

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCIÓN DE NUEVAS CREACIONES**

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Bogotá D.C.,

Abogada
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ASUNTO	Radicación	09 008292
	Trámite	011
	Evento	378
	Actuación	519
	Oficio	EE- 17 633
	Folios	22

Patente de Invención	☐	Patente de Modelo de Utilidad	☐
Vía Nacional	☐		
Vía PCT (Fase Nacional)	☐	Cap. I	☐ Cap. II ☐

No. Solicitud Internacional PCT/JP2007/0055242
Fecha de Presentación Internacional 11/Abril/2008

Como resultado del Examen de Fondo realizado, con fundamento en el Artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica:

1. Documentos estudiados

Descripción:	Folios 12 a 28	29/Enero/2009
Reivindicaciones:	Folio 29	29/Enero/2009
Dibujos:	Folio 30	29/Enero/2009
Prioridad:	JP2006-221951	16/Agosto/2006

2. Análisis de la Prioridad

Se acepta la reivindicación de Prioridad porque esta solicitud fue presentada dentro del plazo establecido (Art. 9 D 486) y su contenido técnico corresponde con el de la prioridad reivindicada.

3. Objeto de la invención

Título de la solicitud: "composición espesante mejorada en el desarrollo de viscosidad".

El problema planteado en esta solicitud es la necesidad de proveer composiciones para espesamiento que puedan reducir significativamente el tiempo de procesamiento para los consumidores, al ser capaces de desarrollar viscosidad rápidamente, cuando se adicionan pequeñas cantidades a sustancias objetivo que contienen agua.

Para resolver este problema técnico la solicitud en estudio proporciona una composición espesante caracterizada por contener goma xantán, que tiene

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100 partes en peso de la misma, 0.5 partes en peso o más de sal metálica unida sobre la superficie del polvo de goma xantán.

El objeto de la presente Solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): A 23L 1/05.

4. De la Solicitud de Patente

Reivindicaciones (Art 30 D 486, Art 22 PCT)

La reivindicación 1, menciona las proporciones de la sal metálica pero no la proporción de la goma xantán, puesto que las composiciones están definidas por sus componentes y la proporción en que se encuentra cada uno de ellos.

Las reivindicaciones 2 y 4 mencionan características que hacen referencia a un proceso, pero una composición no se debe definir por su proceso a menos que no se pueda describir de otra forma y sea nueva e inventiva, sino que en el presente caso la composición puede ser definida por sus componentes y proporciones.

El termino "sal metálica" empleado en las reivindicaciones 1-4, es un termino muy general que no permite diferenciar la invención del estado de la técnica, se sugiere restringir a lo realmente probado en los ejemplos de aplicación.

5. Determinación del Estado de la Técnica

El Estado de la Técnica se determinó con base en la Fecha de Presentación de la Solicitud de Prioridad: Agosto 16 de 2006 y se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Item	Documento	Título	Fecha de Publicación*
D1	JP10204408	Agent For Promoting Dispersion And Dissolution Of Scarcely Water-Soluble Substance	4/Agosto/1998
D2	JP2005333885	Paste Material Composition	8/Diciembre/2005
D3	JP2003104912	Administration-Assisting Food	9/Abril/2003
D4	US5633030	Xanthan gelling agents	27/Mayo/1997

D1

http://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=19980804&CC=JP&NR=10204408A&KC=A (Traducción Cap. Descriptivo Fls 69-70) divulga (abstract) un agente que contiene un gluconato de metal alcalino tal como potasio o gluconato de sodio para promover la mejora de la dispersabilidad de una sustancia soluble en agua, acortando el tiempo de disolución utilizando por efecto del gluconato de metal alcalino como un componente.

D2

http://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20051208&CC=JP&NR=2005333885A&KC=A (Traducción Cap. Descriptivo Fls. 71-75) divulga un Agente espesante, que es usado en grado alimenticio, logrando una alta viscosidad que contiene Goma xantán entre otros y una Sal metálica en proporción con el agente espesante 0:100 a 20:100.

D3

http://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20030409&CC=JP&NR=2003104912A&KC=A (Traducción Cap. Descriptivo Fls. 76-81) divulga un alimento medicamento auxiliar que hace fácil la reducción de

sabor amargo y una deglución de los fármacos básicos. Además el medicamento alimenticio auxiliar en polvo contiene un polímero aniónico como goma xantán y contiene una sal que contiene ion sodio o potasio.

D4
http://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=19970527&CC=US&NR=5633030A&KC=A Divulga (abstract)
Composiciones de agente gelificante que comprenden xantan y al menos un polisacárido seleccionado de goma guar, galactomannandespolimerizada y mezclas de los mismos. Las composiciones se pueden usar en productos.

6. Examen de Patentabilidad(Art 14 D486)

Novedad (Art 16 D486)

La reivindicación 1 consiste en composiciones para espesamiento, caracterizadas en que contienen goma xantán, con 0,5 partes en peso de una sal metálica, por 100 partes en peso de goma xantán, que esta unida a la superficie de un polvo de dicha goma xantán.

Comparación de las características técnicas **esenciales**, con las del Estado de la Técnica:

Características esenciales	D1	D2
Composiciones	Composición	Agente espesante
Goma xantán	Acelerador de disolución como goma xantán entre otros [Párrafo 4]	Goma xantán entre otros
0.5 partes de sal metálica por 100 partes de goma xantán	0.5 partes de sal metálica (sal metálica de ácido gluconico [Párrafo 5]por 100 partes de goma xantán [Párrafo 7]	Sal metálica en proporción con el agente espesante 0:100 a 20:100

Las características **esenciales** de la composición definida en la reivindicación 1 habían sido divulgadas previamente en D1 y D2 porque:

D1, el cual enseña composición que contiene un acelerador de disolución como goma xantán entre otros (Párrafo [4], folio 69) en donde la composición es 0.5 partes de sal metálica (sal metálica de ácido gluconico (Párrafo [5], folio 69) por 100 partes de goma xantán (Párrafo [7], folio 70).

D2, el cual enseña un Agente espesante, que es usado en grado alimenticio, logrando una alta viscosidad ([párrafo 6], folio 72) que contiene Goma xantán entre otros ([Párrafo 8], folio 72) y una Sal metálica en proporción con el agente espesante 0:100 a 20:100 ([Párrafo 8], folio 72).

En consecuencia, la reivindicación 1 carece de novedad, según lo divulgado de forma independiente en cualquiera de los documentos D1 y D2.

Las reivindicaciones dependientes 2 – 5 no mencionan alguna característica que haga nueva a la composición de la reivindicación 1, por lo cual se considera que no son nuevas.

Nivel Inventivo (Art18 D486)

La reivindicación 1 consiste en “composiciones para espesamiento, caracterizadas en que contienen goma xantán, con 0.5 partes en peso de una

sal metálica, por 100 partes en peso de goma xantán, que está unida a la superficie de un polvo de dicha goma xantán”.

