

DESCRIPTION

Title of Invention: CHEESE-LIKE FOOD

5 TECHNICAL FIELD

[0001] The present invention relates to a cheese-like food, an agent for improving the stretch of a cheese using the same, a method for improving the stretch of a cheese, an agent for imparting a cheese-like texture, a method for imparting a cheese-like texture to a food, and a food having a cheese-like texture.

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BACKGROUND ART

[0002] Cheese is a kind of food (dairy product) made by processing milk of cows, buffaloes, sheep, goats, yaks, etc. as a raw ingredient by curdling, fermentation, etc. In addition to being eaten on its own, it is often combined with other foods. For example, a
15 cheese that melts and has a stringy stretch when heated is used in various dishes such as pizza, pasta, gratin, risotto, and cheese fondue.

Such a cheese for heat cooking has an elastic stretch immediately after heating, but it becomes hard when its temperature drops. Foods such as boxed lunches and prepared foods for take-out that are sold in retail stores such as convenience stores are heated at the
20 store, but their temperature drops by the time they are consumed. Accordingly, when a cheese is used in such foods, the stretch and texture typical of the cheese are lost at the time of consumption.

In response to the above problem, attempts have been made to achieve an elastic cheese-like stretch even after its temperature drops by using a starch ingredient. For example,
25 Patent literature 1 describes that by mixing and heating an acetylated starch or a hydroxypropylated starch with a raw cheese and an oil/fat, and then cooling the mixture, a cheese-like food having a flavor and texture more similar to a cheese can be obtained.

CITATION LIST

30 Patent Literature

[0003] Patent literature 1: Japanese Unexamined Patent Application Publication No. 2020-202820

SUMMARY OF INVENTION

35 Technical Problem

[0004] However, starch ingredients such as an acetylated starch and a hydroxypropylated starch easily develop a gel-like texture when the temperature is lowered, which affects the meltability in mouth and prevents the cheese-like texture from being fully obtained. Under these circumstances, it is desirable to provide a cheese-like food that retains a cheese-like stretch and texture even after its temperature drops.

Solution to Problem

[0005] The present invention relates to a cheese-like food, an agent for improving the stretch of a cheese, a method for improving the stretch of a cheese, an agent for imparting a cheese-like texture, a method for imparting a cheese-like texture to a food, and a starch composition for imparting a cheese-like texture, as described below.

[1] A cheese-like food, comprising:

(a) a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0 MPa or more but less than 100 MPa, wherein the starch composition comprises a starch-lipid complex; and

(b) water.

[2] The cheese-like food according to [1] above, comprising Ingredient (a) above in an amount of 0.1 mass% or more but 40 mass% or less based on the total weight of the cheese-like food.

[3] The cheese-like food according to either one of [1] and [2] above, further comprising (c) an edible oil/fat.

[4] The cheese-like food according to [3] above, comprising Ingredient (c) above in an amount of 0.1 mass% or more but 40 mass% or less based on the total weight of the cheese-like food.

[5] The cheese-like food according to any one of [1] to [4] above, further comprising (d) one or more modified starches selected from the group consisting of a hydroxypropylated starch and an acetylated starch.

[6] The cheese-like food according to [5] above, comprising Ingredient (d) above in an amount of 0.1 mass% or more but 40 mass% or less based on the total weight of the cheese-like food.

[7] The cheese-like food according to any one of [1] to [6] above, further comprising (e) a cheese.

[8] The cheese-like food according to [7] above, comprising Ingredient (e) above in

an amount of 1 mass% or more but 90 mass% or less based on the total weight of the cheese-like food.

[9] An agent for improving the stretch of a cheese, comprising the cheese-like food according to any one of [1] to [8] above.

5 [10] A method for improving the stretch of a cheese, the method comprising adding the agent for improving the stretch of a cheese according to [9] above at a mass ratio of 5 parts by mass or more but 4,000 parts by mass or less to 100 parts by mass of the cheese.

[11] An agent for imparting a cheese-like texture, comprising the cheese-like food according to any one of [1] to [8] above.

10 [12] A method for imparting a cheese-like texture to a food, the method comprising adding the agent for imparting a cheese-like texture according to [11] above at a mass ratio of 5 parts by mass or more but 4,000 parts by mass or less to 100 parts by mass of the food.

[13] A starch composition for imparting a cheese-like texture which can be added to a food containing moisture to impart a cheese-like texture thereto, the starch composition
15 comprising:

(a) a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0 MPa or more but less than 100 MPa, wherein the starch composition comprises a starch-lipid
20 complex.

[14] A method for imparting a cheese-like texture to a food, the method comprising adding the starch composition for imparting a cheese-like texture according to [13] above to a food containing moisture.

[15] A food having a cheese-like texture, comprising the agent for imparting a cheese-like texture according to [11] above or the starch composition for imparting a cheese-like texture according to [13] above.
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ADVANTAGEOUS EFFECTS OF INVENTION

[0006] Since a cheese-like food of the present invention has a cheese-like stretch and
30 texture not only immediately after heating but also after its temperature drops, the cheese-like food of the present invention can be added to foods to impart a cheese-like texture thereto.

The cheese-like food of the present invention can also be used in combination with a cheese. The cheese-like food of the present invention can be added, together with a cheese,
35 to a food to improve the stretch of the cheese in the food.

According to a preferred embodiment of the present invention, it is possible to provide a cheese-like food having excellent shape retention while retaining the natural texture and meltability in mouth typical of a cheese even after its temperature drops.

5 BRIEF DESCRIPTION OF DRAWINGS

[0007] [Figure 1] A photograph showing a property of a slurry containing the starch composition for foods obtained in Production example 1-2 (starch composition for foods: edible oil/fat: water = 1:2:7) in an unheated state.

10 [Figure 2] A graph showing changes in the viscosity characteristics of a slurry containing the starch composition for foods obtained in Production example 1-2 (starch composition for foods: edible oil/fat: water = 1:2:7) during three freeze-thaw cycles.

[Figure 3] Photographs showing properties of a slurry containing the starch composition for foods obtained in Production example 1-2 (starch composition for foods: edible oil/fat: water = 1:2:7) during three freeze-thaw cycles, each photograph showing the property of the slurry at 20°C in (a) the first freeze-thaw cycle, (b) the second freeze-thaw cycle, and (c) the third freeze-thaw cycle.

DESCRIPTION OF EMBODIMENTS

20 [0008] Hereinafter, each of the embodiments of the present invention will be described more specifically.

[0009] 1. Cheese-like food

25 A cheese-like food of the present invention comprises: (a) a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0 MPa or more but less than 100 MPa, the starch composition containing a starch-lipid complex; and (b) water.

30 The cheese-like food of the present invention, containing Ingredients (a) and (b) above, can achieve a cheese-like stretch and texture not only at a high temperature immediately after heating but also at a low temperature after cooling down. Herein, high temperature means higher than 50°C, and low temperature means 1°C or higher but 50°C or lower. The term “cheese-like food” as used herein refers to a food with properties similar to those of a cheese, which is produced without using a cheese as an ingredient or with a reduced cheese content. Examples of the properties similar to a cheese include the stretch, texture, flavor, and richness, and it is preferable to have one or more of these properties.

35 [0010] Hereinafter, each ingredient of a cheese-like food of the present invention will be

described.

[0011] (a) Starch composition for foods

A starch composition for foods used in the present invention is a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0 MPa or more but less than 100 MPa, the starch composition containing a starch-lipid complex. Herein, pressure refers to gauge pressure.

[0012] As used herein, the term "starch-lipid complex" refers to a complex formed by the interaction between a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch. Although it is not easy to identify its specific structure, and there are still many parts that remain to be elucidated, it is thought, for example, that the polyglycerol fatty acid ester is entrapped in the helical structure of amylose molecules in the one or more starches selected from the group consisting of raw potato starch and a modified starch of said raw potato starch. Alternatively, the polyglycerol fatty acid ester may be attached to the surface of the aforementioned helical structure of said amylose molecules. Alternatively, it is also possible that the polyglycerol fatty acid ester is interacting with parts other than the aforementioned amylose molecules. In this complex, the starch may be a low-molecular-weight starch resulting from cleavage of the starch chain, a high-molecular-weight starch resulting from polymerization of the starch chains, or may contain both. The starch-lipid complex may be formed at least in part in the aforementioned starch composition for foods. Other ingredients contained in the starch composition for foods are those derived from raw ingredients including the polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch.

[0013] The above-mentioned modified starch of raw potato starch is preferably a modified starch obtained by subjecting the raw potato starch to one or two or more modification treatments selected from the group consisting of crosslinking, etherification, and esterification. Examples of the modification treatment include one or two or more of: crosslinking such as phosphate crosslinking and adipate crosslinking; etherification such as hydroxypropylation; monoesterification such as acetylation and phosphate monoesterification; and the like. Specifically, the modified starch is preferably distarch phosphate potato starch, or etherified distarch phosphate potato starch, and particularly preferably distarch phosphate potato starch.

[0014] While the fatty acid constituting the polyglycerol fatty acid ester is not particularly

limited, it is preferably one or two or more selected from myristic acid, palmitic acid, stearic acid, oleic acid, and behenic acid, and more preferably one or two selected from the group consisting of palmitic acid and stearic acid.

