % strawberry juice content of the drink was 7 %. The same reference oat drink was used as in example 1:

Strawberry juice was found to have no favourable effect on the stability of the oat based berry drink compared to the reference oat drink. The oat based strawberry drink separated to the same extent as the reference oat drink after 4 days of storage.

Table 6. Recipes of the drinks and stability results

Recipes (g/100g)	drink S1	reference oat drink
Strawberry juice	7	
Oat based material (DM)	7.7	7.7
Water	85.3	92.3
Stability results		
Difference to the reference drink (%), 4 d	0.0	

Example 6

Antioxidativity test

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The antioxidantivity of oat based berry drink was studied with the DPPH method. The DPPH method measures the reduction of an stable free radical 2,2-diphenyl-1-picrylhydrazyl (DPPH•). DPPH has an absorption band at 515 nm that disappears upon reduction by an antioxidant compound (J. Sci. Food Agric. 83(14):1403-1411).

10

The drink sample was prepared of oat suspension and sea buckthorn berry juice. The sea buckthorn berry juice and the oat suspension from example 1 were used. The berry content of the test drink was 7 %. The same reference oat drink was used as in example 1.

15 Table 7. Recipes of the drinks (g/100g)

	reference oat drink	test drink
Sea buckthorn berry juice	-	7
Oat based material (DM)	7.7	7.7
Water	92.3	85.3

20

The antioxidantivities of the test drink and the reference drink were compared to the antioxidantivity of vitamin C. The antioxidantivity was measured spectrophotometrically by following the colour change of DPPH-radical after 4 min reaction time. All measurements were done by using concentration 0.25 mg/ml of total phenolics. Ascorbic acid (vitamin C) was used as the reference compound. The radical scavenging activity (antioxidativity) of vitamin C was 97.7 %. The activity of vitamin C was set to 100 % and the activities of the samples were compared to that.

25 Table 8. Antioxidativity results

	antioxidant activity of the drink, compared to vitamin C (%)
vitamin C	100
reference oat drink	0.6
test drink	1.9

The antioxidativity of the reference oat drink was improved by replacing part of the water with sea buckthorn berry juice.

Example 7

5 Sensory analyses of oat based berry drinks compared to rice based berry drinks

The taste of oat based berry drinks containing two strong tasting berries, lingonberry or cranberry, was compared to rice based drinks containing the same strong tasting berries.

10 The recipes were:

	oat lingonberry drink	rice lingonberry drink	oat cranberry drink	rice cranberry drink
commercial oat milk	85	-	85	-
commercial rice milk	-	85	-	85
lingonberry juice	15	15	-	-
cranberry juice	-	-	15	15

Commercial oat milk (GoGreen) and rice milk (GoGreen) were used. The rice milk contained 0.4 g more glucose and 1.6 g more maltose / 100 g than the oat milk. The rice
15 milk also tasted sweeter than the oat milk. To eliminate the effects of the different sweetness on the results, saccharose was added to the oat milk to bring its sweetness to the same level as the rice drink's.

The sweetness of different monosaccharides is different. If the sweetness of saccharose is set to value 1, the sweetness of maltose is 0.5 and the sweetness of glucose is 0.7. To get
20 the same sweetness to the commercial oat drink and the commercial rice drink, saccharose was added to the commercial oat drink. To compensate the difference in the maltose content (1.6 g), 0.8 g saccharose was added (0.5×1.6 g). To compensate the difference in the glucose content (0.4 g), 0.28 g saccharose was added (0.7×0.4 g). Therefore totally
25 1.08 g saccharose was added to 100 g of oat milk.

10 trained panellists evaluated the drinks. A pair-wise test was used, where the lingonberry drinks were compared to each other and cranberry drinks to each other. The panellists were asked which of the drinks had stronger taste. 9 out of 10 panellists rated the rice based
30 lingonberry drinks as having a stronger taste than the oat based lingonberry drinks. All 10 panellists rated the rice based cranberry drinks having a stronger taste than the oat based cranberry drinks.

Oat based berry drinks did not have as strong taste as the rice berry drinks, although the sweetness of the commercial oat and rice milks that were used in the preparation of the drinks was the same. It is possible to prepare soft tasting drinks of the present invention of the strong tasting berries.

Example 8

Oat based sea buckthorn berry drink.

	Oat suspension	84.1 %	(9.4 % dry weight)
10	Sea buckthorn berry juice	7.0 %	
	Sucrose	6.0 %	
	Camelina oil	2.3 %	
	Pectin	0.45 %	
	Colouring agent	0.15 %	
15	Vitamin C		

The oat suspension of the example 1 was used. The amount of oat based material was 7.9 % of the weight of the drink. The amount of starch was 0.9 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.9 and the stability of the drink was good and the taste was soft.

Example 9

Oat based blackcurrant drink

25	Oat suspension	93.2 %
	Blackcurrant juice	5 %
	Camelina oil	1.8 %

The oat suspension used in this example was prepared of oat flakes by using alpha amylase (Fungamyl, Novozymes) and glucoamylase (Optidex, L-400, Genencor International). Of the total sugars of the oat suspension, 91 % was glucose and 3.5 % maltose. The amount of oat based material was 11.9 % of the weight of the drink. The amount of starch was 2.1 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.4. The stability of the drink was good and the taste was soft.

Example 10

Oat based cranberry drink

	Oat suspension	87.7 %
5	Cranberry juice	5.0 %
	Sucrose	7.0 %
	Modified starch	0.3 %

10 The oat suspension of example 1 was used. The amount of oat based material was 8.2 % of the weight of the drink. The amount of starch was 1.3 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.6 and the stability of the drink was good and the taste was soft.

Example 11

15 Oat based lingonberry cranberry drink with added plant stanol ester

	Oat suspension	76.9 %
	Lingonberry juice	8.0 %
	Cranberry juice	5.0 %
20	Sucrose	8.5 %
	Plant stanol ester	1.6 %

25 The oat suspension was prepared as described in WO 03/075683 example 1. The amount of oat based material was 6.5 % of the weight of the drink. The amount of starch was 0.9 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:2 and the stability of the drink was good and the taste was soft.

Example 12

Oat based sea buckthorn berry drink

30	Oat suspension	87.0 %
	Sea buckthorn berry juice	5.0 %
	Sucrose	7.0 %

35 The oat suspension was prepared as described in WO 03/075683 example 1. The amount of oat based material was 6.7 % of the weight of the drink. The amount of starch was 0.7 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.7 and the stability of the drink was good and the taste was soft.

Example 13

Oat based sea buckthorn berry drink with added plant stanol ester

5	Oat suspension	70.2 %
	Sea buckthorn berry juice	12.6 %
	Sucrose	14.0 %
	Plant stanol ester	3.0 %
	Colour (carrot extract)	0.2 %

- 10 The oat suspension was prepared as described in WO 03/075683 example 1, except that no separation of the insoluble fibre took place. The amount of oat based material was 11 % of the weight of the drink. The amount of starch was 2.2 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:1.1 and the stability of the drink was good and the taste was soft.

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A healthy drink and a method for improving stability of a drink

Field of Invention

The invention relates to a drink, especially to a drink that is healthy and soft tasting and has
5 a good stability, and to a method for improving the stability of a drink.

Background of the invention

Oats have been traditionally consumed mainly as breakfast cereals and in bakery products.
10 During the last years new types of oat products have been developed. Examples are non-dairy products, such as oat milk, oat based drinks, creams, desserts and fermented products such as yoghurt-like products.

Oat grain contains phytochemicals that can be classified as antioxidants. Antioxidants are
15 substances that when present at low concentrations compared with those of an oxidizable substrate, delay or inhibit oxidation of that substrate. High consumption of antioxidant rich foods has been associated with reduced risk of chronic diseases like cardiovascular disease and cancer in epidemiological studies. The oat antioxidants consist mainly of phenolic compounds as well as tocopherols and tocotrienols. The processing methods of oat based
20 foods affect the content of antioxidants in the final oat based products. Some of the antioxidant compounds are for example sensitive to heat treatments.

It is well known that berries have generally higher content of antioxidant compounds than other food items, such as vegetables, fruits or cereals. The spectrum of the antioxidants
25 found in berries is also wide, including for example phenolic compounds such as flavonoids, phenolic acids and tannins. Main flavonoid subgroups in berries are anthocyanins, proanthocyanidins, flavonols and catechins. Flavonoid profiles vary between different berries. A high proportion of anthocyanins is found e.g. in blueberries and crowberries. A high proportion of ellagitannins is found e.g. in raspberries, strawberries and cloudberries. A high proportion of flavonols (such as quercetin, kaempferol, myricetin) is found e.g. in sea buckthorn berries, cranberries, lingonberries, black currants and gooseberries. The health effects of flavonoids have so far been mainly demonstrated *in vitro* and in animal studies. In human trials the results have been more variable. However, for flavonols, especially quercetin, there are sufficient intervention trials to indicate the
30 health effects among humans *in vivo*. Quercetin influences some carcinogenesis markers and has effects on plasma antioxidant biomarkers *in vivo* (Williamson and Manach, Am. J. Clin. Nutr., 2005;81:243S-255S).

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EP0231729 discloses a process to manufacture products starting from whole flour of starch-containing cereal grains, such as wheat, barley, oat, rye, rice, maize or sorghum. The carbohydrates are enzymatically degraded while the remaining components of the whole flour are maintained substantially intact. The product prepared by the process has a fairly high dry matter content (33-46 %) and it is mentioned that the product can be used as powder drinks or in nutritional drinks.

EP0731646 discloses a homogenous and stable cereal suspension prepared from oats by a specific process. The suspension may be used as basis for or additive to ice cream, gruel, yoghurt and milkshake, or as health drink or snack between meals.

EP0883349 discloses an enzymatic process for forming a functional syrup from oat material or waxy barley. Especially non-dairy frozen confections are disclosed. Also the addition of the syrup into carbohydrate-loading beverages is mentioned.

WO00/30457 discloses an enzymatic process for producing a liquid oat base. The base can be added to other drink ingredients such as orange juice or milk or it can be dried into a powder.

Both EP1123012 and EP1383396 disclose an enzyme modified cereal suspension prepared by a specific process from grains e.g. oats, barley, rice, wheat, maize, rye, sorghum, triticale and pearl millet. The cereal suspensions can be used as milk substitute, as the basis for or an additive in the manufacture of ice cream, gruel, yoghurt, milkshakes and snacks.

WO03/075683 discloses a modified starch containing liquid and a preparation method thereof. The modified starch containing liquid may be used as such or as an ingredient for different food and feed products and compositions.

US6168821 discloses a beverage containing natural fiber, glucans and a flavoring agent. The glucans are substantially derived from a natural grain. The flavoring agent is preferably vanilla.

EP1816920 discloses an edible fiber composition in liquid form that contains soluble and non-soluble dietary fibers.

WO2004/093571 describes e.g. cereal milk based drinks in which the bitter, sour and/or astringent taste has been masked with plant sterol ester and/or plant stanol ester.

There are some oat based drink products containing berries or berry juices on the market e.g. drinks that contain strawberry juice, raspberry or blackberry. Strong tasting berry juices, such as sea buckthorn juice, have been added only in small quantities (0.3-1.3 %) into oat based drinks. Prior art does not disclose oat based drinks having strong tasting berry juices in higher concentrations.

Often the strong tasting berries, such as sea buckthorn berry, lingonberry, cranberry and black currant have also the highest content of a certain antioxidant compound, quercetin, among berries.

It would be beneficial to widen the range of berries used in oat based drinks for several health and nutritional reasons. Also increasing the concentration of the berry juice in the drinks will improve these effects. It would also be beneficial to have oat based drinks that would have improved taste and/or improved stability as well as increased content of different antioxidants compared to the content found in the processed oat based drinks in the prior art. It would also be an advantage to use natural antioxidants and to avoid adding antioxidants as artificial additives.

The present invention provides products meeting one or more of these requirements.

Summary of the invention

The present invention provides oat based non-dairy drinks with improved stability. The present invention is directed to oat based drinks containing berry juices. The present invention is directed to oat based berry drinks where the berry and the berry concentration has been chosen to favourably affect the stability of the drink.

The invention is more preferably directed to the use of berries having a high content of certain antioxidant compounds, especially flavonols, e.g. quercetin. The products of this invention contain both oat derived and berry derived antioxidants.

The invention is preferably directed to the use of strong tasting berries in the oat based berry drinks.

Preferably the invention provides oat based berry drinks with good stability, soft taste and containing strong tasting berries. Most preferably the invention provides oat based berry drinks with good stability, soft taste, a high content of quercetin and containing strong

tasting berries. The antioxidativity of the drink is higher than the antioxidativity of oat milks or oat suspensions.

5 The invention is further directed to a method for improving the stability of an oat based drink.

The characterising features of the present invention are set forth in the claims.

Detailed description of the invention

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The present invention provides an oat based berry drink with improved stability. It was surprisingly found that certain berry juices favourably affect the structure and stability of the oat based berry drinks when used in sufficient concentrations. Certain other berry juices do not have this favourable effect or even have an opposite, deteriorating effect on
15 the stability of the oat based drinks. By improved stability is here meant that the particles of the drink are separating to a lower degree during a certain time period as compared to the corresponding drink containing water instead of the certain berry juices.

The berries used in the oat based berry drinks of the present invention preferably have a
20 strong taste. It was found that the oat suspension softens the taste, especially of the strong tasting berries (i.e. berry juices), which otherwise taste strongly bitter. On the other hand, it was also noticed that the strong oat taste or oat aftertaste of oat drinks, even when the drinks contain quite high amounts of oat based material, is softened (neutralised) by the berry juices. One aim of the invention is soft (smooth) tasting products which can be
25 prepared even when higher concentrations of strong tasting berry juices are used than in the prior art.

