DESCRIPTION

Title of Invention: BEVERAGE CONTAINING GEL-LIKE MATERIAL

Technical Field

[0001]

The present invention relates to a beverage containing a gel-like material. More specifically, the present invention relates to a beverage in which a gel-like material is stably suspended and the gel-like material exists in the beverage in such a state that the gel-like material itself is not visible.

Background Art

[0002]

Heretofore, various foods and beverages have been provided in response to the ever increasing diversification of consumers' tastes and preferences in foods and beverages. Especially, in the field of beverages, a beverage containing a gel-like material has been developed that provides a unique texture, a satisfactory swallowing sensation, and the like. Such a beverage has attracted public attention for its ability to highly satisfy tastes and preferences, i.e., palatability. . There are two types of beverages containing a gel-like material, i.e., a gel-like material suspension-type beverage, which contains the gel-like material and a liquid in a separated state, and a jelly-like beverage in which the beverage as a whole has a gel-like form.

[0003]

The former gel-like material suspension-type beverage has a drawback in that the gel-like material easily precipitates in the beverage. Such beverages having a gel-like material precipitated therein possess the following disadvantages. Specifically, the sedimentation not only adversely affects its aesthetic appearance, but also, even if the gel-like material is dispersed by stirring or shaking before drinking, sedimentation of a gel-like material forms at the time it is ingested; this makes it impossible to uniformly intake the gel-like material and the liquid fraction. Therefore, it is desired that the gel-like

material in the former-type beverage be stably suspended in the beverage without sedimentation.

[0004]

Conventionally, in the field of gel-like material suspension-type beverages, beverages whose aesthetic appearance is improved by coloring the gel-like material have been developed. However, consumers' tastes and preferences (palatability) in foods and beverages are increasingly diversified and there is a demand for the development of a novel beverage that was hitherto not existent. The following idea is expected to satisfy the consumers' diversifying desire for palatability in foods and beverages. For example, when the gel-like material itself is suspended in the gel-like material suspension-type beverage in an invisible manner, the consumer first notices the presence of the gel-like material when he or she drinks the beverage. This imparts a refreshing sensation to the consumer and is expected to satisfy consumers' current diversifying desire for palatability. However, a formulation that allows the gel-like material to be contained in the beverages in an invisible manner has heretofore been unknown.

[0005]

A beverage in which a gel-like material is stably suspended in such a manner that the gel-like material itself is not visible is expected to meet the current consumers' preference (i.e., desire for palatability) as a novel beverage that was not previously experienced. However, a formulation for a beverage having such a characteristic has not yet been developed.

Citation List

Patent Literature

[0006]

PTL 1: Japanese Unexamined Patent Publication No. H10-243779

Summary of Invention

Technical Problem

[0007]

An object of the present invention is to provide a beverage in which a gel-like material is stably suspended in the beverage, and further provides a beverage in which a gel-like material itself exists in the beverage in an invisible manner.

Solution to Problem

[0008]

The present inventors conducted extensive research to achieve the above objects and found that, in a beverage containing a gel-like material and a liquid fraction, the gel-like material can be stably suspended in the beverage and further the gel-like material itself can exist in the beverage without being visible by using gellan gum as a gelling agent to prepare a gel-like material, adding gellan gum also to a liquid fraction, and adjusting the Brix value of the gel-like material to be equal to or lower than the Brix value of the liquid fraction. The present invention has been accomplished based on these findings and further study.

[0009]

The present invention provides the beverages described below.

Item 1. A beverage comprising a gel-like material and a liquid fraction, both the gel-like material and the liquid fraction containing gellan gum, and the gel-like material having a Brix value equal to or lower than the Brix value of the liquid fraction.

Item 2. The beverage according to Item 1, wherein the ratio of the Brix value of the gel-like material to the Brix value of the liquid fraction is 0.2 to 1.

Item 3. The beverage according to Item 1 or 2, wherein the concentration of the gellan gum contained in the gel-like material is 0.05 to 0.5 wt% relative to the total amount of the gel-like material.

Item 4. The beverage according to any one of Items 1 to 3, wherein the gel-like material contains a monovalent or divalent cation ion.

Item 5. The beverage according to Item 4, wherein the monovalent or divalent cation ion concentration in the gel-like material is 0.001 to 0.5 wt% when converted to cation atoms.