The polyglycerol fatty acid ester preferably has a HLB value of 1 or higher but 13 or lower and an average degree of polymerization of 2 or higher but 9 or lower. Here, the HLB value is more preferably 1 or higher but 11 or lower, and still more preferably 3 or higher but 10 or lower. The average degree of polymerization is more preferably 2 or higher but 7 or lower, and still more preferably 2 or higher but 5 or lower. Herein, the average degree of polymerization of polyglycerol is determined by calculating from the hydroxyl value, or by determining the composition of polyglycerol by gas chromatography, liquid chromatography, thin-layer chromatography, gas chromatography-mass spectrometry, liquid chromatography-mass spectrometry, or the like and then calculating the average degree of polymerization.

[0015] While the mass ratio of the polyglycerol fatty acid ester to 100 parts by mass of the one or more raw starches selected from the group consisting of raw potato starch and a modified starch of said raw potato starch is not particularly limited, it is preferably 0.01 parts by mass or more but 4.8 parts by mass or less, more preferably 0.1 parts by mass or more but 4.5 parts by mass or less, and still more preferably 1.0 part by mass or more but 4.0 parts by mass or less.

Whenever a numerical range is indicated herein, the upper and lower limit values may be combined as appropriate, and any numerical range obtained thereby is considered to be disclosed herein.

[0016] The aforementioned starch composition for foods can be obtained, for example, by adding water to a raw ingredient mixture containing a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch, and subjecting the mixture to a heat treatment using an extruder or a drum dryer.

[0017] [Heat treatment using extruder]

For example, in a case where an extruder is used for the heat treatment, water is added to a raw ingredient mixture containing a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of raw potato starch to adjust the moisture content to about 10 mass% or more but 60 mass% or less based on the mass of a composition containing the raw ingredient mixture and water. Then, the raw ingredient mixture is heated and expanded under the following conditions: barrel temperature of 30°C or higher but 200°C or lower, outlet temperature of 80°C or higher but

180°C or lower, screw speed of 100 rpm or higher but 1,000 rpm or lower, and period of heat treatment of 5 seconds or more but 60 seconds or less, thereby obtaining a starch composition for foods of interest.

Here, the temperature conditions are more preferably a barrel temperature of 30°C or higher but 170°C or lower and an outlet temperature of 100°C or higher but 160°C or lower, and still more preferably a barrel temperature of 30°C or higher but 140°C or lower and an outlet temperature of 110°C or higher but 145°C or lower.

As to the conditions for adding water, it is more preferable to adjust the moisture content to 15 mass% or more but 40 mass% or less, and still more preferable to adjust it to 20 mass% or more but 30 mass% or less based on the mass of the composition containing the raw ingredient mixture and water.

The screw speed is more preferably 150 rpm or higher but 900 rpm or lower and still more preferably 200 rpm or higher but 850 rpm or lower.

The pressure condition is preferably 0.5 MPa or more but less than 100 MPa, more preferably 0.5 MPa or more but 80 MPa or less, still more preferably 0.5 MPa or more but 50 MPa or less, particularly preferably 0.5 MPa or more but 30 MPa or less, still more preferably 0.5 MPa or more but 20 MPa or less, yet still more preferably 0.5 MPa or more but 18 MPa or less, and even more preferably 0.5 MPa or more but 15 MPa or less.

Moreover, the period of heat treatment is more preferably 7 seconds or more but 50 seconds or less and still more preferably 10 seconds or more but 45 seconds or less.

[0018] [Heat treatment using drum dryer]

In a case where a drum dryer is used for the heat treatment, water is added to a raw ingredient mixture containing a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to prepare a slurry in which the concentration of the raw ingredient mixture is 20% w/w or more but 45% w/w or less (about 10 or higher but 22 or lower degrees Baumé). Then, the slurry is preferably passed through heat transfer apparatus "ONLATOR" (registered trademark) and heated to an outlet temperature of about 90°C or higher but 140°C or lower under a pressure condition of 0 MPa or more but 0.5 MPa or less, to give a paste, which is heat-dried by being spread thinly on a drum dryer heated to a temperature of 100°C or higher but 200°C or lower. After the heat treatment, the heat-dried ingredient can be scraped from the drum dryer to obtain a starch composition for foods of interest.

Here, as to the temperature conditions, the outlet temperature is more preferably 95°C or higher but 140°C or lower and still more preferably 100°C or higher but 130°C or lower, and the drum dryer temperature is more preferably 110°C or higher but 190°C or

lower and still more preferably 120°C or higher but 180°C or lower.

As to the conditions for adding water, the concentration of the ingredient mixture in the slurry is preferably in a range of 22% w/w or more but 40% w/w or less (about 10.5 or higher but 20 or lower degrees Baumé), and more preferably in a range of 24% w/w or more but 38% w/w or less (about 11 or higher but 19 or lower degrees Baumé).

The pressure condition is preferably 0.05 MPa or more but 0.48 MPa or less, and more preferably 0.07 MPa or more but 0.45 MPa or less.

[Heat treatment under atmospheric pressure]

In another aspect, water is added to a raw ingredient mixture containing a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to adjust the moisture content to about 10 mass% or more but 60 mass% or less based on the mass of a composition containing the raw ingredient mixture and water. Subsequently, the raw ingredient mixture is heated for gelatinization and dried under atmospheric pressure, thereby obtaining a starch composition for foods of interest. The heating temperature for gelatinization is preferably 90°C or higher but 100°C or lower, more preferably 95°C or higher but 100°C or lower, and still more preferably 100°C (boiling state). While the period of heating for gelatinization is not particularly limited, it is preferably, for example, 1 minute or more but 2 hours or less.

As the means for drying, for example, a drum dryer, a hot plate, or the like may be used.

[0019] The raw ingredient mixture can be subjected to a heat treatment under the above conditions, preferably in the presence of water to give the starch composition for foods of interest. As described above, there is no need for a high-pressure treatment when any of the heat treatment method is used, and the starch composition for foods of interest can be obtained under a pressure condition of less than 100 MPa, preferably 80 MPa or less, more preferably 50 MPa or less, still more preferably 30 Mpa or less, particularly preferably 20 Mpa or less, for example, 18 Mpa or less or 15 Mpa or less.

[0020] According to a preferred embodiment, the aforementioned starch composition for foods has the following characteristic properties.

[0021] For example, the aforementioned starch composition for foods can form a slurry by mixing it with an edible oil/fat twice as much and water 7 times as much as the starch composition for foods on a mass basis in this order at 20°C without heating. According to another preferred embodiment, this slurry is a slurry in which the aqueous and oil phases are not separated but completely emulsified.

[0022] The edible oil/fat here is not particularly limited as long as it is applicable to foods.

For example, the edible oil/fat may be one or two or more selected from the group consisting of: vegetable oils/fats such as soybean oil, rapeseed oil, corn oil, cottonseed oil, rice oil, sunflower oil, safflower oil, sesame oil, olive oil, peanut oil, kapok oil, evening primrose oil, linseed oil, perilla oil, palm oil, palm kernel oil, and coconut oil; animal oils/fats such as fish oil, lard, tallow, and milk fat; triglycerides of medium-chain fatty acids; and processed oils/fats obtained by subjecting these oils/fats to one or two or more kinds of processing selected from the group consisting of transesterification, hydrogenation, and fractionation. Among these, the edible oil/fat is preferably one or more selected from the group consisting of soybean oil, rapeseed oil, corn oil, cottonseed oil, rice oil, sunflower oil, safflower oil, sesame oil, olive oil, linseed oil, perilla oil, and palm oil, more preferably one or more selected from the group consisting of soybean oil, rapeseed oil, corn oil, sunflower oil, olive oil, and palm oil, and particularly preferably one or more selected from the group consisting of rapeseed oil, olive oil, and palm oil. The aforementioned starch composition for foods should be such that it exhibits the viscosity characteristics described above when one or more of the above edible oils/fats are used.

[0023] Preferably, the slurry has rice cake-like viscoelasticity as one of its characteristic properties. Herein, "rice cake-like viscoelasticity" means that when a portion of the slurry is scooped up, it shows a rice cake-like physical property in that it stretches without breaking due to its own viscoelasticity.

As described above, the aforementioned slurry can take a form of a viscous fluid under given conditions. According to a preferred embodiment of the present invention, the starch composition for foods can be blended into a food together with water or together with an edible oil/fat and water to impart pleasant meltability in mouth and a thick and smooth texture to the food.

[0024] Preferably, the value of Brookfield viscosity ($\text{Pa}\cdot\text{s}$) of the aforementioned slurry in an unheated state (about 20°C) measured under the conditions of 30 rpm for 30 seconds (at rotational speed of 30 rpm for 30 seconds) is $2\text{ Pa}\cdot\text{s}$ or more but $100\text{ Pa}\cdot\text{s}$ or less, and the value of Brookfield viscosity ($\text{Pa}\cdot\text{s}$) of the aforementioned slurry measured under the conditions of 30 rpm for 30 seconds after cooling or heating the slurry satisfies the following condition:

"the value of Brookfield viscosity ($\text{Pa}\cdot\text{s}$) at 0°C is twice or more but 30 times or less, preferably twice or more but 20 times or less, the value of Brookfield viscosity at 90°C ".

Thus, the aforementioned starch composition for foods is preferably characteristic in that the Brookfield viscosity of its slurry is temperature dependent such that the viscosity becomes lower at high temperatures and higher at low temperatures, and due to this

characteristic, when the starch composition for foods is blended together with water or together with an edible oil/fat and water, it is easy to be handled at a high temperature while it can impart a resilient and dense cheese-like texture at a low temperature. Also, when the food is consumed and warmed in the mouth, it can give pleasant meltability in mouth and a thick, rich taste.