Preferably the invention also provides oat based drinks with enhanced antioxidativity (radical scavenging activity). The enhanced antioxidativity is achieved with natural
30 ingredients, berries, by combining oat derived antioxidants and berry derived antioxidants in the drink. Preferably berries containing more than 35 mg/kg (35 ppm) fresh weight quercetin are used. The drinks therefore are healthy, and further their shelf-life is improved due to the enhanced antioxidativity. The antioxidativity of the drink is at least doubled compared to a drink with corresponding content of oat based material without any berry
35 juice. Preferably the drink according to the invention contains at least 0.5 ppm quercetin.

Preferably the invention provides oat based drinks with good stability and enhanced antioxidativity. Also the taste of the drinks is soft and well-accepted by consumers. The

enhanced stability, soft taste and the enhanced antioxidativity are obtained by combining oat with certain berry juices. The oat based berry drinks comprise antioxidants from both the oat raw material and from the berries that have been used. The improved stability compared to the sole oat based drink is achieved by using certain berries. It has been found
5 that certain berry juices, when used in sufficient concentrations improve the stability and structure of the oat based drinks while some other berry juices, such as blueberry juice and strawberry juice, do not have this effect.

The invention is related to a drink which comprises berry juice, water and oat based
10 material, which oat based material optionally contains starch, wherein

- the amount of oat based material is from 3 to 30 % by weight of the drink,
- the amount of berry juice is from 5 to 40 % by weight of the drink,
- the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice,
15 bog whorthleberry juice, crowberry juice, chokeberry juice and mixtures thereof, and
- the amount of starch is from 0 to 2.5 % by weight of the drink.

The "oat based material" comprises oat material with a reduced amount of starch compared to conventional oat flakes and oat flour. The starch content is from 0 to 40 % by dry
20 weight, preferably from 0 to 30 % by dry weight, and most preferably from 0 to 20 % by dry weight of the oat based material. Typically, the oat based material comprises starch from 0.01 to 40 % by dry weight, more preferably from 0.05 to 30 % by dry weight, and most preferably from 0.1 to 20 % by dry weight of the oat based material. The amount of starch can be measured by AOAC official method 996.11. If the amount of starch is too
25 high the stability of the drink will suffer or the product will even be undrinkable because of gel formation.

The oat based berry drink according to the present invention preferably comprises an oat
30 suspension and berry juice.

The drink according to the invention preferably comprises an oat suspension which comprises the oat based material and at least part of the water e.g. at least 50 % by weight of the water, preferably all water. The drink is then prepared by adding the oat based material and at least part of the water, e.g. at least 50% by weight of the water, preferably
35 all water, in the form of an oat suspension. Advantageously, the drink comprises the oat suspension in an amount from 60 to 95 % by weight, preferably from 65 to 94.5 %, more preferably from 70 to 94 % still more preferably from 75 to 93.5 %, most preferably from 80 to 93 % by weight of the oat based berry drink. Especially when using strong tasting

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berry juices preferably an even higher amount of oat suspension may be used e.g. from 85 to 95 % by weight of the oat based berry drink.

5 As used here "oat suspension" refers to a suspension comprising oat based material and water. Suitable preparation methods for the oat suspension is disclosed e.g. in WO03/075683, EP0731646, EP1123012 and EP1816920.

10 Preferably the oat suspension has been prepared by method(s) that at least partly degrade oat starch. Preferably the oat suspension has been prepared by using enzymes that at least partly degrade the oat starch. Suitable enzymes include, but are not restricted to, various amylases, such as alpha- and beta-amylases, amyloglucosidases and pullulanases. Preferably at least 20 %, more preferably at least 50 % and still more preferably at least 80 % of the oat starch has been degraded compared to the starch amount in conventional oat flakes. Most preferably the oat starch has been totally degraded. Preferred oat suspensions
15 contain starch degradation products, such as sugars (e.g. glucose, maltose) and maltodextrin. Also some undegraded starch may be present. The preferred oat suspensions contain also other oat derived components, such as proteins, fat and fibre. In addition to starch, also other oat derived components, such as protein or fibre components, may be partly or totally degraded by enzymatic or by other means.

20 Preferably the fibre component of the oat suspension, such as beta-glucan, has been at least partly degraded in the oat suspension preparation process. More preferably the fibre component of the oat suspension, such as beta-glucan, has been totally degraded. However, also oat suspensions containing beta-glucan may be utilised in the present invention.

25 Oat based material in the form of an oat powder made e.g. by drying an oat suspension (see e.g. WO00/30457) may also be used by suspending the powder in water, in berry juice or in their mixture.

30 As used here, by the term "berry juice" is meant the material that can be obtained from berries e.g. by pressing, steam-extraction or by other means used in the juice production. Berries are small fruits with multiple seeds that are called berries in the common language and that are suitable for human consumption. Often berries are juicy and have bright colour. Juices from fruits, such as citrus fruits, apples, bananas, pineapples, cherries and
35 others that are in common language understood as fruits, are not included in the term "berry juice" here. Berries contain generally more antioxidant activity than fruits. The berry juice can originate from one kind of berries or be a mixture of juices from different berries. The pressing cake including seeds and peels/skins is conventionally removed from

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the berry juices. The berry juice can be concentrated by removing water from it and if required, the concentrates can be diluted again. In this specification the berry juice is meant to mean the 100 % juice of berries i.e. the natural concentration of the juice obtained from berries.

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Suitable berries that are used as raw material of the berry juice(s) in this invention are sea buckthorn berries, lingonberries, cranberries, red currants, black currants, gooseberries, bog whortleberries, crowberries and chokeberries. Preferred berries comprise sea buckthorn berries, lingonberries, cranberries, red currants, black currants and gooseberries.

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More preferred berries are sea buckthorn berries, lingonberries, cranberries, red currants, and black currants. Even more preferred berries are sea buckthorn berries, lingonberries, cranberries and red currants. Still even more preferred berries are sea buckthorn berries, lingonberries and cranberries. Further more preferred berries are sea buckthorn berries and lingonberries. Most preferred berries are sea buckthorn berries.

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As strong tasting berries can in this respect following berries be mentioned: sea buckthorn berries, lingonberries, cranberries, red currants, and black currants. More preferred berries are sea buckthorn berries and lingonberries, and most preferred berries are sea buckthorn berries.

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The oat based berry drink can be prepared by conventional drink preparation methods. The preparation steps include mixing the raw materials. The preparation steps may also include homogenisation step(s) and heat treatment step(s). Heat treatments commonly known in the art, such as pasteurization or UHT-treatment, can be used. The preparation steps may also include fermentation, but preferably the oat based berry drinks according to the invention are not fermented.

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The oat based berry drink comprises at least 5 % by weight and at most 40 % by weight, preferably at most 30 % and most preferably at most 20 % by weight berry juice or a mixture of berry juices chosen from the berries suitable for use in the present invention. Typically the oat based berry drink comprises from 5 to 40 %, preferably from 5.5 to 35 %, more preferably from 6 to 30 %, still more preferably from 6.5 to 25 % and most preferably from 7 to 20 % by weight berry juice or a mixture of berry juices chosen from the berries suitable for use in the present invention. The most preferred amount of strong tasting berry juices, especially sea buckthorn berry juice and lingonberry juice is from 5 to 15 % by weight of the drink. Other berry juices may also be added in addition, but preferably only the berries chosen in this invention are used.

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The oat dry matter (oat based material) content of the oat based berry drink is 3-30 %, preferably 4-25 %, more preferably 5-20 %, most preferably 5-15 % by weight.

5 The amount of starch in the drink according to the invention is from 0 to 2.5 % by weight, preferably from 0 to 2.0 % by weight, more preferably from 0 to 1.5 % by weight, and most preferably from 0 to 1.0 % by weight. The amount of starch can be measured by AOAC official method 996.11. Typically, the amount of starch in the drink is from 0.01 to 2.5 % by weight, preferably from 0.03 to 2.0 % by weight, more preferably from 0.05 to 1.5 % by weight, and most preferably from 0.1 to 1.0 % by weight. Preferably the starch is
10 substantially derived from the oat based material.

Preferably the weight ratio of oat dry matter (oat based material) to 100 % berry juice in the oat based berry drink is from 1:0.3 to 1:5, more preferably from 1:0.4 to 1:3, even more preferably from 1:0.5 to 1:2, and most preferably from 1:0.7 to 1:1. Especially when the
15 juice is made from strong tasting berries the ratio of oat dry matter (oat based material) to 100 % berry juice is preferably from 1:0.3 to 1:3, more preferably from 1:0.3 to 1:2, and most preferably from 1:0.3 to 1:1.2. The same ratio for juices of strong tasting berries may still more preferably be $1 \geq 0.4$ and $1 \geq 0.5$.

20 An especially preferred embodiment of the present invention is an oat based berry drink containing sea buckthorn berry juice.

The present invention is directed to oat based drinks having a viscosity of at most 700 mPas, preferably at most 500 mPas, more preferably at most 300 mPas, even more
25 preferably at most 200 mPas, and most preferably at most 100 mPas. The measurement was performed at 20 °C using a Brookfield Model LVDV II viscometer (spindle 2, 100 rpm).

30 The oat based berry drinks of the present invention may also comprise optional ingredients such as stabilising agents, emulsifiers, colouring agents and flavouring agents. The drinks of the present invention can also contain other nutritionally beneficial components. Examples of such nutritionally beneficial components include plant sterols and/or plant stanols, n-3 fatty acids, probiotics, dietary fibre (e.g. soluble β -glucan) and mixtures thereof. Plant sterols and/or plant stanols are preferably added in a form of plant sterol
35 ester and/or plant stanol ester. Other examples of the beneficial nutritional components include beneficial minor components, for example vitamins and minerals, such as calcium. Some of the other nutritionally beneficial components, especially plant sterol ester and/or plant stanol ester and oils rich in n-3 fatty acids (e.g. containing at least 5 %, preferably at

least 10 %, more preferably at least 15 % n-3 fatty acids of the fatty acid content of the oil) also further enhance the favourable effects of the preferred berries on the structural stability of the oat based berry drinks. Further antioxidants may also be added such as in the form of green tea extract. The oat based berry drinks of the present invention may also
5 comprise other cereal material, such as wheat, rice or barley, or soy based material, such as soymilk or soy protein. Fruit and/or vegetable juice(s) may also be included in the drinks according to the invention. The drinks according to the invention may further contain berry juice(s) from one or more other berries than those mentioned as suitable for this invention.

10 In this specification the plant sterols include 4-desmethyl sterols, 4-monomethyl sterols and 4,4-dimethyl sterols (triterpene alcohols) and the plant stanols include 4-desmethyl stanols, 4-monomethyl stanols and 4,4-dimethyl stanols. Typical 4-desmethyl sterols are sitosterol, campesterol, stigmasterol, brassicasterol, 22-dehydrobrassicasterol and Δ^5 -avenasterol. Typical 4,4-dimethyl sterols are cycloartenol, 24-methylenecycloartenol and
15 cyclobranol. Typical stanols are sitostanol, campestanol and their 24-epimers, cycloartanol and saturated forms obtained by saturation of e.g. triterpene alcohols (cycloartenol, 24-methylenecycloartenol and cyclobranol). The terms "plant sterol" and "plant stanol" include all possible mixtures of named sterols and/or stanols as well as any individual sterol or stanol. Preferably the plant sterol and/or plant stanol are desmethyl sterols and/or
20 desmethyl stanols.

As used here, the term "plant sterol ester" or "plant stanol ester" refers to plant sterols or plant stanols having at least 60%, preferably at least 85%, most preferably at least 95% of the plant sterols and/or plant stanols in esterified form. In this invention the plant sterols
25 and/or plant stanols are esterified with an organic acid. Examples of suitable organic acids are fatty acids (2-24 carbon atoms, saturated, monounsaturated or polyunsaturated, including also special fatty acids, such as conjugated fatty acids, e.g. CLA, and EPA and DHA), hydroxybenzoic acids, hydroxycinnamic acids (ferrulic and coumaric acids), di- and tricarboxylic acids and hydroxy acids, and any mixture of said acids. Preferably the
30 plant sterols and/or plant stanols are esterified with fatty acids, most preferably with vegetable oil based fatty acids.

The preferred amount of plant sterol ester and/or plant stanol ester is 0.1 - 10 %, more preferably 0.3 - 9 %, even more preferably 0.5 - 8 %, most preferably 1 - 7 % by weight of the drink.

35 Examples of oils rich in n-3 fatty acids include fish oils and vegetable oils such as camelina oil, linseed oil or rapeseed oil. Preferred oils are of vegetable origin, thus making

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the oat based berry drink suitable also for vegetarians. The preferred amount of oil having a fatty acid content of at least 5 %, preferably at least 10 %, most preferably at least 15 % n-3 fatty acids is 0.1 - 10 %, more preferably 0.5 - 9 %, even more preferably 0.8 - 8 %, most preferably 1 - 7 % by weight of the drink.

5

The drink according to the invention preferably contains no stabilising agent. The added berry juices as selected in this invention are effective enough to stabilise the drink when added in suitable amounts. However, it is possible to include also conventional stabilising agents, e.g. pectin, gums and modified starch, in the drink in order to further stabilise it.

10 The stabilising agent is then used in small amounts e.g. the total amount of stabilising agents is at most 1.0 %, preferably at most 0.7 %, more preferably at most 0.5 % and most preferably at most 0.3 % by weight of the drink.

15 The drink according to the invention preferably contains no flavouring agent. The tastes of the berry juice and the oat based material suitably balance each other when added in amounts according to the invention so that it is not necessary to add any flavouring agent, such as vanilla and/or almond. However, flavouring agents may be added e.g. when some other aroma of the drink is wanted.

20 Preferably, the drinks do not contain milk or gluten and are therefore suitable for lactose intolerant people or people having celiac disease.

The invention is also directed to a method for improving the stability of a drink comprising oat based material, which contains from 0 to 40 % by dry weight of starch, which
25 comprises

- providing a berry juice selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry juice, crowberry juice, chokeberry juice and mixtures thereof, and
- mixing the oat based material, water and the berry juice to obtain a drink comprising the
30 berry juice in an amount from 5 to 40 % by weight, the oat based material in an amount from 3 to 30 % by weight and the starch in an amount of 0 to 2.5 % by weight.