Item 6. The beverage according to any one of Items 1 to 5, wherein the gel-like material contains a sugar.

Item 7. The beverage according to Item 6, wherein the sugar concentration in the gel-like material is 1 to 20 wt%.

Item 8. The beverage according to any one of Items 1 to 7, wherein the gellan gum concentration contained in the liquid fraction is 0.001 to 0.05 wt% relative to the total amount of the liquid fraction.

Item 9. The beverage according to any one of Items 1 to 8, wherein the liquid fraction contains a monovalent or divalent cation ion.

Item 10. The beverage according to Item 9, wherein the monovalent or divalent cation ion concentration in the liquid fraction is 0.0001 to 0.1 wt% when converted to cation atoms.

Item 11. The beverage according to any one of Items 1 to 10, wherein the liquid fraction contains a sugar.

Item 12. The beverage according to Item 11, wherein the sugar concentration in the liquid fraction is 3 to 25 wt%.

Item 13. The beverage according to any one of Items 1 to 12, which comprises 3 to 35 parts by weight of gel-like material relative to 100 parts by weight of the liquid fraction.

Item 14. A method for producing a beverage containing a gel-like material and a liquid fraction, the method comprising mixing the gel-like material containing gellan gum with the liquid fraction containing gellan gum, the gel-like material having a Brix value equal to or lower than the Brix value of the liquid fraction.

Item 15. The method according to Item 14, wherein the ratio of the Brix value of the gel-like material to the Brix value of the liquid fraction is 0.2 to 1.

Item 16. The method according to Item 14 or 15, wherein the concentration of the gellan gum contained in the gel-

like material is 0.05 to 0.5 wt% relative to the total amount of the gel-like material.

Item 17. The method according to Items 14 to 16, wherein the concentration of the gellan gum contained in the liquid fraction is 0.001 to 0.05 wt% relative to the total amount of the liquid fraction.

Item 18. The method according to any one of Items 14 to 17, wherein 3 to 35 parts by weight of the gel-like material is mixed relative to 100 parts by weight of the liquid fraction.

Item 19. The method according to any one of Items 14 to 18, wherein the gel-like material containing gellan gum and the liquid fraction containing gellan gum are subjected to sterilization by heat after mixing.

Advantageous Effects of Invention

[0010]

The beverage of the present invention allows the gel-like material contained therein to be stably suspended in the beverage. This makes it possible for the consumer to ingest the gel-like material uniformly and to homogeneously perceive the unique texture and swallowing sensation of the gel-like material when ingested.

[0011]

In the beverage, the gel-like material itself is present in an invisible condition and perceived, for the first time, when drawn into the mouth. This allows the consumer to enjoy the taste and flavor of the beverage with a fresh sensation not previously experienced.

[0012]

Conventionally, gel-like materials obtained by using agar or gelatin, both of which are widely used as gelling agents in the field of foods, have low thermal stability, and the gel condition collapses at high temperatures; therefore, such a gel-like material cannot be subjected to heat sterilization, which is generally employed in food production. In contrast, the gel-like material contained in the beverage of the present invention is

advantageous in that it can maintain its gel condition even under high temperatures; therefore, it can be subjected to the heat sterilization that is employed in general food production processes.

[0013]

Further, because the beverage of the present invention contains a gel-like material and a liquid fraction, formulating a material that was previously difficult to add to a beverage into a gel-like material makes it easily ingestible. For example, in terms of a material that is not preferably added to a liquid fraction due to bitterness, astringency and other sense-related viewpoints, it is possible to mask the sense-related defect of such a material by formulating it into a gel-like material. Furthermore, for example, in terms of a material that becomes unstable in a liquid fraction, it is possible to prevent the instability of such a material by formulating it into a gel-like material.

Brief Description of Drawings

[0014]

Figure 1 shows the appearance of the beverage of Example 12 (on the left) and the appearance of the beverage of Example 12 with the liquid fraction removed (on the right).

Figure 2 shows the appearance of the beverage containing a gel-like material (having the same formulation as that of Example 9 except for the coloring agent) after being allowed to stand at room temperature for about 10 months.