[0025] The value of Brookfield viscosity (Pa·s) of the slurry in an unheated state (about 20°C) is preferably 2.5 Pa·s or more but 100 Pa·s or less, more preferably 2.5 Pa·s or more but 95 Pa·s or less, and still more preferably 2.5 Pa·s or more but 85 Pa·s or less.

In addition, the value of Brookfield viscosity of the slurry at 0°C is preferably twice or more but 18 times or less, and more preferably twice or more but 15 times or less the value of Brookfield viscosity of said slurry at 90°C.

[0026] Furthermore, the value of Brookfield viscosity (Pa·s) of the slurry at 0°C is preferably 5 Pa·s or more but 300 Pa·s or less, more preferably 5 Pa·s or more but 250 Pa·s or less, and still more preferably 5 Pa·s or more but 200 Pa·s or less. If the value of Brookfield viscosity of the aforementioned slurry at 0°C is within the above range, it can impart a moderately resilient and dense cheese-like texture even at a low temperature and can provide smooth meltability in mouth and a thick, rich taste when consumed.

[0027] Preferably, the slurry is also resistant to freeze-thaw cycle.

For example, when the above slurry is subjected to three freeze-thaw cycles under the following conditions, the difference between the value of Brookfield viscosity (Pa·s) at the temperature of 20°C, 30°C, 40°C, 50°C or 60°C after the above three freeze-thaw cycles and the value of Brookfield viscosity (Pa·s) at the corresponding temperature before the freeze-thaw cycles is within 10.0 Pa·s:

“<Conditions for freeze-thaw cycles>

in the first cycle, the slurry prepared at room temperature is cooled to -10°C at a cooling rate of -1°C/min and maintained in that state for 15 hours or more, then the slurry is heated to reach 60°C at a rate of 45°C/min, and then cooled again to -10°C at a cooling rate of -1°C/min and maintained in that state for 15 hours or more; and

in the second cycle and on, the slurry that went through the first cycle is heated to reach 60°C at a rate of 45°C/min and then cooled again to -10°C at a cooling rate of -1°C/min and kept in that state for 15 hours or more.”

This difference is more preferably within 8 Pa·s, and still more preferably within 5 Pa·s.

[0028] According to a preferred embodiment, the above slurry does not significantly change its viscosity characteristics in the temperature range of 20°C to 60°C, that is, the

temperature range at the time of consumption, even after the freeze-thaw cycles are repeated for three times under the above conditions, and therefore it can ensure product quality to be stable against temperature changes expected in the distribution process of the product.

[0029] Herein, the Brookfield viscosity of the above slurry refers to the value measured using a No. 4 rotor for a Brookfield viscometer at 30 rpm for 30 seconds (i.e., at a rotational speed of 30 rpm for 30 seconds). When heating the slurry, the container is covered with plastic wrap to prevent evaporation of moisture, and the measurement is performed immediately after the temperature reaches a predetermined level, but errors may occur in the measured Brookfield viscosity due to partial evaporation of moisture and other factors. In this case, the value of Brookfield viscosity is acceptable if the slurry that reaches 0°C or 90°C for the first time after its preparation satisfies the above conditions.

[0030] The physical properties of a slurry made by mixing said starch composition for foods with an edible oil/fat and water in a given amount ratio have been described above to explain the characteristic properties of the aforementioned starch composition for foods used in the present invention, but the ratio of the edible oil/fat and water to the starch composition for foods is not limited to the above. In addition, these physical properties are largely dependent on the properties of the aforementioned starch composition for foods and thus even when the aforementioned starch composition for foods is mixed only with water, it can similarly exhibit properties different from those obtained when a commonly used starch ingredient for foods is mixed with water.

[0031] In a cheese-like food of the present invention, the content of the starch composition for foods, i.e., Ingredient (a) described above, is preferably 0.1 mass% or more but 40 mass% or less, more preferably 0.3 mass% or more but 35 mass% or less, still more preferably 0.5 mass% or more but 30 mass% or less, and particularly preferably 0.8 mass% or more but 25 mass% or less based on the total weight of the cheese-like food.

[0032] (b) Water

Water used in the present invention is not particularly limited as long as it can be used for foods, and may be, for example, natural water or tap water. Alternatively, a water-containing liquid, for example, dairy milk such as cow's milk; plant-based milk such as soy and almond milk; and plant juice such as fruit juice and vegetable juice, may also be used.

In the cheese-like food of the present invention, the content of water, i.e., Ingredient (b) described above, is preferably equal to (1 time) or more but 30 times or less, more preferably equal to (1 time) or more but 28 times or less, and still more preferably equal to (1 time) or more but 25 times or less, the mass of Ingredient (a). When a water-containing liquid is used, the amount of moisture contained in said liquid is acceptable as

long as it meets the aforementioned content.

[0033] (c) Edible oil/fat

The cheese-like food of the present invention may further contain an edible oil/fat. Incorporation of the edible oil/fat imparts a cheese-like flavor and thick, rich taste to the cheese-like food of the present invention.

The above-mentioned edible oil/fat may be liquid or solid at room temperature (20°C), and is not particularly limited as long as it is applicable to foods. For example, the edible oil/fat may be one or two or more selected from the group consisting of: vegetable oils/fats such as soybean oil, rapeseed oil, corn oil, cottonseed oil, rice oil, sunflower oil, safflower oil, sesame oil, olive oil, peanut oil, kapok oil, evening primrose oil, linseed oil, perilla oil, palm oil, palm kernel oil, and coconut oil; animal oils/fats such as fish oil, lard, tallow, and milk fat; triglycerides of medium-chain fatty acids; and processed oils/fats obtained by subjecting these oils/fats to one or two or more kinds of processing selected from the group consisting of transesterification, hydrogenation, and fractionation. Among these, the edible oil/fat is preferably one or more selected from the group consisting of soybean oil, rapeseed oil, corn oil, cottonseed oil, rice oil, sunflower oil, safflower oil, sesame oil, olive oil, linseed oil, perilla oil, and coconut oil, more preferably one or more selected from the group consisting of soybean oil, rapeseed oil, corn oil, sunflower oil, olive oil, and coconut oil, and particularly preferably one or more selected from the group consisting of rapeseed oil, olive oil, and coconut oil. The edible oil/fat mentioned above can be selected according to the purpose, application, etc.

In a cheese-like food of the present invention, the content of the edible oil/fat, i.e., Ingredient (c) described above, is preferably 0.1 mass% or more but 40 mass% or less, more preferably 0.3 mass% or more but 35 mass% or less, still more preferably 0.5 mass% or more but 30 mass% or less, and particularly preferably 0.8 mass% or more but 25 mass% or less based on the total weight of the cheese-like food.

[0034] (d) Modified starch

The cheese-like food of the present invention may further comprise one or more modified starches selected from the group consisting of a hydroxypropylated starch and an acetylated starch. By containing such a modified starch, it is possible to provide a cheese-like food having excellent shape retention while retaining the natural texture and meltability in mouth typical of cheese even after its temperature drops. An acetylated starch may be one that has been further subjected to an acid treatment (acid denaturation) or crosslinking such as phosphate crosslinking or adipate crosslinking.

The raw starch of the modified starch is not particularly limited. For example, it is

preferably a plant-derived starch, more preferably one derived from regular corn, glutinous corn (waxy corn), high-amylose corn, non-glutinous rice, glutinous rice, wheat, potato, or cassava, and particularly preferably potato or cassava.

More specifically, the modified starch used in the present invention is preferably
5 hydroxypropylated potato starch, hydroxypropylated tapioca starch, acetylated potato starch, acetylated tapioca starch, acetylated acid-treated potato starch, acetylated acid-treated tapioca starch, acetylated distarch phosphate potato starch, acetylated distarch phosphate tapioca starch, acetylated distarch adipate potato starch, acetylated distarch adipate tapioca starch, or a combination of two or more of these.

10 In a cheese-like food of the present invention, the content of the modified starch, i.e., Ingredient (d) described above, is preferably 0.1 mass% or more but 40 mass% or less, more preferably 0.3 mass% or more but 35 mass% or less, still more preferably 0.5 mass% or more but 30 mass% or less, and particularly preferably 0.8 mass% or more but 25 mass% or less based on the total weight of the cheese-like food.

15 [0035] (e) Cheese

The cheese-like food of the present invention has a cheese-like stretch and texture even if it does not contain a cheese, but it may additionally contain a cheese to enhance the cheese-like flavor and richness.

Examples of the cheese used in the present invention include, but are not
20 particularly limited to, a natural cheese and a processed cheese, and may be selected according to the purpose, application, etc.

If the cheese-like food of the present invention contains a cheese, the content of the cheese, i.e., Ingredient (e) described above, is preferably 1 mass% or more but 90 mass% or less, more preferably 5 mass% or more but 90 mass% or less, still more preferably 7
25 mass% or more but 80 mass% or less, yet still more preferably 7 mass% or more but 70 mass% or less, still more preferably 10 mass% or more but 80 mass% or less, and particularly preferably 10 mass% or more but 70 mass% or less based on the total weight of the cheese-like food.

When two or more of the above ingredients are used, their total amount should be
30 within the above range.

[0036] (f) Other ingredients

If necessary, the cheese-like food of the present invention may further contain an emulsifier, an antioxidant, a pH adjuster, a polysaccharide thickener, a protein, a seasoning, a flavoring, and the like generally used in the food product field.

35 For example, a flavoring and a seasoning that can impart cheese aroma and flavor

can be added to impart a cheese-like flavor and richness to the product.

For example, a protein such as gelatin can be added to improve the shape retention of the cheese-like food and improve cuttability. In addition to gelatin, examples of the protein include milk protein, soy protein, wheat protein, full-fat milk powder, non-fat milk powder, whey powder, buttermilk powder, collagen, and degraded products of these proteins.