Preferably the oat based material and at least part of the water is added in the form of an oat suspension and more preferably the oat suspension is added in an amount from 60 to 95
35 % by weight of the drink.

The method is preferably applicable for preparing all drinks according to this invention.

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Example 1**Stability of the drinks: oat based sea buckthorn berry drinks**

Oat based sea buckthorn berry drink with varying content of sea buckthorn berry juice.

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The stability of the oat based berry drinks was tested using oat based sea buckthorn berry drinks with varying content of sea buckthorn berry juice. The drinks were prepared according to the recipes below.

- 10 The drink samples were prepared of oat suspension and sea buckthorn berry juice. The sea buckthorn berry juice did not contain seeds or the skins of the berries. The sea buckthorn berry juice was 100 % juice.

- 15 The oat suspension was prepared of oat flakes and water as described in WO 03/075683 example 2. The oat dry matter content of the oat suspension was 9.4 % by weight.

- 20 The oat suspension, water and sea buckthorn juice were mixed (compositions given in Table 1) and warmed up to 60 °C. The mixture was homogenised at 60 °C in two phases using 150/50 bar pressure. Camelina oil (60 °C) was added to drink 6 and plant stanol ester (Benecol® Classic) (60 °C) to drink 7 prior to homogenisation. The drinks were allowed to cool to room temperature, mixed thoroughly and poured to measuring cylinders. The measuring cylinders were allowed to stand at 4 °C for 7 days. The stability of the drinks was compared to a reference oat drink containing same amount of oat based material (DM, dry matter) but no berry juice, oil or plant stanol ester. The stability was measured as % of separated material in the test drink of the separated material in the reference oat drink.

- 25 The oat dry matter content (oat based material) of the drinks was 7.7 % by weight. The berry juice content of the drinks was 1.3, 4, 5, 7 or 15 % by weight. One of the drinks (drink 6) contained also camelina oil (1.5 %) and one of the drinks (drink 7) plant stanol ester (1.5 %).

- 30 In the reference oat drink the volume of the separated material was 9 % after 3 days, 12 % after 4 days and 21 % after 7 days of the total volume of the reference oat drink. The volume of the separated material in the test drinks is compared to the volume of the separated material in the reference drink in Table 2.

Table 1. Recipes of the drinks (g/100g)

	drink 1	drink 2	drink 3	drink 4	drink 5	drink 6	drink 7	reference oat drink
Sea buckthorn berry juice	1.3	4	5	7	15	7	7	
Oat based material (DM)	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Water	91.0	88.3	87.3	85.3	77.3	83.8	83.8	92.3
Camelina oil						1.5		
Plant stanol ester							1.5	

Table 2. Stability results

Oat - sea buckthorn berry drinks	difference to the reference drink (%), 3 d	difference to the reference drink (%), 4 d	difference to the reference drink (%), 7 d
Drink 1	0,0	0,0	+4,8
Drink 2	0,0	0,0	+4,8
Drink 3	-11.1	-8.3	-4.8
Drink 4	-11,1	-16,7	-4,8
Drink 5	-22,2	-16,7	-14,3
Drink 6	-33,3	-33,3	-14,3
Drink 7	-44,4	-33,3	-19,0

- 5 After 3 days, the drinks having the lowest concentrations of sea buckthorn berry juice (drinks 1 and 2) had separated to the same extent as the reference drink (difference to the reference drink 0 %). Drinks 3 and 4, containing 5 % or 7 % sea buckthorn berry juice respectively, had better stability than the reference drink (11.1 % less separated material than in the reference drink). The stability was even more improved with higher content of
- 10 sea buckthorn berry juice (drink 5). Stability was even further improved by addition of camelina oil (drink 6; 33.3 % less separated material than in the reference drink) and even more with plant stanol ester (drink 7; 44.4 % less separated material than in the reference drink).
- 15 After 4 days, the drinks having the lowest concentrations of sea buckthorn berry juice (drinks 1 and 2) had separated as much as the reference drink. The drinks having a higher concentration of sea buckthorn berry juice were more stable than the reference drink. The drinks with camelina oil or plant stanol ester had the best stability also after 4 days.
- 20 After prolonged storage (7 days) the differences between the test drinks and the reference oat drink were smaller than at earlier time points. However, the drinks having sufficient amount of sea buckthorn berry juice or sea buckthorn berry juice together with camelina

oil or plant stanol ester still had better stability and contained less separated material than the reference oat drink.

- 5 It was found that sea buckthorn berry juice favourably affected the structure and stability of the oat based berry drinks when at least 5 % sea buckthorn berry juice was used compared to the reference oat drink of the same oat concentration. It was also found that adding camelina oil or plant stanol ester further improved the favourable effect that the sea buckthorn berry juice had on the stability of the oat based berry drinks.

10 Example 2

Stability of the drinks: oat based lingonberry drinks

- 15 The stability of oat based lingonberry drinks was compared to the stability of reference oat drink with a similar test procedure as in example 1 except that the stability of the drinks was measured after 4 days storage.

- 20 The oat based lingonberry drinks were prepared according to the recipes in Table 3. The oat suspension was prepared as in example 1 and the drinks were prepared in the same way as the drinks of example 1. The lingonberry content of the drinks was 4 % and 7 %. The same reference oat drink was used as in the example 1.

Table 3. Recipes of the drinks and stability results

Recipes (g/100g)	drink L1	drink L2	reference oat drink
Lingonberry juice	4	7	
Oat based material (DM)	7.7	7.7	7.7
Water	88.3	85.3	92.3
Stability results			
Difference to the reference drink (%), 4 d	+16.7	-25.0	

- 25 Lingonberry juice was found to have favourable effect on the stability of the oat based berry drinks when used in sufficient concentrations. 4 % lingonberry concentration had an adverse effect. When the lingonberry concentration was raised, the stability of the oat based lingonberry drinks was improved and was better than the stability of the reference oat drink.

Example 3**Stability of the drink: oat based cranberry drink**

5 The stability of an oat based cranberry drink was compared to the stability of reference oat drink with a similar test procedure as in example 1 except that the stability of the drink was measured after 4 days storage.

10 The oat based cranberry drink was prepared according to the recipe below (Table 4). The oat suspension was prepared as in example 1 and the oat cranberry drink was prepared in the same way as the drinks of example 1. The cranberry content of the drinks was 7 %. The same reference oat drink was used as in example 1.

Table 4. Recipes of the drinks and stability results

Recipes (g/100g)	drink C1	reference oat drink
Cranberry juice	7	
Oat based material (DM)	7.7	7.7
Water	85.3	92.3
Stability results		
Difference to the reference drink (%), 4 d	-16.7	

15

Also cranberry juice was found to have a favourable effect on the stability of the oat based berry drinks compared to the reference oat drink.

Example 4, comparative example**20 Stability of the drink: oat based blueberry drink**

The stability of an oat based blueberry drink was compared to the stability of reference oat drink with a similar test procedure as in example 1. The stability of the drink was measured after 3, 4 and 7 days storage.

25

The oat blueberry drink was prepared according to the recipe below (Table 5). The oat suspension was prepared as in example 1 and the drink was prepared in the same way as the drinks of example 1. The blueberry content of the drink was 7 %. The same reference oat drink was used as in example 1.

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Table 5. Recipes of the drinks and stability results

Recipes (g/100g)	drink B1	reference oat drink
Blueberry juice	7	
Oat based material (DM)	7.7	7.7
Water	85.3	92.3
Stability results		
Difference to the reference drink (%), 3 d	+87.5	
Difference to the reference drink (%), 4 d	+50.0	
Difference to the reference drink (%), 7 d	+23.8	

Blueberry juice was found to have an adverse effect on the stability of the oat based berry drink. The blueberry concentration that was used in the test (7 %) was the same concentration that had been found to work well with the other berries. Blueberry did not have a favourable effect on the stability of the oat based berry drink.

Example 5, comparative example

Stability of the drink: oat based strawberry drink

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The stability of oat based strawberry drink was compared to the stability of reference oat drink with a similar test procedure as in example 1 except that the stability of the drink was measured after 4 days storage.

15

The oat strawberry drink was prepared according to the recipe below (Table 6). The oat suspension was prepared as in example 1 and the oat strawberry drink was prepared in the same way as the drinks of example 1. Strawberry juice concentrate was used. The 100 % strawberry juice content of the drink was 7 %. The same reference oat drink was used as in example 1.

20

Strawberry juice was found to have no favourable effect on the stability of the oat based berry drink compared to the reference oat drink. The oat based strawberry drink separated to the same extent as the reference oat drink after 4 days of storage.

Table 6. Recipes of the drinks and stability results

Recipes (g/100g)	drink S1	reference oat drink
Strawberry juice	7	
Oat based material (DM)	7.7	7.7
Water	85.3	92.3
Stability results		
Difference to the reference drink (%), 4 d	0.0	

Example 6

Antioxidativity test

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The antioxidantivity of oat based berry drink was studied with the DPPH method. The DPPH method measures the reduction of an stable free radical 2,2-diphenyl-1-picrylhydrazyl (DPPH•). DPPH has an absorption band at 515 nm that disappears upon reduction by an antioxidant compound (J. Sci. Food Agric. 83(14):1403-1411).

10

The drink sample was prepared of oat suspension and sea buckthorn berry juice. The sea buckthorn berry juice and the oat suspension from example 1 were used. The berry content of the test drink was 7 %. The same reference oat drink was used as in example 1.

15 Table 7. Recipes of the drinks (g/100g)

	reference oat drink	test drink
Sea buckthorn berry juice	-	7
Oat based material (DM)	7.7	7.7
Water	92.3	85.3

The antioxidantivities of the test drink and the reference drink were compared to the antioxidantivity of vitamin C. The antioxidantivity was measured spectrophotometrically by following the colour change of DPPH-radical after 4 min reaction time. All measurements were done by using concentration 0.25 mg/ml of total phenolics. Ascorbic acid (vitamin C) was used as the reference compound. The radical scavenging activity (antioxidativity) of vitamin C was 97.7 %. The activity of vitamin C was set to 100 % and the activities of the samples were compared to that.

25 Table 8. Antioxidativity results

	antioxidant activity of the drink, compared to vitamin C (%)
vitamin C	100
reference oat drink	0.6
test drink	1.9

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The antioxidativity of the reference oat drink was improved by replacing part of the water with sea buckthorn berry juice.

Example 7

5 Sensory analyses of oat based berry drinks compared to rice based berry drinks

The taste of oat based berry drinks containing two strong tasting berries, lingonberry or cranberry, was compared to rice based drinks containing the same strong tasting berries.

10 The recipes were:

	oat lingonberry drink	rice lingonberry drink	oat cranberry drink	rice cranberry drink
commercial oat milk	85	-	85	-
commercial rice milk	-	85	-	85
lingonberry juice	15	15	-	-
cranberry juice	-	-	15	15

Commercial oat milk (GoGreen) and rice milk (GoGreen) were used. The rice milk contained 0.4 g more glucose and 1.6 g more maltose / 100 g than the oat milk. The rice
15 milk also tasted sweeter than the oat milk. To eliminate the effects of the different sweetness on the results, saccharose was added to the oat milk to bring its sweetness to the same level as the rice drink's.

The sweetness of different monosaccharides is different. If the sweetness of saccharose is
20 set to value 1, the sweetness of maltose is 0.5 and the sweetness of glucose is 0.7. To get the same sweetness to the commercial oat drink and the commercial rice drink, saccharose was added to the commercial oat drink. To compensate the difference in the maltose content (1.6 g), 0.8 g saccharose was added (0.5×1.6 g). To compensate the difference in the glucose content (0.4 g), 0.28 g saccharose was added (0.7×0.4 g). Therefore totally
25 1.08 g saccharose was added to 100 g of oat milk.

10 trained panellists evaluated the drinks. A pair-wise test was used, where the lingonberry drinks were compared to each other and cranberry drinks to each other. The panellists were asked which of the drinks had stronger taste. 9 out of 10 panellists rated the rice based
30 lingonberry drinks as having a stronger taste than the oat based lingonberry drinks. All 10 panellists rated the rice based cranberry drinks having a stronger taste than the oat based cranberry drinks.

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Oat based berry drinks did not have as strong taste as the rice berry drinks, although the sweetness of the commercial oat and rice milks that were used in the preparation of the drinks was the same. It is possible to prepare soft tasting drinks of the present invention of the strong tasting berries.

Example 8

Oat based sea buckthorn berry drink.

	Oat suspension	84.1 %	(9.4 % dry weight)
10	Sea buckthorn berry juice	7.0 %	
	Sucrose	6.0 %	
	Camelina oil	2.3 %	
	Pectin	0.45 %	
	Colouring agent	0.15 %	
15	Vitamin C		

The oat suspension of the example 1 was used. The amount of oat based material was 7.9 % of the weight of the drink. The amount of starch was 0.9 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.9 and the stability of the drink was good and the taste was soft.

Example 9

Oat based blackcurrant drink

25	Oat suspension	93.2 %
	Blackcurrant juice	5 %
	Camelina oil	1.8 %

The oat suspension used in this example was prepared of oat flakes by using alpha amylase (Fungamyl, Novozymes) and glucoamylase (Optidex, L-400, Genencor International). Of the total sugars of the oat suspension, 91 % was glucose and 3.5 % maltose. The amount of oat based material was 11.9 % of the weight of the drink. The amount of starch was 2.1 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.4. The stability of the drink was good and the taste was soft.

Example 10**Oat based cranberry drink**

5	Oat suspension	87.7 %
	Cranberry juice	5.0 %
	Sucrose	7.0 %
	Modified starch	0.3 %

10 The oat suspension of example 1 was used. The amount of oat based material was 8.2 % of the weight of the drink. The amount of starch was 1.3 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.6 and the stability of the drink was good and the taste was soft.