Description of Embodiments

[0015]

The beverage of the present invention contains a gel-like material and a liquid fraction, wherein the gel-like material and the liquid fraction both contain gellan gum, and the sugar concentration of the gel-like material is lower than that of the liquid fraction. By adding gellan gum to both the gel-like

material and the liquid fraction, and making the sugar concentration of the gel-like material lower than that of the liquid fraction as described above, the gel-like material can be stably suspended in the liquid fraction, and the gel-like material can be made invisible. The components of the beverage of the present invention are explained in detail below.

[0016]

Gel-like material

The gel-like material contained in the beverage of the present invention is a solid material that is gelled using gellan gum as a gelling agent.

[0017]

The concentration of gellan gum contained in the gel-like material is not particularly limited as long as gelling can be performed, and is generally 0.05 to 0.5 wt%, preferably 0.08 to 0.3 wt%, and more preferably 0.1 to 0.2 wt% relative to the total weight of the gel-like material.

[0018]

The gel-like material may comprise a monovalent or divalent cation ion in order to improve the gel strength due to gellan gum. Examples of such cation ions include sodium ion, potassium ion, calcium ion, and magnesium ion. The monovalent or divalent cation ions can be added in the form of a water soluble salt from which monovalent or divalent cation ions can be released. Specific examples of such salts include sodium chloride, potassium chloride, calcium lactate, magnesium chloride, calcium chloride, calcium gluconate, calcium carbonate, magnesium carbonate, and zinc gluconate. These monovalent or divalent cation ions may be used singly or in a combination of two or more.

[0019]

When monovalent or divalent cation ions are added to the gel-like material, the proportion thereof can be suitably selected depending on the type of cation ion and the gel strength and the like of the gel-like material. For example, the proportion of the monovalent or divalent cation ions when

converted to monovalent or divalent cation atoms is generally 0.001 to 0.065 wt%, preferably 0.004 to 0.05 wt%, and more preferably 0.0065 to 0.04 wt% relative to the total weight of the gel-like material.

[0020]

The gel-like material may comprise a gelling agent other than gellan gum as long as it does not adversely affect the effects of the present invention. However, depending on the type of gelling agent that is used in combination with gellan gum, the transparency of the gel-like material may be impaired causing the gel-like material to be visible. Furthermore, the use of a gelling agent other than gellan gum may result in insufficient heat resistance making it impossible to subject the beverage to heat sterilization. Therefore, the use of gellan gum singly is preferable in order to provide transparency to the gel-like material and make the gel-like material not visible in the beverage.

[0021]

The gel-like material preferably contains sugar in order to secure the suspension of the gel-like material in the beverage, impart a preferable taste to the beverage, and obtain a desirable Brix value. Examples of sugar include monosaccharides, disaccharides, and oligosaccharides. Specific examples thereof include glucose, galactose, fructose, arabinose, xylose, sucrose, lactose, maltose, trehalose, sucralose, fructooligosaccharide, galactosaccharide, and dextrin. These sugars may be used singly or in a combination of two or more.

[0022]

The concentration of sugar contained in the gel-like material may be suitably selected depending on the Brix value to be imparted to the gel-like material, the type of sugar, the desired taste, and the like. For example, the sugar concentration is generally 1 to 20 wt%, preferably 5 to 15 wt%, and more preferably 8 to 10 wt% relative to the total weight of the gel-like material.

[0023]

The gel-like material may further comprise maltitol, xylitol, sorbitol, mannitol and like sugar alcohols, and water-soluble dietary fibers such as polydextrose and like in order to adjust the taste and/or texture thereof, and further provide a desirable Brix value.

[0024]

The following components other than the above components may further be suitably added to the gel-like material as long as the effect of the present invention is not impaired: fruit juices, sweeteners, colors, preservatives, stabilizers, antioxidants, flavoring, acidulants, seasonings, emulsifiers, pH modifiers, nutrition enhancers, and the like.