[0037] In a cheese-like food of the present invention, the total content of Ingredients (a) and (b) above and optional Ingredients (c), (d), and (e), is preferably 70 mass% or more, more preferably 80 mass% or more, still more preferably 90 mass% or more, particularly preferably 95 mass% or more, and even more preferably 99 mass% or more based on the total weight of the cheese-like food.

[0038] The cheese-like food of the present invention may be produced through a step of mixing Ingredients (a) and (b) above and, if necessary, (c), (d), (e), and (f), to obtain a mixture (mixing step). If necessary, a step of heating and stirring the mixture (heating/stirring step) may be conducted. When Ingredient (d) is used, the heating/stirring step is preferably conducted to gelatinize Ingredient (d). When Ingredient (e) is used, a homogeneous mixture can be obtained through the heating/stirring step, or a homogeneous mixture can be obtained without going through the heating/stirring step by dissolving Ingredient (e) in advance before mixing it with other ingredients.

In the mixing step, all of the ingredients to be used may be mixed at the same time, or any two or more ingredients may be mixed in advance and then mixed with other ingredients.

In the heating/stirring step, the mixture is preferably heated and stirred until Ingredient (d) is gelatinized if Ingredient (d) is used or until Ingredient (e) is homogenized in the mixture if Ingredient (e) is used. The mixture is preferably heated to, for example, 60°C or higher but lower than 100°C, more preferably to 65°C or higher but 100°C or lower, and still more preferably to 70°C or higher but 100°C or lower. When Ingredient (d) is used, the above mixture becomes a paste by heating and stirring the mixture and gives a cheese-like stretch and texture. The method of stirring may be any method that allows homogeneous mixing, and manual mixing is also acceptable. For example, stirring may be conducted using a stirrer such as a propeller-type stirrer, a cutter mixer, a homo mixer, a cooker-type emulsifier, a kettle-type emulsifier, a Stephan emulsifier, or a scraped surface emulsifier.

After the heating/stirring step, the product can be cooled as needed for long term stable storage. For example, the cooling temperature is preferably higher than 0°C but lower than 10°C. The cheese-like food of the present invention can maintain its quality stable without significantly losing its cheese-like stretch and texture in the temperature range after

cold storage and at the time of consumption.

[0039] Since the resulting cheese-like food of the present invention has a cheese-like stretch and texture not only immediately after heating but also after the temperature is lowered, the cheese-like food of the present invention can be used suitably in foods such as boxed lunches and prepared foods for take-out.

In addition to the aforementioned starch composition for foods and water, the cheese-like food of the present invention may further contain an edible oil/fat to give a cheese-like flavor and richness.

The cheese-like food of the present invention may further contain a modified starch, i.e., Ingredient (d), to have excellent shape retention while maintaining the natural texture and meltability in mouth typical of cheese even after the temperature is lowered.

Moreover, according to a preferred embodiment of the present invention, the cheese-like food of the present invention may further contain a cheese as an ingredient to further enhance the cheese-like flavor and richness.

[0040] The cheese-like food of the present invention can be suitably used as a substitute for a cheese.

The cheese-like food of the present invention can be used as a food that is combined with other food ingredients, and is suitable as a topping or filling for heat cooked foods. Specific examples of such foods include toast, pizza, gratin, Doria, lasagna, hamburger steak, and risotto.

According to a preferred embodiment of the present invention, the cheese-like food of the present invention has an excellent heat melting property, and when used as a topping or filling for a heat cooked food, it has a texture similar to a cheese and a cheese-like stickiness when heated, and has a cheese-like stretch and texture even after the temperature is lowered. Therefore, it is particularly useful as a substitute for a cheese used for heat cooking. According to one embodiment of the present invention, a cheese-like food having a cheese-like texture and stretch can be provided without or with a reduced amount of milk-derived ingredients such as a cheese. According to a preferred aspect of the present invention, it is possible to meet the diversified food needs arising from increasing health consciousness and allergy awareness, and also possible to reduce the cost of raw ingredients.

[0041] Moreover, according to a preferred embodiment of the present invention, the cheese-like food of the present invention can be stored stably for a long period of time even at freezing temperatures.

[0042] 2. Agent for improving stretch of cheese and method for improving stretch of cheese

In one aspect, a cheese-like food of the present invention can be used as an agent for improving the stretch of a cheese. Specifically, by mixing the cheese-like food of the present invention with a cheese or a food containing a cheese, the stretch of the cheese can be improved. The agent for improving the stretch of a cheese of the present invention is highly effective in improving the stretch of a cheese not only immediately after heating but also after the temperature is lowered. Examples of the cheese include, but are not particularly limited to, a natural cheese and a processed cheese. The cheese-like food of the present invention is especially suitable for improving the stretch of a cheese used for heat cooking.

The stretch of a cheese can be evaluated, for example, by lifting up a suitable amount of a mixture containing the cheese-like food of the present invention and a cheese or a food containing a cheese with a spoon.

According to a preferred embodiment of the present invention, the agent for improving the stretch of a cheese of the present invention may be added to a cheese to improve the stretch of the cheese.

The amount of the agent for improving the stretch of a cheese to be added may be determined according to the desired cheese stretch, application, etc., and is, for example, but not limited to, preferably 5 parts by mass or more, more preferably 10 parts by mass or more, and still more preferably 50 parts by mass or more, relative to 100 parts by mass of the cheese so that improvement of the stretch of the cheese is easily achieved. The upper limit is not particularly limited as long as the stretch of the cheese is improved, but it is preferably 4,000 parts by mass or less, more preferably 3,000 parts by mass or less, and still more preferably 2,000 parts by mass or less.

[0043] 3. Agent for imparting cheese-like texture and method for imparting cheese-like texture to food

In one aspect, a cheese-like food of the present invention can be used as an agent for imparting a cheese-like texture. Specifically, the cheese-like food of the present invention can be mixed with a food to impart a cheese-like texture to the food. In this case, the food can be either a food containing a cheese or a food that does not contain a cheese. When the food is a food containing a cheese, the expression such as “imparting a cheese-like texture” means that the addition of the agent for imparting a cheese-like texture enhances the cheese-like texture of the food. When the food is a cheese-containing food, examples of the cheese include, but are not limited, to a natural cheese and a processed cheese.

The agent for imparting a cheese-like texture of the present invention is highly effective in imparting a cheese-like texture even after the temperature is lowered. For this reason, the agent for imparting a cheese-like texture of the present invention is particularly

suitable for foods for heat cooking. The agent for imparting a cheese-like texture of the present invention can be used to impart a cheese-like texture to a food not only immediately after heating but also after the temperature is lowered.

5 The cheese-like texture can be evaluated, for example, in terms of meltability in mouth and melted cheese-like softness without a gel-like texture.

According to a preferred aspect of the present invention, the agent for imparting a cheese-like texture may be added to a food to impart a cheese-like texture to the food.

The amount of the agent for imparting a cheese-like texture to be added to a food may be determined according to the desired texture, application, etc. of the food, and is, for example, but not limited to, preferably 5 parts by mass or more, more preferably 10 parts by mass or more, and still more preferably 50 parts by mass or more, relative to 100 parts by mass of the food so that the effect of imparting a cheese-like texture is high. The upper limit is not particularly limited as long as a cheese-like texture is achieved, but it is, for example, preferably 4,000 parts by mass or less, more preferably 3,000 parts by mass or less, and still
10 more preferably 2,000 parts by mass or less.
15

[0044] 4. Starch composition for imparting cheese-like texture and method for imparting cheese-like texture to food

The present invention also provides a starch composition for imparting a cheese-like texture and a method for imparting a cheese-like texture to a food containing moisture
20 by adding the starch composition for imparting a cheese-like texture to the food.

The starch composition for imparting a cheese-like texture of the present invention comprises: (a) a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0
25 MPa or more but less than 100 MPa, the starch composition containing a starch-lipid complex.

A cheese-like texture can be imparted to a food by adding the above starch composition for imparting a cheese-like texture to a food containing moisture. Specifically, in this aspect, a cheese-like texture can be imparted to a food by adding the above starch
30 composition for imparting a cheese-like texture to a food containing moisture so that said starch composition for foods absorbs water and results a cheese-like food of the present invention. Examples of foods containing moisture include cream stew, tomato stew, beef stew, soups such as instant noodle soup, sauces such as white sauce, pasta sauce, Mapo tofu sauce, curry sauce, and hashed beef sauce, gratin, and risotto. If the food containing moisture
35 is a food containing a cheese, the addition of the starch composition for imparting a cheese-

like texture of the present invention can also impart an effect of improving the stretch of the cheese.

The starch composition for foods (Ingredient (a)) used in this aspect is the same as and is as described for the starch composition for foods (Ingredient (a)) described in “1. Cheese-like food” above.

The amount of the starch composition for imparting a cheese-like texture added to a food containing moisture is not particularly limited, and may be determined in proportion to the moisture content in the food containing moisture, according to the desired texture, application, etc. of the food. For example, the amount of the aforementioned starch composition for foods relative to the aforementioned starch composition for foods and the total moisture content in the food is preferably 0.01 mass% or more but 30 mass% or less, more preferably 0.01 parts by mass or more but 25 parts by mass or less, still more preferably from 0.01 parts by mass or more but 20 parts by mass or less, and particularly preferably 0.02 parts by mass or more but 15 parts by mass or less.

[0045] 5. Food having cheese-like texture

The present invention also provides a food having a cheese-like texture, which comprises the above-described agent for imparting a cheese-like texture or the above-described starch composition for imparting a cheese-like texture.