Comparación de las características técnicas **esenciales**, con las del Estado de la Técnica:

Características esenciales	D2	D3
Composiciones para espesamiento	Agente espesante	Medicamento alimenticio auxiliar en polvo
en que contienen goma xantán	Goma xantán entre otros	Contiene un polímero aniónico como goma xantán
con 0.5 partes en peso de una sal metálica, por 100 partes en peso de goma xantán, que está unida a la superficie de un polvo de dicha goma xantán.	Sal metálica en proporción con el agente espesante	Contiene una sal que contiene ion sodio o potasio

Los documentos D2 y D3, considerados estado de la técnica cercano a la invención definida en la reivindicación 1, divulga:

D2 divulga un agente espesante que contiene Goma xantán entre otros [Párrafo 8] y una Sal metálica en proporción con el agente espesante ([Párrafo 8], folio 72).

D3 divulga un medicamento alimenticio auxiliar en polvo que Contiene un polímero aniónico como goma xantán ([Párrafo 0009], folio 77) y Contiene una sal que contiene ion sodio o potasio ([Párrafo 0019], folio 78).

La diferencia entre la invención, definida en la reivindicación 1, y los agentes de D2 y D3 consiste en que la invención divulga la proporción de 0.5 partes en peso de una sal metálica, por 100 partes en peso de goma xantán.

El efecto que logara la diferencia antes mencionada en la composición de la reivindicación 1 no puede ser determinado toda vez que no existe alguna evidencia que indique que las proporciones otorgan a la composición ahora reivindicada una mejora en la viscosidad sobre la composición ya conocida en la anterioridad D2 o D3.

Por lo tanto, el Problema Técnico Objetivo que pretende resolver esta invención se puede formular así: “cómo modificar las proporciones entre la sal y la goma xantán en las composiciones espesante ya conocidas en el estado de la técnica que disminuyan el tiempo de procesamiento en consumidores.

Además, en el estado del arte es conocido este tipo de composiciones tanto en alimentos como a nivel farmacéutico, al igual se sabe que la goma de xantano adopta una conformación helicoidal simple o doble, sin ninguna tendencia a la asociación y ordenación. En cambio, la presencia de electrolitos neutraliza su marcado carácter aniónico y facilita las formas estructuradas, que ofrecen propiedades: viscosidad elevada, que prácticamente no depende de la temperatura, y carácter pseudoplástico, es un producto muy soluble tanto en frío como en caliente, se usa como espesante y estabilizante¹; al igual es bien conocido para una persona versada en la materia, la modificaciones de parámetros, condiciones y proporciones, con el animo de mejorara las características de compuestos o composiciones.

¹ Bello G. (2000). Ciencia Bromatológica. Principios generales de los alimentos. Ediciones Díaz de Santos S.A, pp 96 y 97.

Teniendo en cuenta lo anterior, la persona medianamente versada en la materia conociendo el problema técnico objetivo y las enseñanzas de las anterioridades D2 y D3 habría derivado de manera obvia y sin mucho esfuerzo la composición mencionada en la reivindicación 1 de la presente solicitud, toda vez que esta se limita al cambio en las proporciones de los componentes de la composición espesante.

Puesto que las reivindicaciones dependientes 2 – 5 no mencionan características inventivas adicionales, tampoco pueden ser consideradas inventivas.

De igual manera, la reivindicación 5, no presenta nivel inventivo en vista de D1 y D4, puesto que en D4, ya se divulga que las composiciones con goma xantán son frecuentemente incorporadas en productos alimenticios (columna 2, líneas 5-9), de esta manera una persona medianamente versada en la materia puede incorporar las características enseñadas en D4, para preparar productos alimenticios con las composiciones divulgadas en D1.

7. Conclusión

Los requisitos de Patentabilidad de la presente Solicitud están afectados así:

Item	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	JP10204408	1-4	Novedad
		5	Nivel Inventivo
D2	JP2005333885	1-5	Novedad/ Nivel Inventivo
D3	JP2003104912	1-5	Nivel Inventivo
D4	US5633030	5	Nivel Inventivo

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término desesenta (60) días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Se invita al solicitante se sirva indicar, si así lo considera, su renuncia al término faltante y presentarla por escrito

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


JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (C)

El anterior requerimiento fue notificado por fijación en lista, de fecha 09 OCT. 2012

Elaborado por: Mayra Alejandra Quintero
Revisado por: Gloria Jacqueline Alfonso
Expediente 09 008292 1er Art 45 *OK*

TRADUCCIÓN JP10204408*** NOTICES ***

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to moisture powder of damage-at-sea dissolved solids, and a dissolution accelerator.

In detail, it is related with moisture powder of damage-at-sea dissolved solids containing alkaline metal salt of gluconic acid, and a dissolution accelerator.

[0002]

[Problem to be solved by the invention] Generally, although the solubility to water is high, powder, such as polysaccharide and protein, water -- distribution -- it was going to dissolve -- a case (when it is going to dissolve in large quantities especially) -- powder -- the surface -- dissolving -- mucus -- a film -- building -- an inside -- the dissolution -- barring -- what is called -- "-- as -- ** -- " -- a state -- becoming -- easy -- uniform -- dissolving -- a thing -- a long time -- requiring -- saying -- a problem -- it is . although the method of mixing difficulty dissolved solids with other food materials beforehand, etc. are taken as a method of improving this point when manufacturing foodstuffs, for example -- a process -- ** -- improvement, such as becoming coarse, is called for.

[0003]

[Means for solving problem] In order to solve these problems, as a result of repeating research intensively, this inventor added the alkaline metal salt of gluconic acid in small quantities to difficulty dissolved solids, and by mixing, the dispersibility to water improved him and he found out that dissolving time could be shortened. That is, this invention provides a promoting method and moisture powder, and a dissolution accelerator for the distribution to the water of the damage-at-sea dissolved solids by blending the alkaline metal salt of gluconic acid, and the dissolution.

[0004]

[Mode for carrying out the invention] Although the damage-at-sea dissolved solids of the solubility to water itself used by this invention are expensive, when it is going to distribute and dissolve in water, since dispersibility and solubility are bad, Say the substance which takes time to distribute and dissolve uniformly comparatively, and as an example of such a substance, Protein, such as polysaccharide and water-soluble gelatin, such as sodium alginate, sodium alginate propylene glycol ester, xanthan gum, methyl cellulose, carboxymethyl cellulose, and pectin, and casein sodium, etc. can be mentioned.

[0005] Potassium gluconate, sodium gluconate, etc. can be mentioned as alkaline metal salt of gluconic acid.

[0006] The alkaline metal salt of gluconic acid is added in small quantities to damage-at-sea dissolved solids aiming at the dissolution, such as polysaccharide and protein, it mixes beforehand, and the method of distributing and dissolving this in water is suitable for the distribution to the water of the damage-at-sea dissolved solids of this invention, and a dissolution promoting method.