[0025]

The Brix value of the gel-like material is not particularly limited as long as it is equal to or lower than the Brix value of the liquid fraction described later. In order to stably disperse and suspend the gel-like material in the beverage, the Brix value of the gel-like material is generally 1 to 20, preferably 3 to 18, and more preferably 5 to 15. Here, the Brix value of the gel-like material can be obtained by measuring the Brix value of the liquid before solidification by gelling with the gel-like material (i.e., a composition that comprises all the components contained in the gel-like material and has a liquid form before solidification by gelling), or by measuring the Brix value of a liquefied composition obtained by grinding the gel-like material. The Brix value of the gel-like material is primarily affected by the type and concentration of the sugar, and also by the type and concentration of sugar alcohol and/or water-soluble dietary fiber. The Brix value of the gel-like material can be controlled by suitably selecting the proportions and the like of these components.

[0026]

By providing transparency to the gel-like material, the gel-like material can be invisible in the beverage of the present

invention; therefore, in order to satisfactorily maintain such a characteristic in the gel-like material, it is preferable that the selection of additive components be made from a range of components that do not adversely affect the transparency of the gel-like material. Here, the transparency may be either colorless or colored.

[0027]

The shape of the gel-like material may be spherical, rectangular, cubical, cylindrical, polyhedral, or the like. The size of the gel-like material is not limited as long as it can be ingested together with the liquid fraction, and is generally 0.001 to 8 cm^3, preferably 0.008 to 1 cm^3, and more preferably 0.02 to 0.75 cm^3.

[0028]

Liquid Fraction

The liquid fraction in the beverage of the present invention contains gellan gum and is in a liquid form. The concentration of gellan gum contained in the liquid fraction is not limited as long as the liquid fraction is not converted into a gel, and is generally 0.001 to 0.05 wt%, preferably 0.005 to 0.03 wt%, and more preferably 0.008 to 0.02 wt% relative to the total amount of the liquid fraction.

[0029]

Further, the liquid fraction may contain a gelling agent other than the gellan gum as long as the effect of the present invention is not impaired. However, depending on the type of gelling agent used in combination with the gellan gum, the transparency, texture, and the like of the liquid fraction may be impaired, or the liquid fraction may be converted into a gel. Therefore, it is desirable not to use a gelling agent other than the gellan gum.

[0030]

The liquid fraction may contain monovalent or divalent cation ions within the range that does not convert the gellan gum into a gel in order to stably suspend the gel-like material in

the liquid fraction. Specific examples of monovalent or divalent cation ions added to the liquid fraction are the same as those added to the gel-like material. The monovalent or divalent cation ions added to the liquid fraction may be used singly or in a combination of two or more. When the liquid fraction contains monovalent or divalent cation ions, the proportion thereof may be suitably selected depending on the type and the like of cation ions used, and is generally 0.0001 to 0.1 wt%, preferably 0.0007 to 0.065 wt%, and more preferably 0.0013 to 0.05 wt% in terms of the concentration of cation atoms relative to the total weight of the liquid fraction.

[0031]

The Brix value of the liquid fraction is set to be equal to or higher than the Brix value of the gel-like material. Specifically, the ratio (gel Brix value/liquid Brix value) of the Brix value of the gel-like material (gel Brix value) to the Brix value of the liquid fraction (liquid Brix value) is 0.2 to 1, preferably 0.4 to 0.85, and more preferably 0.5 to 0.8. The gel-like material can be stably suspended in the beverage without sedimentation by satisfying the above ratio of gel Brix value to liquid Brix value.

[0032]

The Brix value of the liquid fraction is suitably selected in the range that satisfies the above ratio: specifically, it is generally 1.5 to 25, preferably 3 to 20, and more preferably 5 to 15.

[0033]

The Brix value of the liquid fraction is mainly influenced by the type and concentration of sugar added. It is also influenced by the type and concentration of sugar alcohol and water-soluble dietary fiber. The Brix value of the gel-like material is adjusted by suitably setting the proportion of these components and the like.

[0034]

The liquid fraction preferably contains sugar in order

to impart a good taste as well as a desired Brix value. Specific examples of sugar added to the liquid fraction are the same as those added to the gel-like material. The sugar added to the liquid fraction may be used singly or in a combination of two or more. Further, the sugar added to the liquid fraction may be the same or a different type of sugar as that added to the gel-like material. Additionally, the sugar concentration contained in the liquid fraction may be suitably selected depending on the Brix value to be imparted to the liquid fraction, the type of sugar used, the taste, and the like, and is generally 3 to 25 wt%, preferably 7 to 20 wt%, and more preferably 10 to 15 wt% relative to the total weight of the liquid fraction.