The food having a cheese-like texture contains the above agent for imparting a cheese-like texture in an amount of preferably 0.05 mass% or more but 90 mass% or less, more preferably 0.5 mass% or more but 85 mass% or less, and still more preferably 1 mass% or more but 80 mass% or less.

In addition, the food having a cheese-like texture contains the above starch composition for imparting a cheese-like texture in an amount of preferably 0.01 mass% or more but 30 mass% or less, more preferably 0.01 mass% or more but 25 mass% or less, and still more preferably 0.01 mass% or more but 20 mass% or less.

With the food having a cheese-like texture of the present invention, it is possible to provide a food having an excellent cheese-like texture at high to low temperatures even if the food does not contain a cheese or even if it contains only a very small amount of cheese, by containing the above-described agent for imparting a cheese-like texture or the above-described starch composition for imparting a cheese-like texture.

While the food having a cheese-like texture is not particularly limited as long as it is favorable to have a cheese-like texture, examples thereof include: toast, pizza, gratin, Doria, lasagna, hamburger steaks, and risotto; stews such as cream stew, tomato stew, and beef stew; soups such as instant noodle soup; and sauces such as white sauce, pasta sauce,

Mapo tofu sauce, curry sauce, and hashed beef sauce.

EXAMPLES

[0046] Hereinafter, the present invention will be described in more detail by way of
5 examples, although the present invention is not limited in any way to these examples.

[0047] [1] Preparation of starch composition for foods (Ingredient (a))

Starch compositions for foods of Production examples 1 to 4 were prepared using
the raw starches and polyglycerol fatty acid esters listed in Table 1. The preparation method
of each starch composition for foods was as follows. Production example 1 was carried out
10 at different outlet temperatures in Production examples 1-1, 1-2, and 1-3. The outlet
temperature for each production example is shown in Table 3.

[0048] Production example 1

An ingredient mixture obtained by mixing 2 kg of raw potato starch and 40 g of
polyglycerol fatty acid ester (stearic acid) (2 parts by mass added per 100 parts by mass of
15 the raw starch) was subjected to a heat treatment in a twin-screw extruder ("KEI-45-15"
manufactured by Kowa Kogyo Inc.) while adding water at 11.5 mass% relative to the powder
(50 g/min), thereby obtaining a starch composition for foods of Production example 1. The
conditions for the twin-screw extruder ("KEI-45-15" manufactured by Kowa Kogyo Inc.)
were as follows: barrel temperature 30°C-170°C, outlet temperature 100°C-170°C, pressure
20 condition 5 MPa or less, and screw speed 230 rpm.

[0049] Production example 2

An ingredient mixture obtained by mixing 2 kg of distarch phosphate potato starch
and 40 g of polyglycerol fatty acid ester (stearic acid) (2 parts by mass added per 100 parts
by mass of the raw starch) was subjected to a heat treatment in a twin-screw extruder while
25 adding water at 11.5 mass% relative to the powder (50 g/min), thereby obtaining a starch
composition for foods of Production example 2. The conditions for the twin-screw extruder
("KEI-45-15" manufactured by Kowa Kogyo Inc.) were as follows: barrel temperature
30°C-170°C, outlet temperature 100°C-170°C, pressure condition 5 MPa or less, and screw
speed 230 rpm.

30 [0050] Production example 3

An ingredient mixture obtained by mixing 2 kg of hydroxypropylated distarch
phosphate potato starch and 40 g of polyglycerol fatty acid ester (stearic acid) (2 parts by
mass added per 100 parts by mass of the raw starch) was subjected to a heat treatment in a
twin-screw extruder ("KEI-45-15" manufactured by Kowa Kogyo Inc.) while adding water
35 at 11.5 mass% relative to the powder (50 g/min), thereby obtaining a starch composition for

foods of Production example 3. The conditions for the twin-screw extruder were as follows: barrel temperature 30°C-170°C, outlet temperature 100°C-170°C, pressure condition 5 MPa or less, and screw speed 230 rpm.

[0051] Production example 4

5 An ingredient mixture obtained by mixing 2 kg of raw potato starch and 40 g of polyglycerol fatty acid ester (behenic acid) (2 parts by mass added per 100 parts by mass of the raw starch) was subjected to a heat treatment in a twin-screw extruder (“KEI-45-15” manufactured by Kowa Kogyo Inc.) while adding water at 11.5 mass% relative to the powder (50 g/min), thereby obtaining a starch composition for foods of Production example 4. The
10 conditions for the twin-screw extruder were as follows: barrel temperature 30°C-170°C, outlet temperature 100°C-170°C, pressure condition 5 MPa or less, and screw speed 230 rpm.

[0052] Table 1

	Additives					Raw starch		
	Kind	Fatty acid	Product name, manufacturer	HLB	Degree of polymerization	Kind	Modification treatment	Product name, manufacturer
Production example 1	Polyglycerol fatty acid ester	Stearic acid + a few percent of palmitic acid	"GRINDSTED PGE 55-M" manufactured by DuPont Specialty Products	Approximately 7	3 or lower	Potato	Raw	"JELCALL BP-200" manufactured by J-OIL MILLS
Production example 2							Phosphate crosslinking	"JELCALL KPS-200" manufactured by J-OIL MILLS
Production example 3							Hydroxypropylation/Phosphate crosslinking	"JELCALL EG-500" manufactured by J-OIL MILLS
Production example 4		Behenic acid	"B-100DF" manufactured by Mitsubishi-Chemical Foods Corporation	3	10		Raw	"JELCALL BP-200" manufactured by J-OIL MILLS

[0053] [2] Viscosity characteristics (Brookfield viscosity) of slurries (Reference example)

Forty grams (40 g) of edible oil/fat (edible rapeseed oil, "Sarasara Canola Oil" manufactured by J-OIL MILLS) and 140 g of water were used per 20 g of the starch composition for foods listed in Table 1 (edible starch composition: edible oil/fat: water = 1:2:7) to obtain a slurry by letting the starch composition for foods absorb the edible oil/fat, then adding water to the resultant, and stirring the mixture. When a portion of the slurry containing the starch composition for foods of Production example 1-2 (in an unheated state) was scooped up, it showed rice cake-like viscoelasticity due to its own viscoelasticity as shown in Figure 1. Similar physical properties were also observed for Production examples 2 to 4.

[0054] <Method for measuring Brookfield viscosity>

The slurries obtained in Production examples 1, 3, and 4 were heated from room temperature (20°C) to 90°C and then cooled from 90°C to 0°C according to the temperature increase and decrease conditions shown in Table 2 below, and the Brookfield viscosity of each slurry was measured at each temperature using a No. 4 rotor for Brookfield viscometer (BM model manufactured by Toki Sangyo Co., Ltd.) under the conditions of 30 rpm for 30 seconds. A polypropylene cylinder with a diameter of 7 cm and a height of 9.5 cm (250 ml container manufactured by Kartell) was used for the measurement. When heating the slurry, the container was covered with plastic wrap to prevent evaporation of moisture, and the measurement was performed immediately after it reached the predetermined temperature. For Production example 2, a tactile evaluation is shown.

[0055] Table 2

<Temperature increase conditions>		
Immerse in hot water bath at 80°C	Normal temperature	20°C
		30°C
		40°C
		50°C
		60°C
Warm in microwave oven	500 W, 30 seconds	70°C
	700 W, 20 seconds	80°C
	700 W, 30 seconds	90°C

<Temperature decrease conditions>		
Warm in microwave oven	700 W, 60 seconds or more	90°C
Cool at normal temperature or in ice water		80°C
		70°C
		60°C
		50°C
		40°C
		30°C
		20°C
		10°C
Place in freezer		5°C
		0°C

[0056] Results for the above physical properties of the production examples are shown in Table 3.

[0057] Table 3
(PA-s)

Composition of raw ingredients		Production example 1-1	Production example 1-2	Production example 1-3	Production example 2	Production example 3	Production example 4
Brookfield viscosity [Pa·s]	Outlet temperature of extruder	110°C	130°C	160°C	142°C	144°C	152°C
	During preparation	20°C	6.9	5.2	9.1	80.5	3.8
		30°C	4.6	3.7	6.0	56.5	2.9
	During temperature increase	40°C	3.2	2.8	3.6	39	2.7
		50°C	2.6	2.1	3.4	20	2.2
		60°C	2.6	2.0	2.9	12.5	1.8
		70°C	2.1	1.5	2.3	6	1.3
	During temperature decrease	80°C	1.6	1.3	1.8	4	0.8
		90°C	1.6	1.4	1.7	3.5	0.4
		90°C	1.1	1.3	1.3	4.5	0.6
		80°C	1.3	1.5	1.6	6.5	0.8
		70°C	2.2	1.7	2.7	6.75	1
		60°C	2.5	1.9	2.7	9.5	1.7
		50°C	2.9	2.3	3.0	16.5	2.2
		40°C	4.0	2.6	3.8	17.5	2.9
		30°C	4.8	3.6	4.8	22	3.8
		20°C	5.3	4.8	5.9	29.75	4.1
		10°C	6.6	5.2	6.8	42.75	4.44
		5°C	-	5.6	-	49	-
		0°C	10.3	7.3	12.0	52	6.16

[0058] Twenty grams (20 g) of starch composition for foods, which was each prepared by varying the amount of the polyglycerol fatty acid ester added per 100 parts by mass of the raw starch in the composition of Production example 1, was mixed with 40 g of an edible oil/fat (twice the amount of the starch composition for foods) to let the starch composition absorb the oil, then 80 g of water (4 times the amount of the starch composition for foods) was added, and the mixture was stirred until it became sticky to give a slurry. Table 4 shows the results of the tactile evaluation of each slurry obtained by stirring it with a spoon to see its physical property in terms of rice-cake like stretch.