Example 11**15 Oat based lingonberry cranberry drink with added plant stanol ester**

	Oat suspension	76.9 %
	Lingonberry juice	8.0 %
	Cranberry juice	5.0 %
20	Sucrose	8.5 %
	Plant stanol ester	1.6 %

25 The oat suspension was prepared as described in WO 03/075683 example 1. The amount of oat based material was 6.5 % of the weight of the drink. The amount of starch was 0.9 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:2 and the stability of the drink was good and the taste was soft.

Example 12**Oat based sea buckthorn berry drink**

30	Oat suspension	87.0 %
	Sea buckthorn berry juice	5.0 %
	Sucrose	7.0 %

35 The oat suspension was prepared as described in WO 03/075683 example 1. The amount of oat based material was 6.7 % of the weight of the drink. The amount of starch was 0.7 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:0.7 and the stability of the drink was good and the taste was soft.

Example 13

Oat based sea buckthorn berry drink with added plant stanol ester

5	Oat suspension	70.2 %
	Sea buckthorn berry juice	12.6 %
	Sucrose	14.0 %
	Plant stanol ester	3.0 %
	Colour (carrot extract)	0.2 %

- 10 The oat suspension was prepared as described in WO 03/075683 example 1, except that no separation of the insoluble fibre took place. The amount of oat based material was 11 % of the weight of the drink. The amount of starch was 2.2 % of the drink. The ratio of oat derived dry matter to 100 % berry juice was 1:1.1 and the stability of the drink was good and the taste was soft.

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Claims

1. A drink comprising berry juice, water and oat based material, which oat based material optionally contains starch, wherein
 - 5 - the amount of oat based material is from 3 to 30 % by weight,
 - the amount of berry juice is from 5 to 40 % by weight,
 - the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry juice, crowberry juice, chokeberry juice and mixtures thereof, and
 - 10 - the amount of starch is from 0 to 2.5 % by weight of the drink.
2. The drink according to claim 1 comprising an oat suspension which comprises the oat based material and at least part of the water.
- 15 3. The drink according to claim 1, wherein the oat based material and at least part of the water is added in the form of an oat suspension.
4. The drink according to claim 2 or 3 comprising the oat suspension in an amount from 60 to 95 % by weight.
- 20 5. The drink according to any one of claims 1 to 4, wherein the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice and mixtures thereof, preferably selected from sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice and mixtures thereof, more preferably selected from sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice and mixtures thereof, even more preferably selected from sea buckthorn berry juice, lingonberry juice, cranberry juice and mixtures thereof, further more preferably selected from sea buckthorn berry juice, lingonberry juice and mixtures thereof, and most preferably the berry juice is
- 25 sea buckthorn berry juice.
- 30 6. The drink according to any one of claims 1 to 5, wherein the amount of berry juice is from 5.5 to 35 %, preferably from 6 to 30 %, more preferably 6.5 to 25 %, and most preferably from 7 to 20 % by weight of the drink.
- 35 7. The drink according to any one of claims 1 to 6, wherein the amount of oat based material is 4-25 %, preferably 5-20 %, more preferably 5-15 % by weight.

8. The drink according to any one of claims 1 to 7, wherein the weight ratio of oat based material to berry juice is from 1:0.3 to 1:5, preferably from 1:0.4 to 1:3, more preferably from 1:0.5 to 1:2, and most preferably from 1:0.7 to 1:1.
- 5 9. The drink according to claim 8, wherein the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, and black currant juice and the weight ratio of oat based material to berry juice is from 1:0.3 to 1:2, and preferably from 1:0.3 to 1:1.2.
- 10 10. The drink according to any one of claims 1 to 9, wherein the drink has a viscosity of at most 700 mPas, preferably at most 500 mPas, more preferably at most 300 mPas, even more preferably at most 200 mPas, and most preferably at most 100 mPas.
- 15 11. The drink according to any of claims 1 to 10, wherein the oat based material comprises starch from 0 to 40 % by dry weight, preferably from 0 to 30 % by dry weight, and most preferably from 0 to 20 % by dry weight of the oat based material.
- 20 12. The drink according to any of claims 1 to 11, wherein the amount of starch in the drink is from 0 to 2.0 % by weight, more preferably from 0 to 1.5 % by weight, and most preferably from 0 to 1.0 % by weight.
- 25 13. The drink according to any one of claims 1 to 12, wherein it further comprises plant sterols, plant stanols, n-3 fatty acids, dietary fibres, probiotics, vitamins, minerals or mixtures thereof.
- 30 14. The drink according to claim 13 further comprising plant sterol ester and/or plant stanol ester in an amount from 0.1 to 10 %, preferably from 0.3 to 9 %, more preferably from 0.5 to 8 %, most preferably from 1 to 7 % by weight of the drink.
- 35 15. The drink according to claim 13 or 14 further comprising oil having a fatty acid content of at least 5 % n-3 fatty acids in an amount from 0.1 to 10 %, preferably from 0.5 to 9 %, more preferably from 0.8 to 8 %, most preferably from 1 to 7 % by weight of the drink.
16. A method for improving the stability of a drink comprising oat based material, which contains from 0 to 40 % by dry weight of starch, the method comprising providing a berry juice selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry

juice, crowberry juice, chokeberry juice and mixtures thereof, mixing the oat based material, water and the berry juice to obtain a drink comprising the berry juice in an amount from 5 to 40 % by weight, the oat based material in an amount from 3 to 30 % by weight and the starch in an amount of 0 to 2.5 % by weight.

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17. The method according to claim 16, wherein the oat based material and at least part of the water is added in the form of an oat suspension.

18. The method according to claim 17, wherein the oat suspension is added in an amount
10 from 60 to 95 % by weight of the drink.

15

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Claims

1. A drink comprising berry juice, water and oat based material, which oat based material optionally contains starch, wherein
 - 5 - the amount of oat based material is from 3 to 30 % by weight,
 - the amount of berry juice is from 5 to 40 % by weight,
 - the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry juice, crowberry juice, chokeberry juice and mixtures thereof, and
 - 10 - the amount of starch is from 0 to 2.5 % by weight of the drink.
2. The drink according to claim 1 comprising an oat suspension which comprises the oat based material and at least part of the water.
- 15 3. The drink according to claim 1, wherein the oat based material and at least part of the water is added in the form of an oat suspension.
4. The drink according to claim 2 or 3 comprising the oat suspension in an amount from 60 to 95 % by weight.
- 20 5. The drink according to any one of claims 1 to 4 , wherein the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice and mixtures thereof, preferably selected from sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice and mixtures thereof, more preferably selected from sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice and mixtures thereof, even more preferably selected from sea buckthorn berry juice, lingonberry juice, cranberry juice and mixtures thereof, further more preferably selected from sea buckthorn berry juice, lingonberry juice and mixtures thereof, and most preferably the berry juice is sea buckthorn berry juice.
- 30 6. The drink according to any one of claims 1 to 5, wherein the amount of berry juice is from 5.5 to 35 %, preferably from 6 to 30 %, more preferably 6.5 to 25 %, and most preferably from 7 to 20 % by weight of the drink.
- 35 7. The drink according to any one of claims 1 to 6, wherein the amount of oat based material is 4-25 %, preferably 5-20 %, more preferably 5-15 % by weight.

8. The drink according to any one of claims 1 to 7, wherein the weight ratio of oat based material to berry juice is from 1:0.3 to 1:5, preferably from 1:0.4 to 1:3, more preferably from 1:0.5 to 1:2, and most preferably from 1:0.7 to 1:1.
- 5 9. The drink according to claim 8, wherein the berry juice is selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, and black currant juice and the weight ratio of oat based material to berry juice is from 1:0.3 to 1:2, and preferably from 1:0.3 to 1:1.2.
- 10 10. The drink according to any one of claims 1 to 9, wherein the drink has a viscosity of at most 700 mPas, preferably at most 500 mPas, more preferably at most 300 mPas, even more preferably at most 200 mPas, and most preferably at most 100 mPas.
- 15 11. The drink according to any of claims 1 to 10, wherein the oat based material comprises starch from 0 to 40 % by dry weight, preferably from 0 to 30 % by dry weight, and most preferably from 0 to 20 % by dry weight of the oat based material.
- 20 12. The drink according to any of claims 1 to 11, wherein the amount of starch in the drink is from 0 to 2.0 % by weight, more preferably from 0 to 1.5 % by weight, and most preferably from 0 to 1.0 % by weight.
- 25 13. The drink according to any one of claims 1 to 12, wherein it further comprises plant sterols, plant stanols, n-3 fatty acids, dietary fibres, probiotics, vitamins, minerals or mixtures thereof.
- 30 14. The drink according to claim 13 further comprising plant sterol ester and/or plant stanol ester in an amount from 0.1 to 10 %, preferably from 0.3 to 9 %, more preferably from 0.5 to 8 %, most preferably from 1 to 7 % by weight of the drink.
- 35 15. The drink according to claim 13 or 14 further comprising oil having a fatty acid content of at least 5 % n-3 fatty acids in an amount from 0.1 to 10 %, preferably from 0.5 to 9 %, more preferably from 0.8 to 8 %, most preferably from 1 to 7 % by weight of the drink.
16. A method for improving the stability of a drink comprising oat based material, which contains from 0 to 40 % by dry weight of starch, the method comprising providing a berry juice selected from the group consisting of sea buckthorn berry juice, lingonberry juice, cranberry juice, red currant juice, black currant juice, gooseberry juice, bog whorthleberry

juice, crowberry juice, chokeberry juice and mixtures thereof, mixing the oat based material, water and the berry juice to obtain a drink comprising the berry juice in an amount from 5 to 40 % by weight, the oat based material in an amount from 3 to 30 % by weight and the starch in an amount of 0 to 2.5 % by weight.

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17. The method according to claim 16, wherein the oat based material and at least part of the water is added in the form of an oat suspension.

18. The method according to claim 17, wherein the oat suspension is added in an amount
10 from 60 to 95 % by weight of the drink.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2008/000139

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A23L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

FI, SE, NO, DK

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI, BIOSIS, XPESP, FSTA, FROSTI, CAPLUS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6168821 B1 (CASTLEBERRY ELEN) 02 January 2001 (02.01.2001) column 2, lines 3-50; column 4, line 48 - column 5, line 14; column 5, lines 23-55; column 7, lines 11-24; claims 1, 5, 7-9, 12-14	1-9, 11, 12
Y		1-4, 8-15
Y	WO 03075683 A1 (RAISIO GROUP PLC et al.) 18 September 2003 (18.09.2003), page 4, lines 10-12; page 4, lines 24-26; page 11, table 1; examples 1, 2	1-4, 8-12
Y	EP 0731646 B1 (LINDAHL LENNART et al.) 18 September 1996 (18.09.1996), examples 1-3	1-4, 8-12
Y	WO 02065855 A2 (CEREAL BASE CEBA AB) 29 August 2002 (29.08.2002), & EP 1383396 A2 example 1	1-4, 8-12

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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Name and mailing address of the ISA/FI
National Board of Patents and Registration of Finland
P.O. Box 1160, FI-00101 HELSINKI, Finland

Facsimile No. +358 9 6939 5328

Authorized officer

Marja Tamminen

Telephone No. +358 9 6939 500

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2008/000139

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 0022938 A2 (CEREAL BASE CEBA AB) 27 April 2000 (27.04.2000), & EP 1123012 A2 examples 1 and 2	1-4, 8-12
Y	WO 2006040395 A1 (RAVINTORAISIO OY et al.) 20 April 2006 (20.04.2006), page 5, lines 31-35; page 6, lines 13-19; claims 1, 2, 7-9	13-15
Y	WO 2004093571 A1 (RAISIO BENECOL OY et al.) 04 November 2004 (04.11.2004), page 10, lines 28-31; page 12, lines 25-28; example 9; claims 10 and 20	13-15

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/FI2008/000139

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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INTERNATIONAL SEARCH REPORT

International application No.
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CLASSIFICATION OF SUBJECT MATTER

Int.Cl.
A23L 2/02 (2006.01)
A23L 1/10 (2006.01)
A23L 2/52 (2006.01)
A23L 1/30 (2006.01)

UNA BEBIDA SALUDABLE Y UN MÉTODO PARA MEJORAR LA ESTABILIDAD DE UNA BEBIDA

Campo de la Invención

La invención se refiere a una bebida, especialmente
5 a una bebida que es saludable y de sabor suave y tiene una
buena estabilidad y a un método para mejorar la estabilidad
de una bebida.

ANTECEDENTES DE LA INVENCION

Las avenas se han consumido tradicional y
10 principalmente como cereales para el desayuno y en productos
de panadería. Durante los últimos años se han desarrollado
nuevos tipos de productos de avena. Los ejemplos son
productos no lácteos, tales como la leche de avena, bebidas a
base de avena, cremas, postres y productos fermentados tales
15 como productos semejantes al yogurt.

El grano de avena contiene fitoquímicos que pueden
clasificarse como antioxidantes. Los antioxidantes son
sustancias que cuando se encuentran presentes en bajas
concentraciones comparadas con las de un sustrato oxidable,
20 retardan o inhiben la oxidación de ese sustrato. El alto
consumo de alimentos ricos en antioxidantes se ha asociado
con la disminución del riesgo de enfermedades crónicas como
enfermedades cardiovasculares y cáncer en estudios
epidemiológicos. Los antioxidantes de la avena consisten
25 principalmente de compuestos fenólicos, así como tocoferoles

y tocotrienoles. Los métodos de procesamiento de los alimentos a base de avena afectan el contenido de antioxidantes en los productos finales a base de avena. Algunos de los compuestos antioxidantes son por ejemplo
5 sensibles a los tratamientos térmicos.