[0035]

Further, the liquid fraction may contain sugar alcohol and water-soluble dietary fiber in order to adjust the taste and/or texture and to further provide a desired Brix value. Specific examples of sugar alcohols and water-soluble dietary fibers added to the liquid fraction are the same as those added to the gel-like material.

[0036]

The following components other than the above components may further be suitably added to the liquid fraction as long as the effect of the present invention is not impaired: fruit juices, sweeteners, colors, preservatives, stabilizers, antioxidants, flavoring, acidulants, seasonings, emulsifiers, pH modifiers, nutrition enhancers, and the like.

[0037]

Because the gel-like material is transparent and exists in an invisible condition in the beverage of the present invention, the liquid fraction is preferably transparent in order to fully demonstrate the above feature. The transparency described herein may be either colorless or colored. Additionally, when the gel-like material is colored-transparent, the liquid fraction is also preferably colored-transparent with the same color.

[0038]

Beverage

The beverage of the present invention comprises the gel-like material and the liquid fraction defined above. The combination of a gel-like material and a liquid fraction having the specific compositions described above allows the gel-like material to be stably suspended and invisible.

[0039]

In the beverage of the present invention, the ratio between the gel-like material and the liquid fraction is not particularly limited: the gel-like material is generally added in an amount of 3 to 35 parts by weight, preferably 5 to 25 parts by weight, and more preferably 10 to 15 parts by weight relative to 100 parts by weight of the liquid fraction. The beverage can be provided with a good balance of gel-like material texture and liquid fraction taste by satisfying the above ratio.

[0040]

The beverage of the present invention can be provided in various forms, such as fruit juice drinks, soft drinks, carbonated drinks, lactic acid bacteria beverages, sports drinks, soups, and teas.

[0041]

Further, a container for the beverage of the present invention may be either transparent or opaque. The beverage of the present invention allows the gel-like material to be stably suspended and invisible, and has an excellent aesthetic appearance. Therefore, to allow a consumer to sufficiently enjoy the benefit of such an excellent aesthetic appearance, the beverage of the present invention is preferably contained in a transparent container, preferably a transparent PET bottle or a transparent glass container, and more preferably a colorless transparent PET bottle or a colorless transparent glass container.

[0042]

The beverage of the present invention is produced by mixing the gel-like material and the liquid fraction in desired

amounts. The gel-like material added to the beverage of the present invention can maintain the gel condition even when subjected to heat sterilization, which is a treatment employed in the production of general beverages. Therefore, in the production of the beverage of the present invention, after the gel-like material and the liquid fraction are mixed, the resulting mixture can be subjected to heat sterilization, if necessary. Heat sterilization conditions are not particularly limited as long as the beverage can be sterilized. For example, sterilization is generally performed at 65 to 121°C, and preferably at 85 to 110°C, for 1 to 600 seconds, and preferably for 1 to 180 seconds.

Examples

[0043]

The present invention is described with reference to examples below; however, the present invention is not limited to these examples.

Examples

Preparation of Beverages

Gel-like materials and liquid fractions were prepared by the following procedures, and they were mixed and subjected to heat sterilization, thereby preparing beverages each comprising the gel-like material and the liquid fraction.

[0044]

1. Preparation of Gel-like Materials

Of the components shown in the gel-like material column on Tables 1 and 2, gellan gum and acidulants were added to purified water heated to 90°C or higher, and dissolved in the water by stirring. Subsequently, other components were sequentially added, thereby preparing mixed starting solutions having all the components dissolved therein. Subsequently, each of the mixed starting solutions was poured into a respective predetermined container, and left to stand overnight at 4°C so as to be converted into a gel. The thus-obtained gel was cut into

squares of about 5 mm, thereby preparing pieces of the gel-like material.

[0045]

Further, the Brix value of each gel-like material was obtained by measuring the Brix value of each mixed starting solution using a Brix meter (Hand Refractometer N-1E by Atago Co., Ltd.).

[0046]

2. Preparation of Liquid Fractions

The liquid fractions were prepared by adding and mixing the components shown in the liquid fraction column on Tables 1 and 2 into purified water. Additionally, the sugar Brix value of each prepared liquid fraction was measured using a Brix meter (Hand Refractometer N-1E by Atago Co., Ltd.).