10 [0059] Table 4

Amount of polyglycerol fatty acid ester added [Parts by mass]	Results of tactile evaluation
0	Control
0.5	Well emulsified. Stretch comparable to that of the control. Low viscosity.
0.8	Well emulsified. Stretch comparable to that of the control. Low viscosity.
1.0	Well emulsified. More stretchy and more viscous than the control.
1.5	Well emulsified. More stretchy and more viscous than the control.
2.0	Well emulsified. More stretchy and more viscous than the control.
3.0	Well emulsified. More stretchy and more viscous than the control.
5.0	Did not stretch.
10.0	Did not stretch.

[0060] As shown in these results, the slurry containing the starch composition for foods of the present invention, and an edible oil/fat twice as much and water 7 times as much as the starch composition for foods had a rice cake-like viscoelasticity and as shown in Table 3, the slurry had the desired Brookfield viscosity (Pa·s) in the unheated state (20°C) after the preparation of the slurry, and exhibited the viscosity characteristics defined as follows: “the value of Brookfield viscosity at 0°C is twice or more but 30 times or less, preferably twice or more but 20 times or less, the value of Brookfield viscosity at 90°C”.

[0061] [3] Resistance to freeze-thaw cycle (Reference example)

20 Twenty grams (20 g) of the starch composition for foods obtained in Production example 1-2 was mixed with 40 g of edible oil/fat (twice the amount of the starch composition for foods) to let the starch composition absorb the oil, then 140 g of water (7 times the amount of the starch composition for foods) was added, and the mixture was stirred until it became sticky to give a slurry. The slurry was subjected to three freeze-thaw cycles as described below to observe changes in the viscosity characteristics.

[0062] Table 5

<Freeze-thaw cycles>

*First freeze-thaw cycle	Place in freezer	Freeze overnight (24 hours)	
	⇓		
	Warm in microwave oven	700 W, 1 minute or more	60°C
	Cool at normal temperature or in ice water		50°C
			40°C
			30°C
			20°C
			10°C
			5°C
		0°C	
*Second freeze-thaw cycle Freezer storage lead to dehydration, but freeze-thaw is continued	Place in freezer	Freeze overnight (24 hours)	
	⇓		
	Warm in microwave oven	700 W, 1 minute or more	60°C
	Cool at normal temperature or in ice water		50°C
			40°C
			30°C
			20°C
			10°C
			5°C
		0°C	
*Third freeze-thaw cycle Freezer storage lead to dehydration, but freeze-thaw is continued	Place in freezer	Freeze overnight (48 hours)	
	⇓		
	Warm in microwave oven	700 W, 1 minute or more	60°C
	Cool at normal temperature or in ice water		50°C
			40°C
			30°C
			20°C
			10°C
			5°C
		0°C	

[0063] The above freeze-thaw cycles satisfy the following conditions.

“<Conditions for freeze-thaw cycles>

- 5 In the first cycle, the slurry prepared at room temperature is cooled to -10°C at a cooling rate of -1°C/min and maintained in that state for 15 hours or more, then the slurry is heated to reach 60°C at a rate of 45°C/min, and then cooled again to -10°C at a cooling rate of -1°C/min and maintained in that state for 15 hours or more.

In the second cycle and on, the slurry that went through the first cycle is heated to reach 60°C at a rate of 45°C/min and then cooled again to -10°C at a cooling rate of -1°C/min and kept in that state for 15 hours or more.”

[0064] The results are shown in Table 6 and Figures 2 and 3.

5

Table 6

(Pa·s)

°C	Temperature increase	Temperature decrease	First freeze-thaw cycle	Second freeze-thaw cycle	Third freeze-thaw cycle
0		7.30	8.00	16.00	17.86
5		5.56	6.46	13.60	15.18
10		5.18	5.28	6.52	9.02
20	5.24	4.76	4.42	4.98	5.74
30	3.70	3.56	3.08	4.04	4.56
40	2.76	2.64	2.50	3.12	4.46
50	2.12	2.28	1.98	2.36	3.16
60	1.98	1.88	1.54	1.80	2.52
70	1.48	1.74			
80	1.32	1.48			
90	1.36	1.26			

[0065] Figure 2 is a graph showing changes in the viscosity characteristics after three freeze-thaw cycles.

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Figure 3 are photographs showing the properties of the slurry at 20°C in (a) the first freeze-thaw cycle, (b) the second freeze-thaw cycle, and (c) the third freeze-thaw cycle.

As shown in Table 6 and Figures 2 and 3, the slurry containing the starch composition for foods of the present invention, and an edible oil/fat twice as much as and water 7 times as much as the starch composition for foods showed little change in the viscosity characteristics even after the three freeze-thaw cycles, indicating that the slurry was resistant to freeze-thawing.

15

[0066] [4] Cheese-like food

Examples 1-1 to 1-8

Cheese-like foods were prepared according to the following method in the composition shown in Table 7, and were evaluated by two expert panelists for stretch, texture, flavor, richness, and presence of oil separation. Starch composition for foods 1 was obtained by the method described in Production example 1-2 above. As a control sample, a cheese was evaluated in the same way and was compared with the example. The results are shown in Table 8. The scores for texture, flavor, and richness were each obtained by discussions

20

between the two expert panelists.

[0067] <Method for preparing cheese-like food>

1. Starch composition for foods 1, cow's milk, an edible oil/fat, and optionally a modified starch were mixed to obtain a mixture.

5 2. The cheese was shredded in a food processor. Shredding was performed in a food processor ("MK-K48P" manufactured by Panasonic Corporation) 10 times for 3 seconds each.

10 3. To the cheese obtained in 2, sodium tripolyphosphate as molten salt was added and the mixture was mixed by shredding it again in the food processor. Shredding was performed by adding the molten salt in two batches, the first batch shredded in the food processor 5 times for 3 seconds each, and the second batch shredded 10 times for 3 seconds each.

15 4. The mixture obtained in 1 and the mixture obtained in 3 were placed in a pan and heated at $70 \pm 20^{\circ}\text{C}$ for 15-20 minutes while stirring with a wooden spatula, until the mixture became homogeneous and the total amount of the mixture was 200 g, thereby obtaining a cheese-like food.

5. The obtained cheese-like food was stored in a freezer (about -20°C) for one week, and then heated in a microwave oven (500 W, about 2 minutes) before taste evaluation.

[0068] <Method for evaluating cheese-like food>

20 Cheese-like foods were evaluated according to the following evaluation criteria.

(1) Stretch (stretch when lifted with a spoon)

5: Stretched 20 cm or more

4: 10-20 cm

25 3: 5-10 cm

2: 2-5 cm

1: Did not stretch

(2) Texture

30 (2-1) Meltability in mouth

5: Very pleasant meltability in mouth with no residue in the mouth

4: Pleasant meltability in mouth with no residue in the mouth

3: Pleasant meltability in mouth

2: Clings to the mouth and meltability in mouth is not so pleasant

35 1: Clings to the mouth and meltability in mouth is bad

Herein, “meltability in mouth” refers to the sensation that the food dissolves, melts, and disappears in the saliva during chewing, without remaining in the oral cavity. The term “residue in (the) mouth” refers to the sensation of clinginess in the oral cavity after chewing.

- 5 (2-2) Gel texture and melted cheese-like softness
- 5: No rice cake-like clumpy texture, no gel-like texture, soft like melted cheese
- 4: Soft like melted cheese without much gel-like texture
- 3: Slight rice cake-like clumpy texture, but without much gel-like texture
- 2: Clumps together like rice cake with slight gel texture
- 10 1: Clumps together like rice cake with strong gel-like texture

(3) Flavor and richness (cheesiness)

- 5: Strong cheese flavor and richness are perceived
- 4: Cheese flavor and richness are perceived
- 15 3: A little cheese flavor and richness are perceived
- 2: Not much cheese flavor and richness is perceived
- 1: No cheese flavor and richness is perceived

(4) Presence of oil separation

- 20 The cheese-like foods were observed and evaluated for the presence or absence of oil separation. In Table 8, those with oil separation are marked with “○” and those without oil separation are marked with “×”.