Es muy sabido, que las bayas tienen en general, un contenido más alto de compuestos antioxidantes que otros elementos alimenticios, tales como los vegetales, frutas o cereales. El espectro de los antioxidantes encontrados en
10 las bayas también es amplio, incluyendo por ejemplo compuestos fenólicos tales como flavonoides, ácidos fenólicos y taninos. Los principales sub-grupos de flavonoides en las bayas son las antocianinas, proantocianidinas, flavonoles y catequinas. Los perfiles de flavonoides varían entre
15 diferentes bayas. Una alta proporción de antocianinas se encuentra, e.g. en las moras azules y bayas negras. Una alta proporción de elagitaninos se encuentra, e.g. en las frambuesas, fresas y frambuesas amarillas. Una alta proporción de flavonoles (tales como quercetina, caemferol,
20 miricetina) se encuentran e.g. en las bayas de espino amarillo, arándanos, arándanos rojos, grosellas negras y grosellas espinosas. Hasta ahora los efectos de los flavonoides sobre la salud se han demostrado *in vitro* y en estudios en animales. En estudios en humanos, los resultados
25 han sido más variables. Sin embargo, para los flavonoles,

especialmente la quercetina, existen suficientes estudios de intervención para indicar los efectos sobre la salud entre humanos *in vivo*. La quercetina influye sobre algunos marcadores de carcinogénesis y tiene efectos en los biomarcadores de antioxidantes en plasma *in vivo* (Williamson y Manach, Am. J. Clin. Nutr., 2005;81:243S-255S).

La EP0231729 describe un proceso para elaborar productos a partir de harina integral de granos de cereal que contienen almidón, tal como trigo, cebada, avena, centeno, arroz, maíz o sorgo. Los carbohidratos se degradan enzimáticamente mientras que los componentes restantes de la harina integral se mantienen sustancialmente intactos. El producto preparado por el proceso tiene un contenido bastante alto de materia seca (33-46%) y se menciona que el producto puede utilizarse como bebidas en polvo o en bebidas nutricionales.

La EP0731646 describe una suspensión de cereal homogénea y estable preparada de avenas por un proceso específico. La suspensión puede utilizarse como base o aditivo para helados, atole, yogurt y malteadas, o como bebida saludable o comida rápida entre alimentos.

La EP0883349 describe un proceso enzimático para formar un jarabe funcional de material de avena o cebada cerosa. Especialmente se describen confecciones congeladas

no lácteas. También se menciona la adición del jarabe en bebidas con carga de carbohidratos.

La W000/30457 describe un proceso enzimático para producir una base líquida de avena. La base se puede agregar
5 a otros ingredientes para bebidas, tales como jugo de naranja o leche o puede secarse en un polvo.

Ambas, tanto la EP1123012 como la EP1383396 describen una suspensión de cereal modificada con enzimas, preparada por un proceso específico a partir de granos, e.g.,
10 avena, cebada, arroz, trigo, maíz, centeno, sorgo, triticale y mijo perla. Las suspensiones de cereal pueden utilizarse como sustituto de leche como base o aditivo en la elaboración de helado, atole, yogurt, malteadas y comida rápida.

La W003/075683 describe un almidón modificado que
15 contiene líquido y un método de preparación de éste. El líquido que contiene almidón modificado puede utilizarse como tal o como un ingrediente para alimentos y para diferentes productos y composiciones alimenticios.

La US6168821 describe una bebida que contiene fibra
20 natural, glucanos y un agente saborizante. Los glucanos se derivan sustancialmente de un grano natural. El agente saborizante es preferentemente vainilla.

La EP1816920 describe una composición comestible de fibra en forma líquida que contiene fibras dietéticas
25 solubles y no solubles.

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La WO2004/093571 describe e.g., bebidas a base de leche de cereal en las cuales el sabor amargo, ácido y/o astringente se ha enmascarado con éster de esteroide de origen vegetal y/o éster de estanol de origen vegetal.

5 Existen algunos productos para beber a base de avena que contienen bayas o jugos de bayas en el mercado e.g., bebidas que contienen jugo de fresa, frambuesa o zarzamora. Los jugos de bayas de sabor intenso, tales como el jugo de bayas de espinillo amarillo, se han agregados sólo en
10 pequeñas cantidades (0.3-1.3%) en bebidas a base de avena. La técnica anterior no describe las bebidas a base de avena que tienen jugos de bayas de sabor intenso en concentraciones más altas.

Con frecuencia, las bayas de sabor intenso, tal
15 como las bayas de espinillo amarillo, arándano rojo, arándano y grosella negra también tienen el contenido más alto de un cierto compuesto antioxidante, la quercetina, entre las bayas.

Sería benéfico ampliar el rango de bayas utilizadas
20 en bebidas a base de avena por varias razones de salud y nutricionales. También, el incremento de la concentración del jugo de baya en las bebidas mejorará estos efectos. También sería benéfico tener bebidas a base de avena que tuvieran sabor mejorado y/o estabilidad mejorada así como
25 mayor contenido de diferentes antioxidantes en comparación

con el contenido encontrado en las bebidas procesadas a base de avena en la técnica anterior. También sería una ventaja utilizar antioxidantes naturales y evitar agregar antioxidantes como aditivos artificiales.

- 5 La presente invención proporciona productos que cumplen con uno o más de estos requerimientos.

SUMARIO DE LA INVENCION

- La presente invención proporciona bebidas no lácteas a base de avena con estabilidad mejorada. La
10 presente invención se dirige a bebidas a base de avena que contienen jugos de bayas. La presente invención se dirige a bebidas de bayas a base de avena, en donde la baya y la concentración de baya se han elegido para afectar favorablemente la estabilidad de la bebida.

- 15 La invención se dirige más preferentemente al uso de bayas que tienen un alto contenido de ciertos compuestos antioxidantes, especialmente flavonoles, e.g., quercetina. Los productos de esta invención contienen tanto antioxidantes derivados de la avena como derivados de bayas.

- 20 La invención se dirige preferentemente al uso de bayas de sabor intenso en las bebidas de bayas a base de avena.

- Preferentemente la invención proporciona bebidas de bayas a base de avena con buena estabilidad, sabor suave y
25 que contienen bayas de sabor intenso. Más preferentemente la

invención provee bebidas de bayas a base de avena con buena estabilidad, sabor suave, un alto contenido de quercetina y conteniendo bayas de sabor intenso. La característica antioxidante de la bebida es mayor que la característica
5 antioxidante de las leches de avena o las suspensiones de avena.

La invención se dirige además a un método para mejorar la estabilidad de una bebida a base de avena.

Los rasgos característicos de la presente invención
10 se establecen en las reivindicaciones.

DESCRIPCIÓN DETALLADA DE LA INVENCION

La presente invención proporciona una bebida de bayas a base de avena con estabilidad mejorada. Sorprendentemente se encontró que ciertos jugos de baya
15 afectan favorablemente la estructura y estabilidad de las bebidas de bayas a base de avena cuando se utilizan en concentraciones suficientes. Otros ciertos jugos de baya no tienen este efecto favorable o aún tienen un efecto opuesto, de deterioro sobre la estabilidad de las bebidas a base de
20 avena. Por estabilidad mejorada, se entiende en la presente, que las partículas de la bebida se separan a un grado menor durante cierto período de tiempo, en comparación con la bebida correspondiente que contiene agua en lugar de ciertos jugos de bayas.

Las bayas utilizadas en las bebidas de bayas a base de avena de la presente invención preferentemente tienen un sabor intenso. Se encontró que la suspensión de avena suaviza el sabor, especialmente de las bayas de sabor intenso (i.e. jugos de bayas), las cuales de otra forma saben intensamente amargas. Por otra parte, también se notó que el sabor intenso de la avena o el resabio de la avena de las bebidas de avena, aún cuando las bebidas contienen cantidades bastante altas de material a base de avena, se suaviza (neutraliza) por los jugos de baya. Un objetivo de la invención es los productos de sabor suave (grato) que pueden prepararse aún cuando se utilizan concentraciones más altas de jugos de baya de sabor intenso que en la técnica anterior.

Preferentemente, la invención también proporciona bebidas a base de avena con mejor característica antioxidante (actividad depuradora de radicales). La característica antioxidante mejorada se logra con ingredientes naturales, bayas, al combinar antioxidantes derivados de la avena y antioxidantes derivados de las bayas en la bebida. Preferentemente se utilizan las bayas que contienen más de 35 mg/kg (35 ppm) de quercetina pesada en fresco. Por lo tanto, las bebidas son saludables, y además su vida en anaquel se mejora debido a la característica antioxidante mejorada. La característica antioxidante de la bebida se duplica al menos, en comparación con una bebida con un contenido

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correspondiente de material a base de avena sin ningún jugo de baya. Preferentemente la bebida de acuerdo con la invención contiene al menos 0.5 ppm de quercetina.

Preferentemente la invención proporciona bebidas a
5 base de avena con buena estabilidad y característica antioxidante mejorada. También el sabor de las bebidas es suave y bien aceptado por los consumidores. La estabilidad mejorada, el sabor suave y la característica antioxidante mejorada se obtienen al combinar la avena con ciertos jugos
10 de baya. Las bebidas de bayas a base de avena comprenden antioxidantes tanto del material de avena natural como de las bayas que se han utilizado. La estabilidad mejorada comparada con la bebida a base de avena sola se logra al utilizar ciertas bayas. Se ha encontrado que ciertos jugos de baya
15 cuando se utilizan en concentraciones suficientes mejoran la estabilidad y estructura de las bebidas a base de avena, mientras que algunos otros jugos de baya, tales como el jugo de mora azul y el jugo de fresa, no tienen este efecto.

La invención se refiere a una bebida que comprende
20 jugo de baya, agua y material a base de avena, cuyo material a base de avena opcionalmente contiene almidón, en donde

- la cantidad de material a base de avena es de 3 a 30% por peso de la bebida,
- la cantidad de jugo de baya es de 5 a 40% por peso de la
25 bebida,

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- el jugo de baya se selecciona del grupo que consiste de jugo de bayas de espinillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja, jugo de grosella negra, jugo de grosella espinosa, jugo de mirtilo, jugo de baya negra, jugo de aronia y mezclas de estos, y
- la cantidad de almidón es de 0 a 25% por peso de la bebida.

El "material a base de avena" comprende material de avena con una cantidad reducida de almidón comparada con las hojuelas de avena convencionales y la harina de avena. El contenido de almidón es de 0 a 40% por peso seco, preferentemente de 0 a 30% por peso seco y más preferentemente de 0 a 20% por peso seco del material a base de avena. Típicamente, el material a base de avena comprende almidón de 0.01 a 40% por peso seco, más preferentemente de 0.05 a 30% por peso seco y más preferentemente de 0.1 a 20% por peso seco del material a base de avena. La cantidad de almidón puede medirse por el método oficial AOAC 996.11. Si la cantidad de almidón es demasiado alta, la estabilidad de la bebida sufrirá o el producto será hasta no bebible debido a la formación de gel.

La bebida de bayas a base de avena, de acuerdo con la presente invención, preferentemente comprende una suspensión de avena y jugo de baya.

La bebida de acuerdo con la invención preferentemente comprende una suspensión de avena la cual comprende el material a base de avena y al menos parte del agua, e.g. al menos 50% por peso del agua, preferentemente
5 toda el agua. La bebida se prepara después al agregar el material a base de avena y al menos parte del agua, e.g., al menos 50% por peso del agua, preferentemente toda el agua, en la forma de una suspensión de avena. Convenientemente, la bebida comprende la suspensión de avena en una cantidad de 60
10 a 95% por peso, preferentemente de 65 a 94.5%, más preferentemente de 70 a 94%, aún más preferentemente de 75 a 93.5%, más preferentemente de 80 a 93% por peso de la bebida de bayas a base de avena. Especialmente cuando se utilizan jugos de baya de sabor intenso preferentemente puede
15 utilizarse una cantidad aún más alta de suspensión de avena, e.g de 85 a 95% por peso de la bebida de bayas a base de avena.

Como se utilizó aquí "suspensión de avena" se refiere a una suspensión que comprende material a base de
20 avena, y agua. Los métodos apropiados de preparación para la suspensión de avena se describen, e.g. en WO03/075683, EP0731646, EP1123012 y EP1816920.

Preferentemente, la suspensión de avena se ha preparado por un método(s) que al menos parcialmente degrada
25 el almidón de avena. Preferentemente, la suspensión de avena

se ha preparado utilizando enzimas que al menos parcialmente degradan el almidón de avena. Las enzimas apropiadas incluyen, pero no están restringidas a, varias amilasas, tales como las alfa- y beta-amilasas, amiloglucosidasas y pululanases. Preferentemente, al menos 20%, más preferentemente al menos 50% y aún más preferentemente al menos 80% del almidón de avena se ha degradado, en comparación con la cantidad de almidón en las hojuelas de avena convencionales. Más preferentemente, el almidón de avena ha sido totalmente degradado. Las suspensiones de avena preferidas contienen productos degradantes del almidón, tales como azúcares (e.g., glucosa, maltosa) y maltodextrina. También algo de almidón no degradado puede estar presente. Las suspensiones de avena preferidas contienen también otros componentes derivados de la avena, tales como proteínas, grasa y fibra. Además del almidón, también otros componentes derivados de la avena, tales como proteína o componentes de fibra, pueden ser parcialmente o totalmente degradados por medios enzimáticos o por otros medios.

Preferentemente el componente de fibra de la suspensión de avena, tal como el beta-glucano, ha sido al menos parcialmente degradado en el proceso de preparación de la suspensión de avena. Más preferentemente, el componente de fibra de la suspensión de avena, tal como el beta-glucano, ha sido totalmente degradado. Sin embargo, también las

suspensiones de avena que contienen beta-glucano pueden utilizarse en la presente invención.

El material a base de avena en la forma de un polvo de avena hecho, e.g., por el secado de una suspensión de
5 avena (ver e.g., W000/30457) también puede utilizarse al suspender el polvo en agua, en jugo de baya o en su mezcla.