[0047]

3. Mixing of the Gel-like Materials and Liquid Fractions, and Heat Sterilization Thereof

The gel-like material and the liquid fraction in each Example were mixed in the ratios shown in Tables 1 and 2, and each mixture was subjected to heat sterilization under the conditions of 65°C for 10 minutes, thereby preparing beverages each comprising the gel-like material and the liquid fraction.

[0048]

Table 1

		Examples						
		1	2	3	4	5	6	7
Gel-like material	Sucralose	10 g	10 g	10 g	-	-	-	-
	Fructose	-	-	-	5 g	5 g	5 g	5 g
	Maltitol	-	-	-	5 g	5 g	5 g	5 g
	Sweetener	-	-	-	q.s.	q.s.	q.s.	q.s.
	Water-soluble dietary fibers[#1]	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Acidulant	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Gellan gum	0.1 g	0.15 g	0.175 g	0.175 g	0.15 g	0.125 g	0.125 g
	Calcium lactate	0.1 g	0.1 g	0.1 g	0.1 g	0.1 g	0. 1g	0.08 g
	Fruit juice	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Flavoring	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Total amount	100 g	100 g	100 g	100 g	100 g	100 g	100 g
	Brix value	11.2	11.2	11.3	12.3	12.5	12.6	12.6
Liquid fraction	Sucralose	10 g	10 g	10 g	-	-	-	-
	Fructose	-	-	-	5 g	5 g	5 g	5 g
	Maltitol	-	-	-	5 g	5 g	5 g	5 g
	Water-soluble dietary fibers[#1]	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Acidulant	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Gellan gum	0.003 g	0.003 g	0.005 g	0.005 g	0.005 g	0.01 g	0.01 g
	Calcium lactate	0.002 g	0.002 g	0.005 g	0.007 g	0.007 g	0.007 g	0.007 g
	Fruit juice	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.

	Flavoring	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Total amount	100 g	100 g	100 g	100 g	100 g	100 g	100 g
	Brix value	11.2	11.2	11.3	12.3	12.5	12.6	12.6
Mixing ratio (parts by weight) of gel-like material relative to 100 parts by weight of liquid fraction		33.3	33.3	25	25	25	29	29

#1: Indigestible dextrin and polydextrose were used as the water-soluble dietary fibers.

[0049]

Table 2

		Examples						
		8	9	10	11	12	13	14
Gel-like material	Fructose	2.5 g	2.5 g	2.5 g	-	-	-	-
	Maltitol	2.5 g	2.5 g	2.5 g	-	-	-	-
	Isomerized sugar	-	-	-	9 g	9 g	9 g	9 g
	Sweetener	q.s.	q.s.	q.s.	-	-	-	-
	Water-soluble dietary fibers[#1]	q.s.	-	-	-	-	-	-
	Acidulant	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Gellan gum	0.13 g	0.13 g	0.13 g	0.13 g	0.13 g	0.13 g	0.13 g
	Calcium lactate	0.09 g	0.09 g	0.09 g	0.09 g	0.1 g	0.1 g	0.09 g
	Fruit juice	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Flavoring	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Total amount	100 g	100 g	100 g	100 g	100 g	100 g	100 g
	Brix value	7.4	5.4	5.4	8.4	8.8	8.8	8.8
Liquid fraction	Fructose	2.5 g	2.5 g	2.5 g	-	-	-	-
	Maltitol	2.5 g	2.5 g	2.5 g	-	-	-	-
	Isomerized sugar	-	-	-	12 g	10.5 g	10.5 g	12 g
	Sweetener	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Water-soluble dietary fibers[#1]	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	-
	Acidulant	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Gellan gum	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g
	Calcium lactate	0.015 g	0.015 g	0.015 g	0.015 g	0.015 g	0.015 g	0.335 g
	Fruit juice	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.

	Flavoring	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
	Total amount	100 g	100 g	100 g	100 g	100 g	100 g	100 g
	Brix value	7.4	9.4	7.9	14.2	13.2	13.5	10.8
Mixing ratio (parts by weight) of gel-like material relative to 100 parts by weight of liquid fraction		29	29	25	25	25	25	25

#1: Indigestible dextrin and polydextrose were used as the water-soluble dietary fibers.