[0069] Table 7

Composition (g)	Control sample	Examples											
		100% cheese	Example 1-1	Example 1-2	Example 1-3	Example 1-4	Example 1-5	Example 1-6	Example 1-7	Example 1-8			
Natural cheese 1	100%	200											
Natural cheese 2			10%	10%	10%	10%	10%	10%	10%	10%	20	10%	20
Starch composition for foods 1			10%	10%	10%	10%	10%	10%	10%	10%	10	5%	10
Hydroxypropylated tapioca starch						5%							
Hydroxypropylated potato starch							5%	10					
Acetylated tapioca starch								5%	10				
Acetylated distarch phosphate tapioca starch									5%	10			
Acetylated acid-treated potato starch												5%	10
Edible oil/fat			20%	0%	0	20%	40	20%	40	20%	40	20%	40
Cow's milk			70%	90%	180	70%	140	70%	140	70%	140	70%	140
Total (g)	100%	200	110%	110%	220	110%	220	110%	220	110%	220	110%	220

[0070] Table 8

Evaluation results	Control sample	Examples											
		100% cheese	Example 1-1	Example 1-2	Example 1-3	Example 1-4	Example 1-5	Example 1-6	Example 1-7	Example 1-8			
Evaluation temperature	60-25-65°C	1	4	4	4	4	4	4	4	4	4	4	4
Stretch	5	1	4	4	4	4	4	4	4	4	4	4	4
Texture (melatability in mouth)	5	1	5	4	4	4	4	4	4	4	4	4	4
Texture (gel texture and melted cheese-like softness)	5	1	5	5	5	5	5	5	5	5	5	5	5
Flavor and richness (cheesiness)	5	5	5	4	4	4	4	4	4	4	4	4	4
Separation of oil	○	○	○	○	○	○	○	○	○	○	○	○	○

(Ingredients in Table 7)

- Natural cheese 1: Mozzarella cheese manufactured by AEON Co., Ltd.
- Natural cheese 2: Mozzarella cheese manufactured by AEON Co., Ltd. blended with 2.5 mass% molten salt (tripolyphosphoric acid)
- Cow's milk: "*Bokujo-umare-no-gyunyu* (milk from farm)" manufactured by Gunma prefecture milk producers' cooperative union, water content approx. 87 mass%
- Edible oil/fat (canola oil): Edible rapeseed oil, "*Sarasara* Canola Oil" manufactured by J-OIL MILLS
- Hydroxypropylated tapioca starch: JELCALL POT-05 manufactured by J-OIL MILLS
- Hydroxypropylated potato starch: JELCALL BO-15 manufactured by J-OIL MILLS
- Acetylated tapioca starch: Actbody A-900 manufactured by J-OIL MILLS
- Acetylated distarch phosphate tapioca starch: Actbody ATP-27 manufactured by J-OIL MILLS
- Acetylated acid-treated potato starch: CheeseApp30 (Lyckeby11200) manufactured by Lyckeby Starch AB

Table 7 shows the amount of each ingredient required to obtain 200 g (100%) of the cheese-like food. Since the mixture is heated to remove the moisture until the total weight of the mixture is 200 g in process 4 of the method for preparing a cheese-like food, the amounts of the ingredients are adjusted in advance in anticipation of a loss of 20 g (10%) of the raw ingredients. This also applies to Table 9.

[0071] Comparative examples 1-1 to 1-11

Cheese-like foods were prepared and evaluated in the same manner as in Examples, except that the starch composition for foods was not used and only modified starches were used in the compositions shown in Table 9. The results are shown in Table 10.

[0072]

Table 9-1

Composition	Comparative examples											
	Comparative example 1-1	Comparative example 1-2		Comparative example 1-3	Comparative example 1-4		Comparative example 1-5		Comparative example 1-6			
Natural cheese 1												
Natural cheese 2	10%	20	10%	20	10%	20	10%	20	10%	20	10%	20
Hydroxypropylated tapioca starch	10%	20										
Hydroxypropylated potato starch			10%	20								
Acetylated tapioca starch				10%	20							
Hydroxypropylated distarch phosphate tapioca starch						10%	20					
Hydroxypropylated distarch phosphate potato starch								10%	20			
Hydroxypropylated distarch phosphate waxy corn starch										10%	20	
Acetylated distarch phosphate tapioca starch												
Acetylated distarch adipate waxy corn starch												
Acetylated acid-treated potato starch												
Oxidized tapioca starch												
Pregelatinized distarch phosphate potato starch												
Canola oil	20%	40	20%	40	20%	40	20%	40	20%	40	20%	40
Cow's milk	70%	140	70%	140	70%	140	70%	140	70%	140	70%	140
Total (g)	110%	220	110%	220	110%	220	110%	220	110%	220	110%	220

Table 9-2

Composition	Comparative examples									
	Comparative example 1-7		Comparative example 1-8		Comparative example 1-9		Comparative example 1-10		Comparative example 1-11	
Natural cheese 1										
Natural cheese 2	10%	20	10%	20	10%	20	10%	20	10%	20
Hydroxypropylated tapioca starch										
Hydroxypropylated potato starch										
Acetylated tapioca starch										
Hydroxypropylated distarch phosphate tapioca starch										
Hydroxypropylated distarch phosphate potato starch										
Hydroxypropylated distarch phosphate waxy corn starch										
Acetylated distarch phosphate tapioca starch	10%	20								
Acetylated distarch adipate waxy corn starch			10%	20						
Acetylated acid-treated potato starch					10%	20				
Oxidized tapioca starch							10%	20		
Pregelatinized distarch phosphate potato starch									10%	20
Canola oil	20%	40	20%	40	20%	40	20%	40	20%	40
Cow's milk	70%	140	70%	140	70%	140	70%	140	70%	140
Total (g)	110%	220	110%	220	110%	220	110%	220	110%	220

[0073]

Table 10-1

Table 10-1		Comparative examples											
		Comparative example 1-1		Comparative example 1-2		Comparative example 1-3		Comparative example 1-4		Comparative example 1-5		Comparative example 1-6	
Evaluation results		60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C
Evaluation temperature													
Stretch		5	2	5	1	2	1	1	1	1	1	1	1
Texture (meltability in mouth)		2	1	2	1	1	1	2	2	2	2	2	2
Texture (gel texture and melted cheese-like softness)		2	1	2	1	1	1	3	2	2	2	2	2
Flavor and richness (cheesiness)		2	1	2	1	2	1	2	2	2	2	2	2
Separation of oil		O		O		X		X		X		X	

Table 10-2

Evaluation results	Comparative examples										
	Comparative example 1-7		Comparative example 1-8		Comparative example 1-9		Comparative example 1-10		Comparative example 1-11		Comparative example 25-30°C
	60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C	60-65°C	25-30°C	
Stretch	1	1	1	1	2	2	1	1	3	1	1
Texture (meltability in mouth)	2	1	1	1	2	2	2	2	2	2	2
Texture (gel texture and melted cheese-like softness)	2	1	1	1	2	2	2	2	1	1	1
Flavor and richness (cheesiness)	2	1	1	1	2	2	2	2	2	2	2
Separation of oil	X		X		O		X		O		O

(Ingredients in Table 9)

-Natural cheese 1: Mozzarella cheese manufactured by AEON Co., Ltd.

-Natural cheese 2: Mozzarella cheese manufactured by AEON Co., Ltd. blended with 2.5 mass% molten salt (tripolyphosphoric acid)

5 -Cow's milk: "*Bokujo-umare-no-gyunyu* (milk from farm)" manufactured by Gunma prefecture milk producers' cooperative union, water content approx. 87 mass%

-Edible oil/fat (canola oil): Edible rapeseed oil, "*Sarasara* Canola Oil" manufactured by J-OIL MILLS

-Hydroxypropylated tapioca starch: JELCALL POT-05 manufactured by J-OIL MILLS

10 -Hydroxypropylated potato starch: JELCALL BO-15 manufactured by J-OIL MILLS

-Acetylated tapioca starch: Actbody A-900 manufactured by J-OIL MILLS

-Hydroxypropylated distarch phosphate tapioca starch: JELCALL TPO-8 manufactured by J-OIL MILLS

15 -Hydroxypropylated distarch phosphate potato starch: JELCALL EG-500 manufactured by J-OIL MILLS

-Hydroxypropylated distarch phosphate waxy corn starch: JELCALL A-10 manufactured by J-OIL MILLS

-Acetylated distarch phosphate tapioca starch: Actbody ATP-27 manufactured by J-OIL MILLS

20 -Acetylated distarch adipate waxy corn starch: JELCALL CT-2 manufactured by J-OIL MILLS

-Acetylated acid-treated potato starch: CheeseApp30 (Lyckeby11200) manufactured by Lyckeby Starch AB

-Oxidized tapioca starch: JELCALL SP-3 manufactured by J-OIL MILLS

25 -Pregelatinized distarch phosphate potato starch: BAKEUP B-a manufactured by J-OIL MILLS

[0074] As can be appreciated from the above results, the cheese-like food of the present invention had the stretch, texture, flavor, and richness typical of cheese not only immediately after heating but also after the temperature was lowered. In addition, the cheese-like food had a cheese-like appearance with no oil separation. The cheese-like food showed good physical properties not only immediately after preparation but also after storage in the freezer, suggesting that it will also have good physical properties after refrigerated storage. Since the cheese-like food of the present invention is resistant to refrigerated and frozen storage as described above, it can be used for take-out foods served in retail stores and the like.

35 Moreover, it was shown that the texture such as meltability in mouth was even better when

the cheese-like food contained an edible oil/fat.

[0075] [5] Cheese risotto (Example of imparting cheese texture, case 1)

Example 2

Risotto with cheese sauce was prepared according to the following method using
5 the composition shown in Table 11, and evaluated by discussions between two expert
panelists for stretch, texture, flavor, and richness. Starch composition for foods 1 was
obtained by the method previously described in Production example 1-2.

[0076] <Method for preparing cheese risotto>

1. A commercially available cup-a-soup ("Knorr (registered trademark) Cup Soup"
10 Rich Potage made with Four Kinds of Cheese, manufactured by Ajinomoto Co., Inc.) was
mixed with Starch composition for foods 1, and the mixture was stirred lightly with a spoon
for 5 seconds.

2. Cooked rice was placed in a bowl.

3. The mixture in 1 was poured over the rice in 2, and boiling water (about 90°C)
15 was poured over the mixture and stirred with a spoon about 30 times (for about 30 seconds)
to obtain cheese risotto.