[0007]Although the amount of the alkaline metal salt used of the gluconic acid used by this invention changes with damage-at-sea dissolved solids which are going to dissolve, generally 0.5 part by weight - about 10 parts by weight are [beyond about 0.5 weight degree] preferably suitable for it to 100 parts by weight of damage-at-sea dissolved solids.

[0008]

[Working example]100 ml of water was taken to the beaker, the predetermined damage-at-sea dissolved solids 1g which mixed sodium gluconate to this were added, and time until it agitates this solution with a stirrer and distributes uniformly was measured (water temperature of 25 degrees C).

[0009]Result[Table 1]

水難溶解性物質	グルコン酸ナトリウムの配合量 (重量%)			
	0 (比較例)	1 (実施例)	2 (実施例)	5 (実施例)
アルギン酸ナトリウム	76	45	47	36
アルギン酸ナトリウムプロピレングリコールエステル	39	18	11	8
ノチルセルロース	69	39	33	17
カルボキシノチルセルロース	70	67	65	43
キサンタンガム	23	21	21	18
ベタニン	20	18	15	12
水溶性ゼラチン	216	100	107	123
グアガム酵素分解物	13	6	5	5

表の数値の単位：分

[0010]The effect that the distribution to the water of the time until it carries out uniform dispersion is short compared with additive-free (comparative example), and according to alkaline metal salt of gluconic acid difficulty dissolved solids which is the damage-at-sea dissolved solids which mixed sodium gluconate, and the dissolution were promoted has been checked.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention]

[0001]

The present invention is concerned with the thickening agent constituent which adds to the object containing water and makes viscosity and gelling reveal simple. It is related with a thickening agent constituent suitable for the use which adds in small quantities to a soft drink, the food-grade way which hangs down and makes a source, a dressing, a soup, a mousse, jelly, etc. thicken simple, the meal of the patient who became digestion and dysphagia according to the eating disorder, etc.. and makes viscosity and gelling reveal especially.

[Background of the Invention]

[0002]

It is used for the food-grade way for the thickening stable purpose where many thickening agents are more various than before. By generally distributing and dissolving water, a thickening agent exhibits the function. However, when general consumers add and dissolve a thickening agent at foodstuffs etc. and a thickening agent is powder, it is easy to form lumps, and the thickening agent which formed lumps will be in the state where the function cannot be exhibited. easily. In the addition liquid prepared liquefied, the addition whose distributed percentage of a thickening agent is about 10 to 20% few was required.

[0003]

As technology distributed and dissolved, a thickening agent is distributed in water at ethanol. and the technology distributed and dissolved at objects, such as water, is known. When ethanol is made to carry out high concentration distribution of the thickening agent by this method, in order to maintain a dispersion state, churning is needed, in the state where it does not agitate, a thickening agent precipitates and the dispersibility and the viscosity manifestation nature of the precipitating thickening agent are deteriorated remarkably. Churning is required also for an object to give viscosity to, and when it adds in the state where it settled, it will form lumps like a powdered state. Although how to distribute in glycerin industrially is also known, when glycerin is made to carry out high concentration distribution of the thickening agent, a thickening agent will be able to be distributed only by 20% or less of concentration, but viscosity will be temporally revealed, and mobility will be lost.

[0004]

In the addition liquid for thickening prepared liquefied, water, ethanol, etc. are used for a dispersing agent, A high viscosity thickening agent is dissolved about 10%, or a low viscosity thickening agent is dissolved about 10%, and it is prepared as a liquid which inhibits a viscous manifestation by using a high viscosity thickening agent together about 5% after that, and is liquid (for example, see Patent Document 1.). For the reason, the addition ratio that the addition percentage to the object made to thicken is about 10 to 20% was required. When the addition liquid for thickening is added 10 to 20% to an object, the taste of the last foodstuffs will be inhibited.

[Patent document 1] JP,2000-41594,A (the three - 4th page)

[Description of the Invention]

[Problem to be solved by the invention]

[0005]

Therefore, the constituent which reveals viscosity or gelling by a small amount of addition so that the taste of an object may not be inhibited is called for, without forming lumps like [in the case of powder]. As a thickening agent which gives viscosity and coagulation especially to care foods of digestion and a dysphagia person and training foods, such the characteristic is called for strongly. It adds to the object containing water and an object of the present invention is to provide the thickening agent constituent which can reveal viscosity or gelling promptly.

[Means for solving problem]

[0006]

The inventors found out that it was solvable in the balance by the combination of glycerin, propylene glycol, and ethanol, as a result of inquiring intensively about the manifestation of the prompt viscosity at the time of adding to the object containing the high concentration dispersion liquid and the moisture of a high viscosity thickening agent, or gelling.

[0007]

Becoming a problem in making a thickening agent constituent has the constant viscosity of a distributing [1. high viscosity thickening agent / uniformly]-at high concentration so that it may add to object containing moisture and viscosity or gelling can be revealed promptly 2. constituent, and maintaining mobility is raised. It is preferable to a pan that 3. distribution is in the state where the high viscosity thickening agent carried out is swelling.

In order to carry out high concentration distribution of the thickening agent, the method of distributing using a poor solvent is known. The method of settling conventionally the thickening agent extracted as an aqueous solution as a manufacturing method of a thickening agent using ethyl alcohol etc. is used. If a poor solvent is used, the viscous manifestation of a thickening agent can be inhibited, and the state where it distributed although it was possible to have made it distribute at high concentration cannot be maintained. In order to add to the object which distributes a thickening agent uniformly and contains water and to make viscosity or gelling reveal promptly, a constituent needs to have appropriate viscosity. If low, the constituent itself will separate, and if the viscosity is high, it cannot be distributed to objects, such as water.

In addition, in order to carry out the viscous manifestation of the objects, such as water, promptly, it is desirable for the thickening agent in a constituent to swell. Glycerin is made to distribute a thickening agent and the method of dissolving in an object and making viscosity reveal is performed industrially. When making glycerin distribute a thickening agent, it can distribute and about 20% of a thickening agent can be swollen. However, after distribution, the viscosity of a constituent will rise and will be solidified eventually temporally. In order to make objects, such as water, reveal viscosity or gelling promptly, it is necessary to make a thickening agent into a swollen state in glycerin, and to suppress a viscosity rise of a constituent. In the present invention, the above 1-3 was solved by blending glycerin, propylene glycol, and/or ethanol with sufficient balance as a solvent.

[Best Mode of Carrying Out the Invention]

[0008]

The component A and the component B which do not contain moisture substantially are used for the present invention.

Component A: A thickening agent or a thickening agent, and salts.

Component B: Glycerin, and propylene glycol and/or ethanol.

