

SPECIFICATION

METHOD FOR PRODUCING PUDDING

5 Technical Field

[0001] The present invention relates to a method for producing a pudding.

Background Art

10 [0002] Generally, a milk pudding is produced through a base liquid blending step, a homogenizing step, a sterilizing step, a primary cooling step, a cup filling step, and a secondary cooling step (For example, refer to Japanese unexamined patent application publication No. 2006-061035.). People who eat a milk pudding produced in this way can usually feel its moderate elasticity.

15 Prior Art Document(s)

Patent Document(s)

[0003] Patent Document 1: Japanese unexamined patent application publication No. 2006-061035

20 Summary of the Invention

Problem to be solved by the invention

[0004] Incidentally, in recent years, good meltability-in-the-mouth and smoothness on the tongue may be required for a pudding such as a milk pudding. It is an object of the present invention to provide a pudding with
25 meltability-in-the-mouth and smoothness on the tongue superior to conventional puddings.

Means to solve the problem

[0005] A method for producing a pudding according to an aspect of the present
30 invention includes a preparing step and a homogenizing step. It should be

noted that examples of "pudding" here include a custard pudding, milk pudding, chocolate pudding, mango pudding, ginger milk pudding, sesame pudding, Bavarian cream, and blancmange. A base liquid is prepared in the preparing step. It should be noted that the base liquid may be purchased or be prepared by blending raw ingredients. In the homogenizing step, the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.0 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less. It should be noted that the "dispersoids" here refer to milk fat, casein and the like. Moreover, in the homogenizing step, it is preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.8 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.8 μm or more to 4.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.8 μm or more to 3.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.8 μm or more to 2.6 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.9 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.9 μm or more to 4.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized

such that dispersoids in the base liquid have a median diameter in the range of 1.9 μm or more to 3.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.9 μm or more to 2.6 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 1.95 μm or more to 2.55 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that dispersoids in the base liquid have a median diameter in the range of 2.0 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that the same dispersoids have a median diameter in the range of 2.0 μm or more to 4.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, it is even more preferable that the base liquid is homogenized such that the same dispersoids have a median diameter in the range of 2.0 μm or more to 3.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less, and it is particularly preferable that the base liquid is homogenized such that the same dispersoids have a median diameter in the range of 2.0 μm or more to 2.6 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less. Furthermore, it is particularly preferable that the standard deviation of the median diameter of the dispersoids is 0.20 or less. Moreover, in this homogenizing step, a homogenizing pressure is preferably in the range of 1 MPa or more to 15 MPa or less, more preferably in the range of 1 MPa or more to 5 MPa or less, even more preferably in the range of 2 MPa or more to 5 MPa or less, and particularly preferably in the range of 2 MPa or more to less than 5 MPa.

[0006] Results of intensive research by the inventors of the present invention

showed that a pudding has meltability-in-the-mouth and smoothness on the tongue superior to conventional puddings by homogenizing the base liquid such that the median diameter of the dispersoids in the base liquid and the standard deviation thereof are in the above-described range when the base liquid of a pudding is homogenized. Accordingly, the method for producing a pudding according to the present invention can be used to produce a pudding with meltability-in-the-mouth and smoothness on the tongue superior to conventional puddings.

[0007] It should be noted that in the above-described method for producing a pudding, the base liquid preferably contains fat in the range of 5% by mass or more to 40% by mass or less, and more preferably in the range of 13% by mass or more to 25% by mass or less. In addition, it is preferable that "fat" here is milk fat.

[0008] Results of intensive research by the inventors of the present invention showed that when the base liquid of a pudding contains fat in the range of 5% by mass or more to 40% by mass or less, a creamy pudding with a remarkable smoothness in the mouth can be obtained. Accordingly, the method for producing a pudding according to the present invention can be used to produce a creamy pudding with a remarkable smoothness in the mouth compared to conventional puddings.

[0009] Moreover, in the above-described method for producing a pudding, the base liquid preferably contains a nonfat milk solid content in the range of 5% by mass or more to 10% by mass or less, more preferably in the range of 5% by mass or more to 8% by mass or less, and even more preferably in the range of 5% by mass or more to 7% by mass or less, and particularly preferably contains fat in the range of 5.5% by mass or more to 6.5% by mass or less.

[0010] Furthermore, in the above-described method for producing a pudding, the base liquid preferably contains a solid content in the range of 20% by mass or more to 40% by mass or less, more preferably in the range of 25% by mass or more to 38% by mass or less, even more preferably in the range of 30% by mass

or more to 36% by mass or less, and particularly preferably in the range of 32% by mass or more to 34% by mass or less.

[0011] In addition, breaking strength of the pudding obtained in the manner as described above is preferably in the range of 10.0 gf/cm² or more to 25.0 gf/cm² or less, more preferably in the range of 10.0 gf/cm² or more to 16.0 gf/cm² or less, even more preferably in the range of 10.0 gf/cm² or more to 15.0 gf/cm² or less, even more preferably in the range of 10.0 gf/cm² or more to 14.5 gf/cm² or less, even more preferably in the range of 10.0 gf/cm² or more to 14.0 gf/cm² or less, and particularly preferably in the range of 10.0 gf/cm² or more to 13.0 gf/cm² or less.

Description of Embodiments

[0012] Hereinafter, embodiments of the present invention will be described in detail, but the present invention is not limited to the respective embodiments described below.