[0077] Table 11

Ingredients	Mass (g)	Mass%
"Knorr (registered trademark) Cup Soup" Rich Potage made with Four Kinds of Cheese (1 bag)	19.4	8.3%
Starch composition for foods 1	4	1.7%
Hot water	100	42.8%
Rice	110	47.1%
Total	233.4 g	100.0%

20 [0078] <Method for evaluating cheese risotto and results of evaluation>

As a control sample, cheese risotto was prepared in the same way as in Example
2, except that only a commercially available cup-a-soup was used instead of the mixture
described in 1. The cheese risotto obtained in Example 2 was evaluated by tasting and
comparing it with the obtained control sample.

25 As a result, the cheese risotto obtained in Example 2 had cheese-like thickness,
pleasant meltability in mouth, a cheese-like stretch, and an enhanced cheese-like texture.

On the other hand, the control sample had strong cheese flavor but was gluey with
little cheese-like texture due to the lack of the starch composition for foods.

[0079] [6] Cheese carbonara (Example of imparting cheese texture, case 2)

30 Example 3

Cheese carbonara was prepared according to the following method using the composition shown in Table 12, and evaluated by discussions between two expert panelists for stretch, texture, flavor, and richness. Starch composition for foods 1 was obtained by the method previously described in Production example 1-2.

5 [0080] <Method for preparing cheese carbonara>

1. One thousand five hundred grams (1500 g) of hot water added with 15 g of salt was boiled.

2. Hundred grams (100 g) of dry pasta was put in boiling water and boiled for 10 minutes.

10 3. The pasta boiled in 2 was drained in a colander 10 times.

4. A commercially available retort pouch of carbonara pasta sauce ("Topvalu Pasta Sauce" Carbonara made with Three Kinds of Cheese (AEON Co., Ltd.)) was soaked and heated in boiling water for 5 minutes.

15 5. The carbonara pasta sauce and Starch composition for foods 1 were placed in a bowl, and mixed with a whipper about 20 times (for about 20 seconds).

6. The pasta drained in 3 was put into the bowl containing the sauce mixed in 5, mixed with tongs for 5 seconds, and placed in a dish, thereby obtaining cheese carbonara.

[0081] Table 12

Ingredients	Mass (g)	Mass%
"Topvalu Pasta Sauce" Carbonara made with Three Kinds of Cheese	140	8.0%
Starch composition for foods 1	2.8	0.2%
"Ma·Ma Spaghetti (1.6 mm)", dry pasta	100	5.7%
Water	1,500	85.3%
Salt	15	0.9%
Total	1757.8 g	100.0%

20 [0082] <Method for evaluating cheese carbonara and results of evaluation>

As a control sample, cheese carbonara was prepared in the same way as in Example 3, except that only the carbonara pasta sauce was placed in the bowl in 5 above. The cheese carbonara obtained in Example 3 was evaluated by tasting and comparing it with the obtained control sample.

25 As a result, the cheese carbonara obtained in Example 3 had a sticky cheese-like stretch and thickness, pleasant meltability in mouth, and a natural cheese texture. In addition, the aroma of cheese was enhanced, and the aroma and taste were in harmony.

On the other hand, the control sample was watery, had an aroma peculiar to retort pouch, had a sharp taste, and the aroma and taste were not harmonious.

30 [0083] [7] Cheese-like food 2

Example 4

A cheese-like food was prepared according to the following method using the composition shown in Table 13, and evaluated by discussions between two expert panelists for cuttability, stretch, and texture. Starch composition for foods 1 was obtained by the method previously described in Production example 1-2.

[0084] <Method for preparing Cheese-like food 2>

1. Red cheddar and molten salt were shredded in a food processor. Shredding was performed in a food processor ("MK-K48P" manufactured by Panasonic Corporation) 10 times for 3 seconds each.

2. The remaining ingredients were added to the food processor in 1, shredded and mixed in the same manner as in 1 to obtain a mixture.

3. The mixture obtained in 2 was put in a pan and heated at $70 \pm 20^{\circ}\text{C}$ for 15-20 minutes while stirring with a wooden spatula until the mixture was homogeneous and until 10% of the moisture content in the mixture had evaporated (until the total weight of the mixture became 100 g for Example 4-1, and until the total weight of the mixture became 101 g for Example 4-2), thereby obtaining Cheese-like food 2.

4. After letting Cheese-like food 2 obtained above cool down, Cheese-like food 2 was stored in a refrigerator (about 2°C) for 24 hours. The resulting Cheese-like food 2 was subjected to cut test and taste evaluation in which it was heated in a microwave oven (500 W, about 2 minutes) before tasting.

[0085] <Method for evaluating Cheese-like food 2>

The stretch and texture of Cheese-like food 2 were evaluated based on the evaluation criteria for (1) Stretch and (2) Texture described in Example 1. Cheese-like food 2 was also evaluated for cuttability according to the following evaluation method.

(5) Cuttability test

The cheese-like food taken out of the refrigerator was sliced into approximately 5 mm slices with a slicer or a knife to evaluate its cuttability.

Results are shown in Table 13.

[0086] Table 13

Ingredients	Example 4-1		Example 4-2	
	Mass (g)	Mass%	Mass (g)	Mass%
Red cheddar	29.2	26.5%	29.2	26.3%
Molten salt	0.8	0.7%	0.8	0.7%
Starch composition for foods 1	2	1.8%	2	1.8%
Hydroxypropylated tapioca starch	8	7.3%	8	7.2%
Cow's milk	50	45.5%	50	45.1%
Solid fat	20	18.2%	20	18.0%
Gelatin	-	-	1	0.9%
Cuttability	Could be cut into slices with slicer and knife.		Could be cut into slices with slicer and knife. Cheese-like food did not deform much when cut.	
Stretch	A stretch of 15 cm was observed		A stretch of 15 cm was observed	
Texture	The cheese-like food had pleasant meltability in mouth and a smooth cheese-like texture without a gel-like texture.		The cheese-like food had pleasant meltability in mouth and a smooth cheese-like texture without a gel-like texture.	

(Ingredients in Table 13)

-Red Cheddar: American Red Cheddar Cheese, 1 kg cut, sold by Sanyu

5 -Cow's milk: "*Bokujo-umare-no-gyunyu* (milk from farm)" manufactured by Gunma prefecture milk producers' cooperative union, water content approx. 87 mass%

-Hydroxypropylated tapioca starch: JELCALL POT-05 manufactured by J-OIL MILLS

-Molten salt: Tripolyphosphoric acid manufactured by Mitejima Chemical Co., Ltd.

-Solid fat: Atlanta SS manufactured by J-OIL MILLS

10 -Gelatin: Bovine gelatin, Gelatin C-300 manufactured by JELEAF INC.

[0087] As can be appreciated from the above results, the cheese-like food of the present invention had the stretch and texture typical of cheese even when a solid fat was used. In addition, the cheese-like food of the present invention could be sliced after refrigerated storage.

15 In particular, the combination with gelatin improved the cuttability. The cheese-like food containing gelatin also had a cheese-like stretch and texture.

As described above, the cheese-like food of the present invention not only has a cheese-like stretch and texture, but also can be sliced at refrigerated temperatures, and thus can be used by processing it into various thicknesses and shapes.

CLAIMS

1. A cheese-like food, comprising:

(a) a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0 MPa or more but less than 100 MPa, wherein the starch composition comprises a starch-lipid complex; and

(b) water.

2. The cheese-like food according to claim 1, comprising Ingredient (a) above in an amount of 0.1 mass% or more but 40 mass% or less based on the total weight of the cheese-like food.

3. The cheese-like food according to claim 1 or 2, further comprising (c) an edible oil/fat.

4. The cheese-like food according to claim 3, comprising Ingredient (c) above in an amount of 0.1 mass% or more but 40 mass% or less based on the total weight of the cheese-like food.

5. The cheese-like food according to any one of claims 1 to 4, further comprising (d) one or more modified starches selected from the group consisting of a hydroxypropylated starch and an acetylated starch.

6. The cheese-like food according to claim 5, comprising Ingredient (d) above in an amount of 0.1 mass% or more but 40 mass% or less based on the total weight of the cheese-like food.

7. The cheese-like food according to any one of claims 1 to 6, further comprising (e) a cheese.

8. The cheese-like food according to claim 7, comprising Ingredient (e) above in an amount of 1 mass% or more but 90 mass% or less based on the total weight of the cheese-like food.

9. An agent for improving the stretch of a cheese, comprising the cheese-like food according to any one of claims 1 to 8.
- 5 10. A method for improving the stretch of a cheese, the method comprising adding the agent for improving the stretch of a cheese according to claim 9 at a mass ratio of 5 parts by mass or more but 4,000 parts by mass or less to 100 parts by mass of the cheese.
11. An agent for imparting a cheese-like texture, comprising the cheese-like food
10 according to any one of claims 1 to 8.
12. A method for imparting a cheese-like texture to a food, the method comprising adding the agent for imparting a cheese-like texture according to claim 11 at a mass ratio of 5 parts by mass or more but 4,000 parts by mass or less to 100 parts by mass of the food.
15
13. A starch composition for imparting a cheese-like texture which can be added to a food containing moisture to impart a cheese-like texture thereto, the starch composition comprising:
20 (a) a starch composition for foods obtained by subjecting a polyglycerol fatty acid ester and one or more selected from the group consisting of raw potato starch and a modified starch of said raw potato starch to a heat treatment under a pressure condition of 0 MPa or more but less than 100 MPa, wherein the starch composition comprises a starch-lipid complex.
- 25 14. A method for imparting a cheese-like texture to a food, the method comprising adding the starch composition for imparting a cheese-like texture according to claim 13 to a food containing moisture.
15. A food having a cheese-like texture, comprising the agent for imparting a cheese-
30 like texture according to claim 11 or the starch composition for imparting a cheese-like texture according to claim 13.