Especially if it is the thickening agent currently used for chemically-modified ***** usual foodstuffs powdered, do not limit the thickening agent in the present invention, but Xanthan gum, A guar gum, locust bean gum, tara gum, tamarind gum, karaya gum, Xanthene, tara gum, a guar gum, and carrageenan are preferable from the point of pectin, carrageenan, sodium alginate, psyllium seed gum,

CMC. CMC sodium, devil's tongue flour, starch, and gelatin being raised, adding in small quantities to an object, and making viscosity revealing. Although it does not limit in particular, the viscosity measured to 20 degrees C ion exchange water with the B type viscometer (made by Tokyo Keiki) of the solution which carried out the distributed dissolution 0.5% is preferable in respect of viscosity preparation to an object of the thing of 100 or more mPa-s.

Especially if it is processed powdered and is generally used for foodstuffs, do not limit the salts in the present invention, but. Sodium chloride, potassium chloride, potassium citrate monobasic, tripotassium citrate, Calcium citrate, trisodium citrate, sodium acetate, potassium DL-bitartrate, Potassium L-bitartrate, calcinated calcium, non-calcinated calcium, calcium hydroxide, Potassium carbonate, calcium carbonate, sodium bicarbonate, calcium lactate, Potassium pyrophosphate, tetrasodium pyrophosphate, disodium dihydrogen pyrophosphate, Potassium polyphosphate, sodium polyphosphate, potassium metaphosphate, Sodium metaphosphate, tripotassium phosphate, tricalcium phosphate, trisodium monophosphate, Diammonium hydrogen phosphate, ammonium dihydrogenphosphate, the potassium phosphate, potassium dihydrogen phosphate, calcium phosphate monobasic, calcium primary phosphate, disodium hydrogenphosphate, and calcium sulfate are raised, although it is not what is limited especially for the compounding ratio of a thickening agent and salts -- usually -- 100:0-100:50 -- it is 100:0-100:20 preferably.

[0009]

When the state where there is mobility in the present invention topples horizontally the transparent container which injected the liquid thickening agent at the time of preservation, it means the degree which can be slowly flowed by the liquid thickening agent. Preferably, the viscosity measured with the B type viscometer (made by Tokyo Keiki) says what is a 300 - 5,000 mPa-s degree. Although the ratio in particular of glycerin for maintaining mobility, propylene glycol, and/or ethanol is not limited, it is preferable to blend propylene glycol and/or ethanol in 60-140 to the glycerin 100.

[0010]

With the state where viscosity can be promptly revealed by the a small amount of addition in the present invention, It says that 5% or less of the liquid thickening agent usually made it possible to make viscosity reveal preferably with the addition amount of 2% or less of a liquid thickening agent to the object containing water, The state where 1,000 or more mPa-s of viscosity measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm and 30 seconds, No.3 rotor) are revealed is said.

[0011]

Although ***** is shown and the present invention is described specifically hereafter, the present invention is not restricted to the following working example.

[Working example]

[0012]

How to reveal viscosity easily in the first place in addition to an object is described.

Working example 1

The xanthan gum 35g and 5 g of potassium chloride were distributed to the dispersing agent which mixed the glycerin 30g and the propylene glycol 30g, and the liquid thickening agent 100g was prepared to it. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm, and 30 seconds, No.4 rotor), it was 2,240 mPa-s, and when it saved for one month at the room temperature and viscosity was measured again, it was 1,960 mPa-s. When this liquid thickening agent 6g was fed into the ion exchange water 294g and the viscosity after standing was measured by low rotation DISUPA (product made from special opportunity-ized industry) for 600-rpm and part handbill 5 minutes during 1 minute, it was 3,920 mPa-s. When the distributed dissolution of the liquid thickening agent which carried out room temperature preservation for one month was carried out similarly at ion exchange water, it was 3,880 mPa-s.

[0013]

Working example 2

The examination which replaced the part to propylene glycol by ethanol like the working example 1 was carried out.

The xanthan gum 35g and 5 g of potassium chloride were distributed to the dispersing agent which mixed the glycerin 30g, the propylene glycol 20g, and 10 g of ethanol, and the liquid thickening agent 100g was prepared to it. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm, and 30 seconds, No.4 rotor), it was 1,680 mPa-s, and when it saved for one month at the room temperature and viscosity was measured again, it was 1,540 mPa-s. When this liquid thickening agent 6g was fed into the ion exchange water 294g and the viscosity after standing was measured by low rotation DISUPA (product made from special opportunity-ized industry) for 600-rpm and part handbill 5 minutes during 1 minute, it was 3.440 mPa-s. When the distributed dissolution of the liquid thickening agent which carried out room temperature preservation for one month was carried out similarly at ion exchange water, it was 3,260 mPa-s.

[0014]

Working example 3

The xanthan gum of the working example 1 was transposed to the guar gum, and the same examination was carried out.

40 g of guar gums were distributed to the dispersing agent which mixed the glycerin 30g and the propylene glycol 30g, and the liquid thickening agent 100g was prepared to it. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm, and 30 seconds, No.4 rotor), it was 2,380 mPa-s, and when it saved for one month at the room temperature and viscosity was measured again, it was 2,320 mPa-s. When this liquid thickening agent 6g was fed into the ion exchange water 294g and Ushiro's viscosity was measured by low rotation DISUPA (product made from special opportunity-ized industry) for 600-rpm and part handbill 5 minutes during 1 minute, it was 2.100 mPa-s. When the distributed dissolution of the liquid thickening agent which carried out room temperature preservation for one month was carried out similarly at ion exchange water, it was 2,050 mPa-s.

[0015]

Comparative example 1

The example of an examination which made glycerin, propylene glycol, and ethanol the dispersing agent independently respectively as a comparative example was shown.

The glycerin 60g was used as the solvent, the xanthan gum 35g and 5 g of potassium chloride were distributed, and the liquid thickening agent 100g was prepared. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm, and 30 seconds, No.4 rotor), it became the high viscosity which will be 20,000 or more mPa-s and exceeds a limit of measurement. The liquid thickening agent which carried out room temperature preservation for one month was solidified, and it was illiquid.

[0016]

Comparative example 2

Propylene glycol 60g was used as the solvent, the xanthan gum 35g and 5 g of potassium chloride were distributed, and the liquid thickening agent 100g was prepared. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm, and 30 seconds, No.4 rotor), it was 260 mPa-s. When precipitate of xanthan gum and potassium chloride arises, separation with propylene glycol occurs and the liquid thickening agent which carried out room temperature preservation for one month carries out the distributed dissolution similarly at ion exchange water, it is 820 mPa-s, dispersibility is also bad and the pellet appeared.