Como se utilizó aquí, por el término "jugo de baya" se entiende el material que puede obtenerse de bayas e.g., por presión, extracción por vapor o por otros medios
10 utilizados en la producción de jugo. Las bayas son frutas pequeñas con múltiples semillas que son llamadas bayas en el lenguaje común y que son apropiadas para el consumo humano. Con frecuencia, las bayas son jugosas y tienen color brillante. Los jugos de frutas, tales como las frutas
15 cítricas, manzanas, plátanos, piñas, cerezas y otras que, en el lenguaje común se entienden como frutas, no están incluidas en el término "jugo de baya" aquí. Las bayas contienen, en general, más característica antioxidante que las frutas. El jugo de baya puede originarse de una clase de
20 bayas o ser una mezcla de jugos de diferentes bayas. De manera convencional, la torta de prensa que incluye semillas y hollejos/cáscaras se retira de los jugos de bayas. El jugo de baya se puede concentrar al retirarle el agua y si se requiere, el concentrado puede diluirse de nuevo. En esta
25 especificación, el jugo de baya significa que es el 100% de

jugo de bayas, i.e., la concentración natural del jugo obtenida de las bayas.

Las bayas apropiadas que se utilizan como materia prima del jugo(s) de bayas en esta invención son bayas de
5 espino amarillo, arándanos rojos, arándanos, grosellas rojas, grosellas negras, grosellas espinosas, mirtilos, bayas negras y aronias. Las bayas preferidas comprenden bayas de espino amarillo, arándanos rojos, arándanos, grosellas rojas, grosellas negras y grosellas espinosas. Las bayas más
10 preferidas son bayas de espino amarillo, arándanos rojos, arándanos, grosellas rojas y grosellas negras. Las bayas aún más preferidas son bayas de espino amarillo, arándanos rojos, arándanos y grosellas rojas. Las bayas todavía más preferidas son bayas de espino amarillo, arándanos rojos y
15 arándanos. Las bayas todavía más preferidas son bayas de espino amarillo y arándanos rojos. Las bayas más preferidas son bayas de espino amarillo.

A este respecto, como bayas de sabor intenso se pueden mencionar las siguientes: bayas de espino amarillo,
20 arándanos rojos, arándanos, grosellas rojas y grosellas negras. Más preferidas son las bayas de espino amarillo y arándanos rojos y las bayas más preferidas son las bayas de espino amarillo.

La bebida de bayas a base de avena se puede
25 preparar por métodos convencionales de preparación. Las

etapas de preparación también pueden incluir etapa(s) de homogenización y etapa(s) de tratamiento térmico. Pueden utilizarse los tratamientos térmicos comúnmente conocidos en la técnica, tales como la pasteurización o el tratamiento-
5 UHT. Las etapas de preparación también pueden incluir la fermentación, pero preferentemente, las bebidas de bayas a base de avena de acuerdo con la invención no son fermentadas.

La bebida de bayas a base de avena comprende al menos 5% por peso y a lo más 40% por peso, preferentemente a
10 lo más 30% y más preferentemente a lo más 20% por peso del jugo de baya o una mezcla de jugos de baya elegidos de las bayas apropiadas para uso en la presente invención. Típicamente, la bebida de bayas a base de avena comprende de 5 a 40%, preferentemente de 5.5 a 35%, más preferentemente de
15 6 a 30%, aún más preferentemente de 6.5 a 25% y más preferentemente de 7 a 20% por peso de jugo de baya o una mezcla de jugos de baya elegidos de las bayas apropiadas para uso en la presente invención. La cantidad más preferida de jugos de baya de sabor intenso, especialmente el jugo de baya
20 de espino amarillo y jugo de arándano rojo es de 5 a 15% por peso de la bebida. Otros jugos de baya también pueden agregarse adicionalmente, pero preferentemente sólo se utilizan las bayas elegidas en esta invención.

El contenido de materia seca de avena (material a
25 base de avena) de la bebida de bayas a base de avena es 3-

30%, preferentemente 4-25%, más preferentemente 5-20%, más preferentemente 5-15% por peso.

La cantidad de almidón en la bebida de acuerdo con la invención es de 0 a 2.5% por peso, preferentemente de 0 a 2.0% por peso, más preferentemente de 0 a 1.5% por peso y más preferentemente de 0 a 1.0% por peso. La cantidad de almidón puede medirse por el método oficial AOAC 996.11. Típicamente, la cantidad de almidón en la bebida es de 0.01 a 2.5% por peso, preferentemente de 0.03 a 2.0% por peso, más preferentemente de 0.05 a 1.5% por peso y más preferentemente de 0.1 a 1.0% por peso. Preferentemente el almidón se deriva sustancialmente del material a base de avena.

Preferentemente la proporción del peso de materia seca de avena (material a base de avena) al 100% de jugo de baya en la bebida de bayas a base de avena es de 1:0.3 a 1:5, más preferentemente de 1:0.4 a 1:3, aún más preferentemente de 1:0.5 a 1:2, y más preferentemente de 1:0.7 a 1:1. Especialmente, cuando el jugo está hecho de bayas de sabor intenso la proporción de materia seca de avena (material a base de avena) al 100% de jugo de baya es preferentemente de 1:0.3 a 1:3, más preferentemente de 1:0.3 a 1:2 y más preferentemente de 1:0.3 a 1:1.2. La misma proporción de jugos de bayas de sabor intenso puede ser aún más preferentemente 1:>0.4 y 1:>0.5.

Una modalidad especialmente preferida de la presente invención es una bebida de bayas a base de avena que contiene jugo de baya de espino amarillo.

La presente invención se dirige a bebidas a base de
5 avena que tienen una viscosidad de a lo más 700 mPas, preferentemente a lo más 500 mPas, más preferentemente a lo más 300 mPas, aún más preferentemente a lo más 200 mPas y más preferentemente a lo más 100 mPas. La medición se efectuó a
20° C utilizando un viscosímetro Brookfield Modelo LVDV II
10 (torno 2, 100 rpm).

Las bebidas de bayas a base de avena de la presente invención también pueden comprender ingredientes opcionales tales como agentes estabilizadores, emulsificantes, agentes colorantes y agentes saborizantes. Las bebidas de la
15 presente invención también pueden contener otros componentes nutricionalmente benéficos. Ejemplos de tales componentes nutricionalmente benéficos incluyen esteroides de origen vegetal y/o estanoles de origen vegetal, ácidos grasos n-3 , probióticos, fibra dietética (e.g., β -glucano soluble) y
20 mezclas de éstos. Los esteroides de origen vegetal y/o estanoles de origen vegetal se agregan preferentemente en una forma de éster de esteroide de origen vegetal y/o éster de estanol de origen vegetal. Otros ejemplos de los componentes nutricionales benéficos incluyen componentes benéficos
25 menores, por ejemplo vitaminas y minerales, tales como

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calcio. Algunos de los otros componentes nutricionalmente benéficos, especialmente éster de esteroles de origen vegetal y/o éster de estanol de origen vegetal y ácidos grasos ricos en n-3 (e.g. que contienen al menos 5%, preferentemente al menos 10%, más preferentemente al menos 15% de ácidos grasos n-3 del contenido de ácido graso del aceite) también mejoran más los efectos favorables de las bayas preferidas en la estabilidad estructural de las bebidas de bayas a base de avena. También pueden agregarse antioxidantes tales como en la forma de extracto de té verde. Las bebidas de bayas a base de avena de la presente invención también pueden comprender otro material de cereal, tal como trigo, arroz o cebada o material a base de soya, tal como leche de soya o proteína de soya. También pueden incluirse jugo(s) de frutas y/o vegetales en las bebidas de acuerdo con la invención. Las bebidas de acuerdo con la invención pueden contener también jugo(s) de baya de una o más bayas diferentes a aquellas mencionadas como apropiadas para esta invención.

En esta especificación los esteroides de origen vegetal incluyen 4-desmetil esteroides, 4-monometil esteroides y 4,4-dimetil esteroides (alcoholes tripterpenicos) y los estanoles de origen vegetal incluyen 4-desmetil estanoles, 4-monometil estanoles y 4,4dimetil estanoles. Los 4-demetil esteroides típicos son sitoesterol, campesterol, estigmasterol, brassicasterol, 22-dehidrobrassicasterol y $\Delta 5$ -

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avenaesterol. Los 4,4-dimetil esteroides típicos son cicloartenol, 24-metilencicloartenol y ciclobranol. Los estanoles típicos son sitoestanol, campestanol y sus 24-epímeros, cicloartenol y formas saturadas obtenidas por saturación de, e.g. alcoholes triterpénicos (cicloartenol, 24-metilenecicloartenol y ciclobranol). Los términos "esterol de origen vegetal" y "estanol de origen vegetal" incluyen todas las posibles mezclas de los esteroides y/o estanoles nombrados, así como cualquier esteroide o estanol individual. Preferentemente el esteroide de origen vegetal y/o estanol de origen vegetal son desmetil esteroides y/o desmetil estanoles.

Como se utilizó aquí, el término "éster de esteroide de origen vegetal" o "éster de estanol de origen vegetal" se refiere a esteroides de origen vegetal o estanoles de origen vegetal que tienen al menos 60%, preferentemente al menos 85%, más preferentemente al menos 95% de los esteroides de origen vegetal y/o estanoles de origen vegetal en forma esterificados. En esta invención, los esteroides de origen vegetal y/o estanoles de origen vegetal son esterificados con un ácido orgánico. Ejemplos de ácidos orgánicos apropiados son ácidos grasos (2-24 átomos de carbono, saturados, monoinsaturados o poliinsaturados, incluyendo también ácidos grasos especiales, tales como ácidos grasos conjugados, e.g., CLA y EPA y DHA), ácidos hidroxibenzoicos, ácidos

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hidroxycinámicos (ácidos ferrúlicos y cumáricos), ácidos di-
y tricarboxílicos y ácidos hidroxí y cualquier mezcla de
dichos ácidos. Preferentemente los esteroides de origen
vegetal y/o estanoles de origen vegetal son esterificados con
5 ácidos grasos, más preferentemente con ácidos grasos a base
de aceite vegetal.

La cantidad preferida de éster de esteroide de origen
vegetal y/o éster de estanol de origen vegetal es 0.1 - 10%,
más preferentemente 0.3 - 9%, aún más preferentemente 0.5 -
10 8%, más preferentemente 1-7% por peso de la bebida.

Ejemplos de aceites ricos en ácidos grasos n-3
incluyen aceites de pescado y aceites vegetales tales como
aceite de camelina, aceite de linaza o aceite de colza. Los
aceites preferidos son de origen vegetal, haciendo así la
15 bebida de bayas a base de avena apropiada también para
vegetarianos. La cantidad preferida de aceite que tiene un
contenido de ácido graso de al menos 5%, preferentemente al
menos 10%, más preferentemente al menos 15% de ácidos grasos
n-3 es 0.1 - 10%, más preferentemente 0.5 - 9%, aún más
20 preferentemente 0.8 - 8%, más preferentemente 1 - 7% por peso
de la bebida.

La bebida de acuerdo con la invención
preferentemente no contiene agentes estabilizantes. Los
jugos de baya agregados como se seleccionaron en esta
25 invención son lo suficientemente efectivos para estabilizar

la bebida cuando se agregados en cantidades apropiadas. Sin embargo, es posible incluir también agentes estabilizantes convencionales, e.g. pectina, gomas y almidón modificado, en la bebida a fin de estabilizarla más. El agente
5 estabilizador se utiliza después en pequeñas cantidades, e.g. la cantidad total de agentes estabilizadores es a lo más 1.0%, más preferentemente a lo más 0.7%, más preferentemente a lo más 0.5% y más preferentemente a lo más 0.3% por peso de la bebida.

10 La bebida de acuerdo con la invención preferentemente no contiene agentes saborizantes. Los sabores del jugo de baya y del material a base de avena se equilibran apropiadamente uno al otro cuando se agregan en cantidades de acuerdo con la invención, de manera que no es
15 necesario agregar ningún agente saborizante, tal como vainilla y/o almendra. Sin embargo, pueden agregarse agentes saborizantes, e.g. cuando se quiere algún otro aroma en la bebida.

Preferentemente, las bebidas no contienen leche o
20 gluten y, por lo tanto, son apropiadas para las personas intolerantes a la lactosa o personas que tienen enfermedad celíaca.

La invención también se dirige a un método para mejorar la estabilidad de una bebida que comprende material a

base de avena, el cual contiene de 0 a 40% por peso seco de almidón, el cual comprende

- proporcionar un jugo de baya seleccionado del grupo que consiste de jugo de baya de espinillo amarillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja, jugo de grosella negra, jugo de grosella espinosa, jugo de mirtillo, jugo de baya negra, jugo de aronia y mezclas de éstos y
- mezclar el material a base de avena, agua y el jugo de baya para obtener una bebida que comprende el jugo de baya en una cantidad de 5 a 40% por peso, el material a base de avena en una cantidad de 3 a 30% por peso y el almidón en una cantidad de 0 a 2.5% por peso.

Preferentemente, el material a base de avena y al menos parte del agua es agregado en la forma de una suspensión de avena y más preferentemente la suspensión de avena es agregada en una cantidad de 60 a 95% por peso de la bebida.

El método es preferentemente aplicable para preparar todas las bebidas de acuerdo con esta invención.

Ejemplo 1

Estabilidad de las bebidas: bebidas de bayas de espinillo amarillo a base de avena

Bebida de baya de espinillo amarillo a base de avena con contenido variable de jugo de baya de espinillo amarillo.

La estabilidad de las bebidas de bayas a base de
avena fue probada utilizando bebidas de bayas de espino
amarillo a base de avena, con contenido variable de jugo de
baya de espino amarillo. Las bebidas se prepararon de
5 acuerdo con las recetas de abajo.

Las muestras de bebida se prepararon de suspensión
de avena y jugo de baya de espino amarillo. El jugo de baya
de espino amarillo no contenía semillas o las cáscaras de las
bayas. El jugo de baya de espino amarillo fue 100% jugo.

10 La suspensión de avena se preparó de hojuelas de
avena y agua según se describe en el ejemplo 2WO 03/075683.
El contenido de la materia seca de avena de la suspensión de
avena fue 9.4% por peso.