#2: High-fructose corn syrup(Brix value of 69.5) was used as isomerized sugar.

[0050]

Beverage Evaluation

1. Evaluation of Beverage Transparency

When the beverages of Examples 1 to 14 were observed with the naked eye, the gel-like material was not visible in any of the beverages. Each beverage was a transparent liquid in appearance. As an example of the results, Fig. 1 shows a picture of the appearance of the beverage of Example 12, and a picture of the appearance of the beverage of Example 12 from which the liquid fraction was removed.

[0051]

2. Evaluation of the Suspension Ability of the Gel-like Material in the Beverage

200 g of each beverage of Examples 1 to 14 was poured into a respective container, and left to stand for 60 minutes. Subsequently, these beverages were ingested just as they were, without stirring. As a result, a uniform amount of gel-like material was drawn into the mouth in each of the following stages: at the start of drinking, at about the middle of drinking, and at the end of drinking. These results clearly showed that the gel-like material was uniformly dispersed and suspended in each beverage without sedimentation.

[0052]

Further, in order to evaluate the suspension ability of the gel-like material over a long period of time, a beverage was prepared with the same formulation as in Example 9 except that an orange color was added to the gel-like material. The beverage was stored in a transparent glass container, and left to stand for about 10 months in a room. Fig. 2 shows the results obtained by observing the appearance of the beverage after the lapse of about 10 months. As Fig. 2 clearly shows, it was observed that the gel-like material was stably suspended in the beverage without settling at the bottom of the container even after the lapse of about 10 months.

[0053]

Further, although the beverages of Examples 1 to 14 were liquids having a transparent appearance, the presence of the gel-like materials was perceived when ingested. This allowed the consumer to enjoy the taste and flavor of the beverages with a fresh sensation not previously experienced.

[0054]

Comparative Examples

Beverages were prepared by the same method as in Examples 1 to 14, except that an appropriate amount of agar or gelatin in place of the gellan gum was used as a gelling agent for the gel-like material. As a result, the gel-like material was dissolved in the each beverage during heat sterilization, and it was ultimately impossible to prepare a beverage having a gel-like material suspended therein.

[0055]

Further, beverages were prepared using the formulations of Examples 5 to 7, except that neither fructose nor maltitol were added to the liquid fraction. In the resulting beverages, sedimentation of the gel-like materials immediately occurred, and the gel-like materials could not be stably suspended in the beverages.

CLAIMS

[Claim 1]

A beverage comprising a gel-like material and a liquid fraction, both the gel-like material and the liquid fraction containing gellan gum, and the gel-like material having a Brix value equal to or lower than the Brix value of the liquid fraction.

[Claim 2]

The beverage according to claim 1, wherein the ratio of the Brix value of the gel-like material to the Brix value of the liquid fraction is 0.2 to 1.

[Claim 3]

The beverage according to claim 1, wherein the concentration of the gellan gum contained in the gel-like material is 0.05 to 0.5 wt% relative to the total amount of the gel-like material.

[Claim 4]

The beverage according to claim 1, wherein the gellan gum concentration contained in the liquid fraction is 0.001 to 0.05 wt% relative to the total amount of the liquid fraction.

[Claim 5]

The beverage according to claim 1, which comprises 3 to 35 parts by weight of the gel-like material relative to 100 parts by weight of the liquid fraction.

[Claim 6]

A method for producing a beverage containing a gel-like material and a liquid fraction, the method comprising mixing the gel-like material containing gellan gum with the liquid fraction containing gellan gum, the gel-like material having a Brix value equal to or lower than the Brix value of the liquid fraction.

[Claim 7]

The method according to claim 6, wherein the ratio of the Brix value of the gel-like material to the Brix value of the liquid fraction is 0.2 to 1.

[Claim 8]

The method according to claim 6, wherein the concentration of the gellan gum contained in the gel-like material is 0.05 to 0.5 wt% relative to the total amount of the gel-like material.

[Claim 9]

The method according to claim 6, wherein the concentration of the gellan gum contained in the liquid fraction is 0.001 to 0.05 wt% relative to the total amount of the liquid fraction.

[Claim 10]

The method according to claim 6, wherein 3 to 35 parts by weight of the gel-like material is mixed relative to 100 parts by weight of the liquid fraction.