[0017]

Comparative example 3

60 g of ethanol was used as the solvent, the xanthan gum 35g and 5 g of potassium chloride were distributed, and the liquid thickening agent 100g was prepared. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed

of 30 rpm. and 30 seconds, No.4 rotor), it was 220 mPa-s. When precipitate of xanthan gum and potassium chloride arises, separation with ethanol occurs and the liquid thickening agent which carried out room temperature preservation for one month carries out the distributed dissolution similarly at ion exchange water, it is 690 mPa-s, dispersibility is also bad and the pellet appeared.

[0018]

By the system which made glycerin the dispersing agent independently from the result of the working examples 1-3 and the comparative examples 1-3, viscosity was temporally revealed and, one month afterward, it was solidifying. In propylene glycol or an ethanol independent, separation occurred in the liquefied thickening agent and the dispersibility to ion exchange water also worsened. In the working example, the liquid state could be maintained. the dispersibility to ion exchange water was also good, and by blending glycerin, propylene glycol, and ethanol with sufficient balance showed that it was in the state where viscosity can be revealed immediately in addition to an object.

[0019]

How to reveal [2nd] gelling simply in addition to an object is described.

Working example 4

The xanthan gum 20g and the tara gum 20g were distributed to the dispersing agent which mixed the glycerin 30g and the propylene glycol 30g, and the liquid thickening agent 100g was prepared to it. When the viscosity of this liquid thickening agent was measured with the B type viscometer (Tokyo Keiki make: after the revolving speed of 30 rpm, and 30 seconds, No.4 rotor), it was 1,620 mPa-s, and when it saved for one month at the room temperature and viscosity was measured again, it was 1,540 mPa-s. This liquid thickening agent 2g was fed into the ion exchange water 98g, and gel was formed, when it cooled at 10 degrees C after agitating and dissolving.

[0020]

The working example to food and drinks

Working example 5

French dressing was prepared by the combination shown in Table 1 using the liquid thickening agent prepared in working example 1. It was possible for viscosity to have been revealed by mixing various kinds of raw materials simply, and to have made viscosity reveal simply.

[0021]

[Table 1]

実施例1の液体状糊料	0.5g
植物油脂	38g
水	37.5g
グラニュー糖	12g
酢	9g
食塩	1g
粉末ガーリック	1g
粉末マスタード	1g
合計	100g

[Industrial applicability]

[0022]

As stated above, the thickening agent quantity content pharmaceutical preparation by this invention is the invention which made it possible to be able to distribute a high viscosity thickening agent liquefied at high concentration, and to make an object reveal viscosity by a small amount of addition, and not to produce a pellet at the time of the dissolution.

[Translation done.]

TRADUCCION JP2003104912

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] The present invention is medication auxiliary food which makes easy bitter taste reduction and a deglutition of basic drugs.

Just before using it, water is added, and it is related with powdered medication auxiliary food used as a liquid which is viscous only by mixing.

[0002]

[Description of the Prior Art] Many researches aiming at improvement in medication compliance are made, and the deglutition helping drink of drugs is disclosed in JP,H11-124342,A. The jelly Mr. beverage (high viscous liquid object foodstuffs) aiming at medication assistance came to be sold also to the commercial scene. It aims at making passage of a throat smooth, and masking the bitter taste of drugs, etc. by sweet taste or a flavor by mixing drugs with the liquid of high consistency. However, since a high viscous liquid object contains moisture not less than 80%, there is a disadvantageous point in the preservation over the opening back or a long period of time, and portability. In order to solubilize the gelling agent of polysaccharide thickener or others at the time of manufacture, it is necessary to heat at around 70 degrees C, or to fill up the bag etc. which molded the aluminum laminate film etc.

[0003] Many methods of reducing bitter taste, such as drugs and health food, are also already disclosed. For example, JP,H4-346937,A has disclosed jelly which made agar, gelatin, and a kappa carrageenan a gelling agent.

It is masking by confining a bitter substance into jelly.

[0004] The formulated thing containing the hydrophilic substance and anionic polymeric material which have positive charge is disclosed in a basic drug, and in order to conceal the basic drug which has an unpleasant taste especially, combination of anionic polymeric materials, such as a carrageenan, is devised by JP,H11-92402,A. Since it is difficult to make it dissolve without heating of an anionic polymeric material in water, the dissolving method of the anionic polymeric material is disclosed further, but. The hydrophilic substance which has the positive charge with which solubility is assisted has a molecular weight as high as about 10,000 to 2,000,000, and is not easy to dissolve this self.

[0005] Generally, the method of heating and the method in which it is made to dissolve after mixing with excipients, such as sugar of a large quantity (20-30 times the amount or more of a polymeric material), are one of the methods of dissolving a polymeric material in water. In the method of mixing with an excipient, if a polymeric material is blended 10% by weight or more, solubility will worsen, but when especially a polymeric material contributes to masking of bitter taste, since a certain amount of compounding amount must be secured, this method becomes disadvantageous. Anyway, in order to have

dissolved the polymeric material in water, restrictions [on a manufacturing process] on formulation study were received.

[0006]

[Problem to be solved by the invention]Then, an object of the present invention is to provide the powdered administration auxiliary food used as the liquid which is smoothly viscous, without forming unmixed-in lump of flour also at ordinary temperature, collateralizing the effect which makes easy bitter taste reduction and a deglutition of basic drugs.

[0007]

[Means for solving problem]It is the medication auxiliary food for making easy bitter taste reduction and a deglutition of basic drugs, and just before using the present invention (1), it adds water and is the powdered medication auxiliary food used as the liquid which is viscous only by mixing without heating.

[0008]The present invention (2) is the medication auxiliary food of the aforementioned invention (1) which contains an anionic polymeric material 10% by weight or more under existence of an unmixed-in-lump-of-flour inhibitor.

[0009]The present invention (3) is the medication auxiliary food of the aforementioned invention (2) whose anionic polymeric materials are a carrageenan, sodium alginate, xanthan gum, and/or carboxymethylcellulose sodium.

[0010]The present invention (4) is the aforementioned invention (2) or the medication auxiliary food of (3) whose unmixed-in-lump-of-flour inhibitors are sodium bicarbonate and organic acid.

[0011]The present invention (5) is the medication auxiliary food of the aforementioned invention (2) which anionic polymeric materials are a kappa type and/or the iota type carrageenan, and is the ionic material in which an unmixed-in-lump-of-flour inhibitor contains calcium ion, potassium ion, and/or sodium ion.

[0012]

[Embodiment of the Invention]The preferable component for making easy the bitter taste reduction and the deglutition of basic drugs in the present invention is an anionic polymeric material. Here, it comprises six membered-rings with a carboxyl group or a sulfuric acid group, a fixed unit is polymer which is carrying out repetitive combination regularly, and an anionic polymeric material is polymer which dissolves in not less than 20 degree-C 1,000 ml of water below 100 degrees C 1g or more preferably. An anionic polymeric material is 200 - 8,000 mPa-s still more preferably 100 to 20,000 mPa-s more preferably 15 to 50,000 mPa-s preferably [the viscosity of the 2-% by weight aqueous solution at 25 degrees C]. This viscosity is based on a Brookfield viscometer measuring method (BM type: Made by Tokyo Keiki).