La suspensión de avena, agua y jugo de baya de
15 espino amarillo se mezclaron (composiciones dadas en la Tabla
1) y calentaron a 60° C. La mezcla fue homogenizada a 60° C
en dos fases utilizando 150/50 presión de barra. El aceite
de camelina (60° C) se agregó a la bebida 6 y éster de
estanol de origen vegetal (Benecol® Classic) (60° C) se
20 agregó a la bebida 7 antes de la homogenización. Se permitió
que las bebidas se enfriaran a temperatura ambiente, se
mezclaron completamente y se vació en cilindros de medición.
Se dejó que los cilindros de medición permanecieran a 4° C
por 7 días. La estabilidad de las bebidas se comparó con una
25 bebida de avena de referencia que contiene la misma cantidad

de material a base de avena (DM, materia seca), pero no jugo de baya, aceite o éster de estanol de origen vegetal. La estabilidad se midió como % de material separado en la bebida de prueba del material separado en la bebida de avena de
5 referencia.

El contenido de materia seca de avena (material a base de avena) de las bebidas fue de 7.7% por peso. El contenido de jugo de baya de las bebidas fue 1.3, 4, 5, 7 o 15% por peso. Una de las bebidas (bebida 6) también contenía
10 aceite de camelina (1.5%) y una de las bebidas (bebida 7) éster de estanol de origen vegetal (1.5%).

En la bebida de avena de referencia el volumen del material separado fue de 9% después de 3 días, 12% después de 4 días y 21% después de 7 días del volumen total de la bebida
15 de avena de referencia. En la Tabla 2, el volumen del material separado en las bebidas de prueba se compara con el volumen del material separado en la bebida de referencia.

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Tabla 1. Recetas de las bebidas (g/100g)

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	Bebida 1	Bebida 2	Bebida 3	Bebida 4	Bebida 5	Bebida 6	Bebida 7	Bebida de avena de referencia
Jugo de baya de espino amarillo	1.3	4	5	7	15	7	7	
Material a base de avena (DM)	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Agua	91.0	88.3	87.3	85.3	77.3	83.8	83.8	92.3
Aceite de camelina						1.5		
Éster de estanol de origen vegetal							1.5	

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15 **Tabla 2. Resultados de estabilidad**

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Bebidas de avena - baya de espino amarillo	Diferencia con la bebida de referencia (%), 3d	Diferencia con la bebida de referencia (%), 4d	Diferencia con la bebida de referencia (%), 7 d
Bebida 1	0,0	0,0	+4,8
Bebida 2	0,0	0,0	+4,8
Bebida 3	-11.1	-8.3	-4.8
Bebida 4	-11,1	-16,7	-4,8
Bebida 5	-22,2	-16,7	-14,3
Bebida 6	-33,3	-33,3	-14,3
Bebida 7	-44,4	-33,3	-19,0

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Después de 3 días, las bebidas que tenían las concentraciones más bajas de jugo de baya de espino amarillo (bebidas 1 y 2) se habían separado en la misma medida que la bebida de referencia (diferencia con la bebida de referencia 0%). Las bebidas 3 y 4, conteniendo 5% o 7% de jugo de baya de espino amarillo, respectivamente, tuvieron mejor estabilidad que la bebida de referencia (11.1% menos material separado que en la bebida de referencia). La estabilidad fue mejorada todavía más con un contenido más alto de jugo de baya de espino amarillo (bebida 5). La estabilidad fue aún más mejorada por la agregación de aceite de camelina (bebida 6; 33.3% menos material separado que en la bebida de referencia) y aún más con éster de estanol de origen vegetal (bebida 7; 44.4% menos material separado que en la bebida de referencia).

Después de 4 días, las bebidas que tenían las concentraciones más bajas de jugo de baya de espino amarillo (bebidas 1 y 2) tuvieron tanta separación como en la bebida de referencia. Las bebidas que tienen una concentración más alta de jugo de baya de espino amarillo fueron más estables que la bebida de referencia. Las bebidas con aceite de camelina o éster de estanol de origen vegetal tuvieron la mejor estabilidad también después de 4 días.

Después de un almacenamiento prolongado (7 días), las diferencias entre las bebidas de prueba y la bebida de

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avena de referencia fueron más pequeñas en los puntos de tiempo más tempranos. Sin embargo, las bebidas que tiene suficiente cantidad de jugo de baya de espino amarillo o jugo de baya de espino amarillo junto con aceite de camelina o
5 éster de estanol de origen vegetal tuvieron aún mejor estabilidad y contenían menos material separado que la bebida de avena de referencia.

Se encontró que el jugo de baya de espino amarillo afectó favorablemente la estructura y estabilidad de las
10 bebidas de bayas a base de avena cuando se utilizó al menos 5% del jugo de baya de espino amarillo, comparado con la bebida de avena de referencia de la misma concentración de avena. También se encontró que agregar aceite de camelina o éster de estanol de origen vegetal mejoró más el efecto
15 favorable del jugo de baya de espino amarillo en la estabilidad de las bebidas de bayas a base de avena.

Ejemplo 2

Estabilidad de las bebidas: bebidas de arándano rojo a base de avena

20 La estabilidad de las bebidas de arándano rojo a base de avena se comparó con la estabilidad de la bebida de avena de referencia con un procedimiento de prueba similar al del ejemplo 1, excepto que la estabilidad de las bebidas se midió después de 4 días de almacenamiento.

Las bebidas de arándano rojo a base de avena se prepararon de acuerdo con las recetas en la Tabla 3. La suspensión de avena se preparó como en el ejemplo 1 y las bebidas se prepararon de la misma manera que las bebidas del ejemplo 1. El contenido de las bebidas fue de 4% y 7%. La misma bebida de avena de referencia se utilizó como en el ejemplo 1.

Tabla 3. Recetas de las bebidas y resultados de estabilidad

10	Recetas (g/100g)	Bebida L1	Bebida L2	Bebida de avena de referencia
	Jugo de arándano rojo	4	7	
	Material a base de avena (DM)	7.7	7.7	7.7
	Agua	88.3	85.3	92.3
	Resultados de estabilidad			
15	Diferencia con la bebida de referencia (%), 4 d	+16.7	-25.0	

Se encontró que el jugo de arándano rojo tiene efecto favorable en la estabilidad de las bebidas de bayas a base de avena cuando se utilizaron en suficientes concentraciones. La concentración de 4% de arándano rojo tuvo un efecto adverso. Cuando se incrementó la concentración de arándano rojo, la estabilidad de las bebidas de arándano rojo a base de avena mejoró y fue mejor que la estabilidad de la bebida de avena de referencia.

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Ejemplo 3

Estabilidad de la bebida: bebida de arándano a base de avena

La estabilidad de una bebida de arándano a base de avena se comparó con la estabilidad de la bebida de avena de referencia con un procedimiento de prueba similar al del ejemplo 1, excepto que la estabilidad de la bebida se midió después de 4 días de almacenamiento.

La bebida de arándano a base de avena se preparó de acuerdo con la receta de abajo (Tabla 4). La suspensión de avena se preparó como en el ejemplo 1 y la bebida de arándano de avena se preparó de la misma manera que las bebidas del ejemplo 1. El contenido de arándano de las bebidas fue del 7%. La misma bebida de avena de referencia se utilizó como en el ejemplo 1.

Tabla 4. Recetas de las bebidas y resultados de estabilidad

Recetas (g/100g)	Bebida C1	Bebida de avena de referencia
Jugo de arándano	7	
Material a base de avena (DM)	7.7	7.7
Agua	85.3	92.3
Resultados de estabilidad		
Diferencia con la bebida de referencia (%)m 4 d	-16.7	

También se encontró que la bebida de arándano tiene un efecto favorable en la estabilidad de las bebidas de bayas a base de avena comparada con la bebida de avena de referencia.

5 **Ejemplo 4, ejemplo comparativo**

Estabilidad de la bebida: bebida de mora azul a base de avena

La estabilidad de una bebida de mora azul a base de avena se comparó con la estabilidad de la bebida de avena de referencia con un procedimiento de prueba similar al del
10 ejemplo 1. La estabilidad de la bebida se midió después de 3, 4 y 7 días de almacenamiento.

La bebida de mora azul de avena se preparó de acuerdo con la receta de abajo (Tabla 5). La suspensión de avena se preparó como en el ejemplo 1 y la bebida se preparó
15 de la misma manera que las bebidas del ejemplo 1. El contenido de mora azul de la bebida fue de 7%. La misma bebida de avena de referencia se utilizó como en el ejemplo 1.

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Tabla 5. Recetas de las bebidas y resultados de estabilidad

	Recetas (g/100g)	Bebida B1	Bebida de avena de referencia
	Jugo de mora azul	7	
	Material a base de avena (DM)	7.7	7.7
5	Agua	85.3	92.3
	Resultados de estabilidad		
	Diferencia con la bebida de referencia (%), 3d	+87.5	
	Diferencia con la bebida de referencia (%), 4d	+50.0	
10	Diferencia con la bebida de referencia (%), 7 d	+23.8	

Se encontró que el jugo de mora azul tiene un efecto adverso en la estabilidad de la bebida de bayas a base de avena. La concentración de mora azul que se utilizó en la prueba (7%) fue la misma concentración que se había encontrado que funcionaba bien con las otras bayas. La mora azul no tiene un efecto favorable en la estabilidad de la bebida de bayas a base de avena.

Ejemplo 5, ejemplo comparativo

20 Estabilidad de la bebida: bebida de fresa a base de avena

La estabilidad de la bebida de fresa a base de avena se comparó con la estabilidad de la bebida de avena de referencia, con un procedimiento de prueba similar al del ejemplo 1, excepto que la estabilidad de la bebida se midió después de 4 días de almacenamiento.

La bebida de fresa a base de avena se preparó de acuerdo con la receta de abajo (Tabla 6). La suspensión de avena se preparó como en el ejemplo 1 y la bebida de fresa de avena se preparó de la misma manera que las bebidas del ejemplo 1. Se utilizó concentrado de jugo de fresa. El contenido de jugo de fresa de la bebida 100% de fue de 7%. La misma bebida de avena de referencia se utilizó como en el ejemplo 1.

Se encontró que el jugo de fresa no tiene efecto favorable en la estabilidad de la bebida de bayas a base de avena, comparado con la bebida de avena de referencia. La bebida de fresa a base de avena se separó en la misma medida que la bebida de avena de referencia después de 4 días de almacenamiento.

Tabla 6. Recetas de las bebidas y resultados de estabilidad

Recetas (g/100g)	Bebida S1	Bebida de avena de referencia
Jugo de fresa	7	
Material a base de avena (DM)	7.7	7.7
Agua	85.3	92.3
Resultados de estabilidad		
Diferencia con la bebida de referencia (%), 4d	0.0	

Ejemplo 6

Prueba de antioxidación

La característica antioxidante de la bebida de bayas a base de avena se estudió con el método DPPH. El método DPPH mide la reducción de un radical libre estable 2,2-difenil-1-picril-hidrazilo (DPPH*). El DPPH tiene una banda de absorción a 515 nm que desaparece en la reducción por un compuesto antioxidante (J. Sci. Food Agric. 83(14):1403-1411).

La muestra de bebida se preparó de suspensión de avena y jugo de baya de espinillo amarillo. Se utilizaron jugo de baya de espinillo amarillo y la suspensión de avena del ejemplo 1. El contenido de baya de la bebida de prueba fue de 7%. Se utilizó la misma bebida de avena de referencia que en el ejemplo 1.

Tabla 7. Recetas de las bebidas (g/100g)

	Bebida de avena de referencia	Bebida de prueba
Jugo de baya de espinillo amarillo	-	7
Material a base de avena (DM)	7.7	7.7
Agua	92.3	85.3

Las acciones antioxidantes de la bebida de prueba y de la bebida de referencia se compararon con la característica antioxidante de la vitamina C. La

característica antioxidante se midió de manera espectrofotométrica por el siguiente cambio de color del radical DPPH después de 4 minutos de tiempo de reacción. Todas las mediciones se efectuaron utilizando la
5 concentración de 0.25 mg/ml de fenólicos totales. El ácido ascórbico (vitamina C) se utilizó en el compuesto de referencia. La actividad depurativa radical (característica antioxidante) de la vitamina C fue 97.7%. La actividad de la vitamina C se estableció en 100% y las actividades de las
10 muestras se compararon con aquella.

Tabla 8. Resultados de la característica antioxidante

	Característica antioxidante de la bebida comparada con la vitamina C (%)
Vitamina C	100
Bebida de avena de referencia	0.6
Bebida de prueba	1.9

La característica antioxidante de la bebida de avena de referencia se mejoró al remplazar parte del agua con
20 jugo de baya de espinillo.

Ejemplo 7

Análisis sensorial de bebidas de bayas a base de avena comparadas con bebidas de bayas a base de arroz.

El sabor de las bebidas de bayas a base de avena
25 que contienen dos bayas de sabor intenso, arándano rojo o

arándano, se comparó con bebidas a base de arroz que contienen las mismas bayas de sabor intenso.

Las recetas fueron:

5		Bebida de arándano rojo a base de avena	Bebida de arándano rojo a base de arroz	Bebida de arándano a base de avena	Bebida de arándano a base de arroz
	Leche comercial de avena	85	-	85	-
10	Leche comercial de arroz	-	85	-	85
	Jugo de arándano rojo	15	15	-	-
	Jugo de arándano	-	-	15	15

15 Se utilizó leche comercial de avena (GoGreen) y leche de arroz (GoGreen). La leche de arroz contenía 0.4 g más de glucosa y 1.6 g más de maltosa / 100 g que la leche de avena. La leche de arroz también sabía más dulce que la
20 dulzuras en los resultados, se agregó sacarosa a la leche de avena para hacerla tan dulce como la leche de arroz.