[0013]As a good example of an anionic polymeric material, a carrageenan, sodium alginate, xanthan gum, and carboxymethylcellulose sodium are mentioned. It may use combining two or more type of anionic polymeric materials.

[0014]The anionic polymeric material concerning the present invention is manufactured in accordance with a conventional method, and it deals in it. For example, from Taito Co., Ltd. "to Taito gel K-9" (kappa type carrageenan), "Taito gel SV" (iota type carrageenan), "Taito gel HMV" (lambda type carrageenan), It is sold with the trade name "duck algin" (sodium alginate) and Daicel Chemical Industries, Ltd. to a "CMC die cell" (carboxymethylcellulose sodium), from "Taito gel VIS-Y" (xanthan gum) and KIBUN FOOD CHEMIFA CO., LTD.

[0015]The content of the anionic polymeric material concerning the present invention is 10 to 30 % by weight more preferably five to 50% by weight to the whole quantity of the medication auxiliary food of powder state.

[0016]The medication auxiliary food of powder state may contain other polymeric materials other than an anionic polymeric material. As a good example of other polymeric materials, a guar gum, locust bean gum, Pectin, alpha-ized starch (modified starch), methyl cellulose, Hydroxypropylmethylcellulose, hydroxyethyl methyl cellulose, hydroxyethyl cellulose, hydroxypropylcellulose, a polyvinyl pyrrolidone, and polyvinyl alcohol are mentioned.

[0017]The powdered medication auxiliary food concerning the present invention contains an unmixed-in-lump-of-flour inhibitor preferably. Powdered medication auxiliary food can be used as a viscous liquid, without unmixed-in lump of flour generating, even if water is added, and it mixes by this, without heating just before using it. Since unmixed-in lump of flour will be easy to be formed if the content of an anionic polymeric material adds water to the whole quantity of the medication auxiliary food of powder state especially in 10% by weight or more of a case, it is effective especially in this case.

[0018]As an unmixed-in-lump-of-flour inhibitor, a foaming component is mentioned, for example. If sodium bicarbonate and organic acid are mentioned and water is specifically added to these two powder mixtures, it will foam reacting violently and generating carbon dioxide. In this case, 0.01-500 micrometers of particle diameter of sodium bicarbonate are 0.1-200 micrometers more preferably. As for sodium bicarbonate, it is preferable that it is 0.01-10 times the amount on the basis of the weight of an anionic polymeric material, it is more preferable that it is 0.05-5 times the amount, and it is still more preferable that it is 0.1-2 times the amount. On the other hand, particle diameter is preferable and 0.01-500 micrometers of organic acid is 0.1-200 micrometers more preferably. As a preferable example of organic acid, the water-soluble organic acid of citrate, malic acid, lactic acid, succinic acid, ascorbic acid, adipic acid, maleic acid, tartaric acid, erythorbic acid, etc. is mentioned. As for organic acid, it is preferable that it is 0.01-10 times the amount on the basis of the weight of an anionic polymeric material, it is more preferable that it is 0.05-5 times the amount, and it is still more preferable that it is 0.1-2 times the amount. The ratio in particular of sodium bicarbonate and organic acid is not limited, but should just be within the limits of the compounding amount of the above [each].

[0019]When a kappa type and/or the iota type carrageenan are used as an anionic polymeric material, the salt containing calcium ion, potassium ion, or sodium ion may be used as an unmixed-in-lump-of-flour inhibitor. Uniform distributing to water becomes possible also for this combination. The good example of the ionic material containing this calcium ion, potassium ion, or sodium ion, Calcium lactate, calcium gluconate, a calcium chloride, potassium chloride, Dibasic potassium phosphate, potassium dihydrogen phosphate, potassium carbonate, potassium bicarbonate, Potassium citrate, potassium tartrate, sodium chloride, phosphoric acid 1 hydrogen sodium, The ionic matter containing calcium ion, such as a sodium dihydrogenphosphate, sodium carbonate, sodium bicarbonate, sodium acid citrate, sodium tartrate, and sodium sulfate, potassium ion, or sodium ion is mentioned. As for the ionic matter containing calcium ion, potassium ion, and sodium ion, it is preferable that it is 0.01-10 times the amount on the basis of the weight of a carrageenan, it is more preferable that it is 0.05-5 times the amount, and it is still more preferable that it is 0.1-2 times the amount.

[0020]The medication auxiliary food concerning the present invention if needed Dextrin, grape sugar, Sugar, such as fructose, milk sugar, sucrose, maltose, mannitol, and sorbitol, Corrigents, such as amino acid, such as perfume, such as sweeteners, such as Aspartame and a stevia, a strawberry flavor, and a banana flavor, a glycine, and serine, a pH adjuster, water soluble vitamin, a coloring agent, and cocoa powder, etc. may be contained.

[0021]Although the basic drug in particular with which bitter taste is reduced is not limited with the medication auxiliary food concerning the present invention, as an example of the basic drugs which have an unpleasant taste, Clarithromycin, azithromycin, an erythromycin, chloramphenicol, Cefotiamhexetil hydrochloride, chloride SEFUKYANERUDAROKISETO, lenampicillin hydrochloride, Bacampicillin hydrochloride, talampicillin hydrochloride, berberine chloride, digitoxin, Sulpyrine, azelastine hydrochloride, etilefrine hydrochloride, diltiazem hydrochloride, Propranolol hydrochloride, promethazine hydrochloride, papaverine hydrochloride, ticlopidine hydrochloride, aminophylline, phenobarbital, calcium pantothenate, chloride DONEBEJIRU, aminoguanidine hydrochloride, etc. are mentioned.

[0022]The medication auxiliary food concerning the present invention has the solubility for 50 or less seconds still more preferably 100 or less seconds more preferably 200 or less seconds. The "soluble" value said to this Description is a 200-ml beaker (67 mm of shell diameters). After putting 80 ml of water (water temperature of 20**5 degrees C) into 89 mm in height, agitating to 400 revolutions per

minute by a disc-like rotator (35 mm in diameter, and 12 mm in thickness) (the product made from Nalgene, a star head) and throwing in there a polymeric-material content powder composition, it is time until it becomes impossible for a solid to check visually.

[0023]

[Working example] Hereafter, the present invention is not limited by these working examples, although shape is taken according to an working example and the present invention is described.

[0024] Here, organoleptics estimated the masking effect of the bitter taste performed in the working example, and the valuation basis was made into five steps shown below.

+3: -- very bitter +2: -- bitter +1: -- **0: which senses bitter taste a few -- it can be said to be neither -- in addition it sensed -1: bitter taste, the following were used as pharmaceutical preparation which has bitter taste. The object for the Zithromac fine grain children (Pfizer Pharmaceuticals make: azithromycin hydrate pharmaceutical preparation), the dry syrup for Claris children (Taisho Pharmaceutical [Co., Ltd.] make: clarithromycin pharmaceutical preparation)

[0025] Organoleptics estimated the deglutition-aid effect and the valuation basis was made into the three-stage shown below.

** : which x: is hard to understand -- it can be called neither -- it O: is easy to understand -- in addition -- the examination of the deglutition-aid effect -- Hellsing of tablet form Tab Letts 1 dose of multivitamin (made by Sankyo Co., Ltd.) was used.

[0026] 3 g of working-example 1 and comparative example 1 (soluble effect of anionic polymer and unmixed-in-lump-of-flour inhibitor) kappa carrageenans, the sodium bicarbonate 1g, 1 g of citrate, and the sorbitol 10g were mixed, and the powder composition was obtained. Solubility was measured using this 1 g. The kind of anionic polymeric material was changed, the powder composition was obtained, and solubility was measured. The result is shown in Table 1. The powder composition which mixed and obtained the anionic polymeric material 3g and the sorbitol 10g was made into the comparative example 1.

[0027]

[Table 1]

表 1

	実施例 1	比較例 1
κ-カラギーナン	1 4 秒	> 6 0 0 秒
アルギン酸ナトリウム	5 8 秒	> 6 0 0 秒
キサントランガム	2 8 秒	> 6 0 0 秒
CMCナトリウム	3 1 秒	> 6 0 0 秒

* 実施例 = アニオン性高分子物質 + ソルビトール + 炭酸水素 Na + クエン酸

比較例 = アニオン性高分子物質 + ソルビトール

[0028] 3 g of working-example 2 and comparative example 2 (soluble effect of carrageenan and ionic matter) kappa carrageenans, the calcium lactate 1g, 4 g of alpha-ized starch, and the sorbitol 10g were mixed, and the powder composition was obtained. Solubility was measured using this 1 g. Calcium lactate was changed into potassium chloride and sodium acid citrate, the powder composition was obtained, and solubility was measured. The result is shown in Table 2. The powder composition which does not blend the ionic matter of calcium lactate, potassium chloride, and sodium acid citrate was made into the comparative example 2.

[0029]

[Table 2]

表 2

	実施例 2	比較例 2
乳酸カルシウム	1 5 秒	> 6 0 0 秒
塩化カリウム	1 7 秒	
クエン酸ナトリウム	1 6 3 秒	

* 実施例 = κ-カラギーナン + α化デンプン + ソルビトール + イオン性物質
比較例 = κ-カラギーナン + α化デンプン + ソルビトール

[0030] Working-example 3 and the comparative example 3 (bitter taste masking effect of anionic polymer and foaming component) sodium alginate 3g, the sodium bicarbonate 1g, 1 g of citrate, and the sorbitol 10g were mixed, and the powder composition was obtained. 10 ml of water was added and mixed with these 1.5 g, and Zithromac 1g was added in the place used as gel. it mixed further, and organoleptics were done by ten test subjects. Claris 0.5g was mixed instead of Zithromac, and organoleptics were done. The result is shown in Table 3. The powder composition which 6g of alpha-ized starch used instead of sodium alginate was made into the comparative example 3.

[0031]

[Table 3]

表 3

	塩基性薬剤	評 価				
		+ 3	+ 2	+ 1	± 0	- 1
実施例 3	ジスロマック	0	0	1	5	4
	クラリス	0	0	0	4	6
比較例 3	ジスロマック	5	4	1	0	0
	クラリス	4	4	1	1	0

[0032] 2 g of working-example 4 and comparative example 4 (bitter taste masking effect of carrageenan and ionic matter) kappa carrageenans, The calcium lactate 0.5g, 6 g of alpha-ized starch, and the sorbitol 10g were mixed, the powder composition was obtained, and 10 ml of water was added and mixed with these 1.5 g, and Zithromac 1g was added in the place used as gel. it mixed further, and organoleptics were done by ten test subjects. Claris 0.5g was mixed instead of Zithromac, and organoleptics were done. The result is shown in Table 4. The powder composition which mixed a kappa carrageenan and 6 g of alpha-ized starch except calcium lactate, and the sorbitol 10g was made into the comparative example 4.

[0033]

[Table 4]

表 4

	塩基性薬剤	評 価				
		+ 3	+ 2	+ 1	± 0	- 1
実施例 4	ジスロマック	0	0	3	4	3
	クラリス	0	0	1	6	3
比較例 4	ジスロマック	7	3	0	0	0
	クラリス	3	5	2	0	0

[0034] The working-example 5 and comparative example 5 (bitter taste masking effect of an anionic polymer and a foaming component) xanthan gum 2g, 1 g of guar gums, the sodium bicarbonate 1.2g, 0.6 g of citrate, and the sorbitol 10g were mixed, and the powder composition was obtained. 10 ml of water was added and mixed with these 1.5 g, and Zithromac 1g was added in the place used as gel. it mixed

further, and organoleptics were done by ten test subjects. Claris 0.5g was mixed instead of Zithromac, and organoleptics were done. The result is shown in Table 5. The powder composition which 4g of alpha-ized starch used instead of xanthan gum was made into the comparative example 5.

[0035]

[Table 5]

表 5

	塩基性薬剤	評 価				
		+ 3	+ 2	+ 1	± 0	- 1
実施例 5	ジスロマック	0	0	3	3	4
	クラリス	0	0	1	4	5
比較例 5	ジスロマック	4	3	3	0	0
	クラリス	3	4	2	1	0

[0036] 3 g of working-example 6 and comparative example 6 (deglutition-aid effect of anionic polymer) kappa carrageenans, the sodium bicarbonate 1.2g, 0.6 g of citrate, and the sorbitol 10g were mixed, and the powder composition was obtained. 10 ml of water was added and mixed with these 1.5 g, it was considered as gel, and organoleptics were done by ten test subjects. The kind of anionic polymer was changed, the powder composition was obtained, and organoleptics were done. The result is shown in Table 6. The powder composition which mixed the constituent 1.2g which does not blend an anionic polymer, i.e., sodium bicarbonate, 0.6 g of citrate, and the sorbitol 10g was prepared, and what added 10 ml of water to these 1.5 g, and was melted was made into the comparative example 6.