La dulzura de los diferentes monosacáridos es diferente. Si la dulzura de la sacarosa establece en el valor 1, la dulzura de la maltosa es de 0.5 y la dulzura de
25 la glucosa es 0.7. Para obtener la misma dulzura que la

bebida comercial de avena y la bebida comercial de arroz, se agregó sacarosa a la bebida comercial de avena. Para compensar la diferencia en el contenido de maltosa (1.6 g), se agregó 0.8 g de sacarosa (0.5×1.6 g). Para compensar la
5 diferencia en el contenido de glucosa (0.4 g), se agregó 0.28 g de sacarosa (0.7×0.4 g). Por lo tanto, se agregó en total 1.08 g de sacarosa a 100 g de leche de avena.

10 Panelistas entrenados evaluaron las bebidas. Se utilizó una prueba en pares, en donde se compararon bebidas de arándano rojo una con otra y las bebidas de arándano unas con otras. A los panelistas se les preguntó cuál de las bebidas tenía un sabor más intenso. 9 de los 10 panelistas calificaron las bebidas de arándano rojo a base de arroz como las de sabor más intenso que las bebidas de arándano rojo a
15 base de avena. Los 10 panelistas calificaron las bebidas de arándano a base de arroz como las que tienen un sabor más intenso que las bebidas de arándano a base de avena.

Las bebidas de bayas a base de avena no tienen sabor tan intenso como las bebidas de bayas a base de arroz, aunque la dulzura de las leches comerciales de avena y arroz
20 que se utilizaron en la preparación de las bebidas fue la misma. Es posible preparar bebidas de sabor suave de la presente invención de las bayas de sabor intenso.

Ejemplo 8

Bebida de baya de espino amarillo a base de avena.

	Suspensión de avena	84.1%	(9.4% peso seco)
5	Jugo de baya de espino amarillo	7.0%	
	Sucrosa	6.0%	
	Aceite de camelina	2.3%	
	Pectina	0.45%	
10	Agente colorante	0.15%	
	Vitamina C		

Se utilizó la suspensión de avena del ejemplo 1. La cantidad de material a base de avena fue 7.9% del peso de la bebida. La cantidad de almidón fue 0.9% de la bebida. La
15 proporción de materia seca derivada de la avena en el 100% de jugo de baya fue 1:0.9 y la estabilidad de la bebida fue buena y el sabor fue agradable.

Ejemplo 9

Bebida de grosella negra a base de avena

20	Suspensión de avena	93.2%
	Jugo de grosella negra	5%
	Aceite de camelina	1.8%

25

La suspensión de avena utilizada en este ejemplo se preparó de hojuelas de avena utilizando alfa amilasa (Fungamyl, Novozymes) y glucoamilasa (Optidex, L-400, Genencor Internacional). Del los azúcares totales de la suspensión de avena, 91% fue glucosa y 3.5% maltosa. La cantidad de material a base de avena fue 11.9% del peso de la bebida. La cantidad de almidón fue 2.1% de la bebida. La proporción de materia seca derivada de la avena en el 100% del jugo de baya fue 1:0.4. La estabilidad de la bebida fue buena y el sabor fue agradable.

Ejemplo 10

Bebida de arándano a base de avena

	Suspensión de avena	87.7%
15	Jugo de arándano	5.0%
	Sucrosa	7.0%
	Almidón modificado	0.3%

Se utilizó la suspensión de avena del ejemplo 1. La cantidad de material a base de avena fue 8.2% del peso de la bebida. La cantidad de almidón fue 1.3% de la bebida. La proporción de materia seca derivada de la avena en el 100% de jugo de baya fue 1:0.6 y la estabilidad de la bebida fue buena y el sabor fue agradable.

Ejemplo 11

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Bebida de arándano rojo-arándano agrio a base de avena con éster de estanol de origen vegetal agregado.

	Suspensión de avena	76.9%
5	Jugo de arándano rojo	8.0%
	Jugo de arándano agrio	5.0%
	Sucrosa	8.5%
	Éster de estanol de origen vegetal	1.6%

10 La suspensión de avena se preparó como se describe en el ejemplo 1WO 03/075683. La cantidad de material a base de avena fue 6.5% del peso de la bebida. La cantidad de almidón fue 0.9% de la bebida. La proporción de materia seca derivada de la avena en el 100% de jugo de baya fue de 1:2 y
15 la estabilidad de la bebida fue buena y el sabor fue agradable.

Ejemplo 12

Bebida de baya de espino amarillo a base de avena

20	Suspensión de avena	87.0%
	Jugo de baya de espino amarillo	5.0%
	Sucrosa	7.0%

25 La suspensión de avena se preparó como se describe en el ejemplo 1WO 03/075683. La cantidad de material a base

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de avena fue 6.7% del peso de la bebida. La cantidad de almidón fue 0.7% de la bebida. La proporción de materia seca derivada de la avena en el 100% de jugo de baya fue de 1:0.7 y la estabilidad de la bebida fue buena y el sabor fue
5 agradable.

Ejemplo 13

Bebida de baya de espino amarillo a base de avena con éster de estanol de origen vegetal agregado

10	Suspensión de avena	70.2%
	Jugo de baya de	12.6%
	espino amarillo	
	Sucrosa	14.0%
	Éster de estanol de	3.0%
15	origen vegetal	
	Color (extracto de	0.2%
	zanahoria)	

La suspensión de avena se preparó como se describe en el ejemplo 1 WO 03/075683, excepto que no ocurrió la
20 separación de la fibra insoluble. La cantidad de material a base de avena fue 11% del peso de la bebida. La cantidad de almidón fue 2.2% de la bebida. La proporción de materia seca derivada de la avena en el 100% de jugo de baya fue de 1:1.1 y la estabilidad de la bebida fue buena y el sabor fue
25 agradable.

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REIVINDICACIONES

1. Una bebida que comprende jugo de baya, agua y material a base de avena, cuyo material a base de avena contiene opcionalmente almidón, en donde

- 5 - la cantidad de material a base de avena es de 3 a 30% por peso,
- la cantidad de jugo de baya es de 5 a 40% por peso,
- el jugo de baya se selecciona del grupo que consiste del
- 10 jugo de baya de espinillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja, jugo de grosella negra, jugo de grosella espinosa, jugo de mirtilo, jugo de baya negra, jugo de aronia y mezclas de estos y
- la cantidad de almidón es de 0 a 2.5% por peso de la
- 15 bebida.

2. La bebida de acuerdo con la reivindicación 1 que comprende una suspensión de avena la cual comprende el material a base de avena y al menos parte de agua.

3. La bebida de acuerdo con la reivindicación 1, 20 en donde el material a base de avena y al menos parte del agua se agrega en la forma de una suspensión de avena.

4. La bebida de acuerdo con la reivindicación 2 o 3 que comprende la suspensión de avena en una cantidad de 60 a 95% por peso.

5. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a la 4, en donde el jugo de baya se selecciona del grupo que consiste de jugo de baya de espino amarillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja, jugo de grosella negra, jugo de grosella espinosa y mezclas de estos, preferentemente se seleccionan de jugo de baya de espino amarillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja, jugo de grosella negra y mezclas de estos, más preferentemente se seleccionan de jugo de baya de espino amarillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja, y mezclas de estos, aún más preferentemente se seleccionan de jugo de baya de espino amarillo, jugo de arándano rojo, jugo de arándano y mezclas de estos, aún más preferentemente se seleccionan de jugo de baya de espino amarillo, jugo de arándano rojo y mezclas de estos y más preferentemente el jugo de baya es jugo de baya de espino amarillo.

6. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a 5, en donde la cantidad de jugo de baya es de 5.5 a 35%, preferentemente de 6 a 30%, más preferentemente 6.5 a 25% y más preferentemente de 7 a 20% por peso de la bebida.

7. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a 6, en donde la cantidad de material a

base de avena es 4-25%, preferentemente 5-20%, más preferentemente 5-15% por peso.

8. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a 7, en donde la proporción de peso de material a base de avena a jugo de baya es de 1:0.3 a 1:5, preferentemente de 1:0.4 a 1:3, más preferentemente de 1:0.5 a 1:2 y más preferentemente de 1:0.7 a 1:1.

9. La bebida de acuerdo con la reivindicación 8, en donde el jugo de baya se selecciona del grupo que consiste de jugo de baya de espinillo amarillo, jugo de arándano rojo, jugo de arándano, jugo de grosella roja y jugo de grosella negra y la proporción de peso de material a base de avena a jugo de baya es de 1:0.3 a 1:2, y preferentemente de 1:0.3 a 1:1.2.

10. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a 9, en donde la bebida tiene una viscosidad de a lo más 700 mPas, preferentemente a lo más 500 mPas, más preferentemente a lo más 300 mPas, aún más preferentemente a lo más 200 mPas y más preferentemente a lo más 100 mPas.

11. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a 10, en donde el material a base de avena comprende almidón de 0 a 40% por peso seco, preferentemente de 0 a 30% por peso seco y, más preferentemente de 0 a 20% por peso seco del material a base de avena.

12. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a 11, en donde la cantidad de almidón en la bebida es de 0 a 2.0% por peso, más preferentemente de 0 a 1.5% por peso y más preferentemente de 0 a 1.0% por peso.

5 13. La bebida de acuerdo con cualquiera de las reivindicaciones 1 a la 12, en donde además comprende esteroides de origen vegetal, estanoles de origen vegetal, ácidos grasos n-3, fibras dietéticas, probióticos, vitaminas, minerales o mezclas de éstos.

10 14. La bebida de acuerdo con la reivindicación 13 que comprende además éster de esteroide de origen vegetal y/o éster de estanol de origen vegetal en una cantidad de 0.1 a 10%, preferentemente de 0.3 a 9%, más preferentemente de 0.5 a 8%, más preferentemente de 1 a 7% por peso de la bebida.

15 15. La bebida de acuerdo con la reivindicación 13 o 14 que comprende además aceite que tiene un contenido de ácido graso de al menos 5% de ácidos grasos n-3 en una cantidad de 0.1 a 10%, preferentemente de 0.5 a 9%, más preferentemente de 0.8 a 8%, más preferentemente de 1 a 7%
20 por peso de la bebida.

16. Un método para mejorar la estabilidad de una bebida que comprende material a base de avena, el cual contiene de 0 a 40% por peso seco de almidón, el método comprende proporcionar un jugo de baya seleccionado del grupo
25 que consiste de jugo de baya de espinillo amarillo, jugo de

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arándano rojo, jugo de arándano, jugo de grosella roja, jugo de grosella negra, jugo de grosella espinosa, jugo de mirtilo, jugo de baya negra, jugo de aronia y mezclas de éstos, mezclando el material a base de avena, agua y el jugo
5 de baya para obtener una bebida que comprende el jugo de baya en una cantidad de 5 a 40% por peso, el material a base de avena en una cantidad de 3 a 30% por peso y el almidón en una cantidad de 0 a 2.5% por peso.

17. El método de acuerdo con la reivindicación 16,
10 en donde el material a base de avena y al menos parte del agua se agrega en la forma de una suspensión de avena.

18. El método de acuerdo con la reivindicación 17, en donde la suspensión de avena se agrega en una cantidad de 60 a 95% por peso de la bebida.

///

RESUMEN

La invención se refiere a una bebida, especialmente una bebida que es saludable y de sabor agradable y tiene buena estabilidad, y a un método para mejorar la estabilidad
5 de una bebida.



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Act. 411 PRESENTACION Folios: 112

PATENTE DE INVENCION ☐

MODELO DE

- ☐ Indicación que se solicita una patente.
 - ☐ Datos de identificación del solicitante o de la persona que presenta la solicitud
 - ☐ Descripción de la invención
 - ☐ Dibujos de ser estos pertinentes
 - ☐ Comprobante de pago de las tasas establecidas (De ser el caso formato de descuento)
- Completa ☐ Incompleta ☐

PATENTE DE INVENCION PCT ☐ MODELO DE UTILIDAD PCT ☐ Art.33 Decisión 486/00, Circular Única

- ☐ Indicación que se solicita una PCT
 - ☐ Copia de la solicitud en español, tal como fue presentada inicialmente (capítulo descriptivo, reivindicatorio, resumen)
 - ☐ Dibujos de ser estos pertinentes
 - ☐ Comprobante de pago de las tasas establecidas (de ser el caso formato de descuento)
- Completa ☐ Incompleta ☐

DISEÑO INDUSTRIAL ☐

(Art. 119 Decisión 486/00)

- ☐ Indicación que se solicita Diseño industrial
 - ☐ Datos de identificación del solicitante o de la persona que presenta la solicitud
 - ☐ Representación gráfica y fotográfica del Diseño industrial o muestra del material que incorpora el diseño
 - ☐ Comprobante de pago de las tasas establecidas
- Completa ☐ Incompleta ☐

ESQUEMA DE TRAZADO ☐

(Art. 92 Decisión 486/00)

- ☐ Indicación que se solicita un esquema de trazado
 - ☐ Datos de identificación del solicitante o de la persona que presenta la solicitud
 - ☐ Representación gráfica de un esquema de trazado
 - ☐ Comprobante de pago de las tasas establecidas
- Completa ☐ Incompleta ☐



Bogotá D.C.,
2020

Doctor(a)
JARAMILLO CAMPUZANO MAURICIO
Apoderado(a) y/o Representante de
RAISIO NUTRITION LTD

REFERENCIA	Radicación No.	10 081459
	Solicitud internacional	PCT/FI2008/000139
	Fecha inicio fase nacional	05/07/2010
	Trámite	11
	Evento	378
	Actuación	430
	Oficio No.	

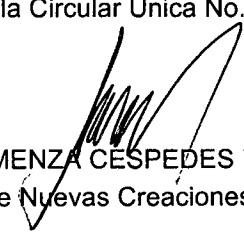
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Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. El solicitante debe presentar un nuevo título que permita identificar la materia de la cual trata la solicitud, ya que el título relacionado no se encuentra con la precisión necesaria para identificar claramente el objeto de la solicitud de patente. (Regla 4.3 PCT, Art 26-27 D-486, Circular única 5.2.9)

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Unica No.10 de 2001.


ALIX CARMENZA CÉSPEDES DE VERGEL
Directora de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista de fecha 30 JUL 2010
adpa11