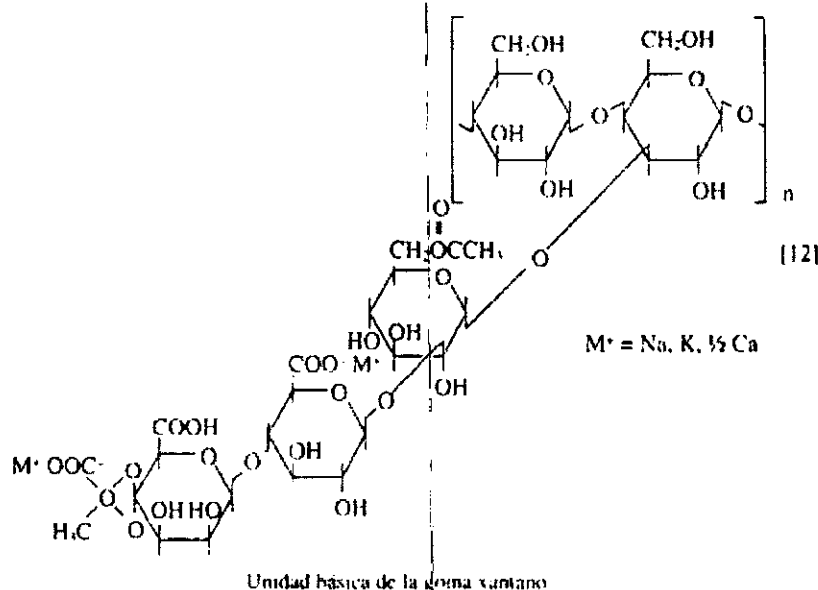
[0037]

[Table 6]

表 6

	アニオン性高分子物質	評 価		
		×	△	○
実施例 6	κ-カラギーナン	0	2	8
	アルギン酸ナトリウム	0	3	7
	キサンタンガム	0	2	8
	CMCナトリウム	0	2	8
比較例 6	無配合	4	5	1

[Translation done.]



Es un producto muy soluble tanto en frío como en caliente, bastante estable frente a los efectos de la acidez dentro de un amplio rango y del tratamiento térmico. Por ello, se usa como espesante y estabilizante en muchas conservas alimenticias. También resiste los procesos de congelación y descongelación, por lo que se suele adicionar a los alimentos espesados con almidón que se han de conservar congelados, para mejorar su estabilidad y evitar la sinéresis. Igualmente, se aprovecha su sinergia con los galactomananos, como la goma garrofin: sus mezclas se pueden usar para formar geles. También sirve para reemplazar al gluten en alimentos horneados, ya que forma una matriz elástica al combinarse con el almidón, por lo que resulta aconsejable para alimentos destinados a las personas celiacas, que no toleran el gluten. Prácticamente no se digiere en el tracto digestivo y se elimina por las heces.

A finales de 1990 se ha autorizado en los EE UU de América el empleo de la *goma gelano* para la fabricación de helados y mermeladas. Se trata de un polisacárido extracelular, elaborado a partir de cultivos de *Pseudomonas elodea* cuando crece en materiales azucarados. Está constituido por macromoléculas lineales en las que se repite una estructura de tetrasacárido formado por dos unidades de glucosa, un ácido glucurónico y una ramnosa. Puede formar geles en medio ácido, o en la presencia de iones Ca^{2+} , a concentraciones tan reducidas como 0,05 %.

d) Extractos de algas marinas

Los polisacáridos de origen marino son polímeros aniónicos, que se obtienen de dos grupos diferentes de algas: pardas y rojas, recolectadas en varias zonas mundiales, y que marcan las características estructurales y sus propiedades de aplicación en la industria alimentaria.

La *goma arábica*, es una exudación desecada procedente de tallos y ramas de ciertos árboles del género *Acacia*, de modo principal la *Acacia senegalia* habitual de Sudán y Senegal; conocida desde hace unos 4.000 años en el antiguo Egipto. Está constituida por una mezcla de diversos polisacáridos muy similares, cuyas cadenas principales están formadas por moléculas de D-galactosa con enlaces $1 \rightarrow 3$, con una estructura lineal, pero que en los carbonos C_6 llevan insertadas cadenas ramificadas que contienen galactosa, arabinosa y ácido glucurónico en distintas proporciones. Es la más soluble en agua de todas las gomas, pudiéndose preparar soluciones hasta del 50 %; presenta viscosidades que dependen de los cambios de pH y de la presencia de electrolitos, debido a las cargas iónicas de sus moléculas, que sólo son elevadas para concentraciones muy altas. Resulta incompatible con algún otro polímero usado en tecnología alimentaria, como la gelatina o el alginato sódico.

Se utiliza como espesante, emulsificante y estabilizante en una gran variedad de productos: reduce o previene la cristalización del azúcar y la pérdida de agua en dulces de confitería; evita la formación de grandes cristales de hielo en los helados; en las bebidas estabiliza las emulsiones y las espumas; posibilita la preparación de concentrados de aroma en forma de polvo, por lo que es un eficaz fijador de aromas, etc.

La *goma karaya*, exudado del árbol *Sterculia urens*, que abunda en la India. En esquema, su estructura corresponde a un polisacárido acetilado, que contiene ácido galacturónico, galactosa y ramnosa, y se caracteriza por su naturaleza ácida y una solubilidad más bien escasa; tal vez sea la goma menos soluble. Se usa como aglutinante en derivados cárnicos porque en realidad actúa absorbiendo agua para dar lugar a dispersiones extremadamente viscosas. Hay que señalar que su empleo puede producir alergias en algunas personas.

c) Exudados de microorganismos

Varios cultivos de microorganismos producen polisacáridos que, aislados y purificados de modo conveniente, han recibido diversas aplicaciones, entre las cuales nos interesa las realizadas por la industria alimentaria. Los más utilizados de todos ellos son dos: xantano y gelano.

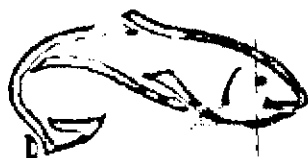
La *goma xantano*, es un polímero obtenido por cultivos de las bacterias *Xanthomonas campestris* al fermentar el almidón de maíz, encontrado como consecuencia de un programa de investigación sobre nuevas aplicaciones de este cereal. En su estructura interviene una cadena principal, algo similar a la celulosa, con grupos de oligosacáridos unidos como ramificaciones [12].

Un examen de su estructura ha demostrado que cada dos unidades de beta-D-glucosa, enlazadas a través de uniones $1 \rightarrow 4$, lleva una ramificación en la posición 3 formada por un trisacárido que integra dos moléculas de manosa (algunas veces acetilada en el C_6) y una de ácido glucurónico (a veces enlazado al ácido pirúvico en los carbonos C_4 y C_6). Sus moléculas adoptan una conformación helicoidal, simple o doble, sin ninguna tendencia a la asociación y ordenación. En cambio, la presencia de electrolitos neutraliza su marcado carácter aniónico y facilita las formas estructuradas, que ofrecen propiedades tecnológicas interesantes: viscosidad elevada, que prácticamente no depende de la temperatura, y carácter pseudoplástico.

CIENCIA BROMATOLÓGICA

Principios generales de los alimentos

JOSÉ BELLO GUTIÉRREZ



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