[0013] <Method for Producing Puddings According to the Embodiments of the Present Invention>

A pudding with good meltability-in-the-mouth according to the embodiment of the present invention is produced basically through a preparing step, homogenizing step, sterilizing step, primary cooling step, cup filling step, and secondary cooling step. It should be noted that the order of these steps may be changed or a portion of these steps may be omitted as appropriate due to the properties of the base liquid or the like.

[0014] Hereinafter, the respective steps will be described in detail.

25 (1) Preparing step

In the preparing step, the base liquid is purchased or is prepared by blending raw ingredients.

[0015] It should be noted that when being prepared by blending raw ingredients in this step, the base liquid is prepared by dissolving milk raw ingredients, gelatinizing agents and the like into water.

[0016] It is preferable that the "milk raw ingredient" here is at least one selected from the group consisting of raw milk, milk, skimmed milk, milk fat (cream), butter, whey, concentrated milk, skimmed concentrated milk, buttermilk, cheese, whole condensed milk, skimmed condensed milk, whole milk powder, and skimmed milk powder. It should be noted that in the embodiment of the present invention, the base liquid preferably contains milk fat in the range of 5% by mass or more to 40% by mass or less, and more preferably in the range of 13% by mass or more to 25% by mass or less. Moreover, it is preferable that the base liquid contains a nonfat milk solid content in the range of 5% by mass or more to 10% by mass or less. Furthermore, it is preferable that the base liquid contains a solid content in the range of 20% by mass or more to 40% by mass or less.

[0017] It is preferable that the "gelatinizing agent" here is at least one selected from the group consisting of agar, carageenan, furcellaran, gelatin, low methoxyl pectin, deacylated gellan gum, and sodium alginate.

[0018] Moreover, other ingredients than milk raw ingredients and gelatinizing agents can be added to the base liquid as appropriate. Examples of other ingredients include oils and fats, saccharides, starches, eggs and processed egg products, beans and processed bean products, fruits and vegetables, nuts, liquors, and additives. Examples of additives include sweetening agents, flavors, coloring agents, emulsifying agents, seasonings, reinforcing agents, and thickening agents.

[0019] Incidentally, the base liquid can be heated if necessary in order to dissolve the milk raw ingredients, gelatinizing agents and the like in water. It is preferable that the heating temperature at that time is in the range of 40°C or more to 80°C or less. It is preferable that the heating temperature is approximately 60°C when the base liquid contains oil and fat.

[0020] Moreover, in order to efficiently dissolve the milk raw ingredients, gelatinizing agents and the like in water, for example, a stirring device such as a mixer and a tank with a stirrer can be used.

[0021] (2) Homogenizing step

In this homogenizing step, the base liquid prepared in the preparing step is homogenized with a homogenizer, a plate-type sterilizer with a homogenizer or the like. The homogenizing pressure and the like in the
5 homogenizing step is set to an extent that the dispersoids in the base liquid have a median diameter in the range of 1.0 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less. It should be noted that in the embodiment of the present invention, the homogenizing pressure is preferably set in the range of 1 MPa or more to 15
10 MPa or less in order to thus homogenize the base liquid.

[0022] (3) Heating step

In the heating step, the base liquid subjected to the homogenizing step is heated using a tank with a jacket and stirrer, a plate-type sterilizer or the like. In this heating step, it is preferable that the base liquid is heated at a
15 temperature in the range of 90°C or more to 150°C or less for the time in the range of 2 seconds or more to 10 minutes or less.

[0023] (4) Primary cooling step

In the primary cooling step, the base liquid subjected to the heating step is cooled to a temperature in a predetermined range using a tank with a
20 jacket and stirrer, a plate-type sterilizer or the like. It is preferable that a cooling temperature for the base liquid in the primary cooling step is higher by 5 to 15°C than the temperature at which the gelatinizing agent contained in the base liquid gelatinizes. For example, it is preferable that the cooling temperature is set to a temperature in the range of 45°C or more to 55°C or less
25 in the case of using agar, 50°C or more to 60°C or less in the case of using carageenan, 45°C or more to 55°C or less in the case of using furcellaran, 25°C or more to 35°C or less in the case of using gelatin, 35°C or more to 45°C or less in the case of using low methoxyl pectin, 35°C or more to 45°C or less in the case of using deacylated gellan gum, and 35°C or more to 45°C or less in the
30 case of using sodium alginate.

[0024] (5) Cup filling step

In the cup filling step, a cup (container) is filled with the base liquid subjected to the primary cooling step and is sealed up. This cup filling step can be performed using a cup filling sealing machine, a foam filling sealing machine or the like.

[0025] (6) Secondary cooling step

In the secondary cooling step, the base liquid filling cup in the cup filling step is allowed to stand in a refrigerator and is cooled. As a result, the base liquid gelatinizes and a desired pudding can be obtained. It should be noted that in the secondary cooling step, the base liquid in a cup is preferably cooled continuously on a conveyor that moves gently in a refrigerator or a freezer, for example. Moreover, in the secondary cooling step, it is preferable that a cooling temperature is set to an extent that the temperature at the center of the pudding in a cup is in the range of 1°C or more to 10°C or less.

[0026] <Characteristics of Method for Producing Pudding According to Embodiments of the Present Invention>

(1)

In the homogenizing step of the method for producing a pudding according to the embodiment of the present invention, the base liquid is homogenized such that the dispersoids in the base liquid have a median diameter in the range of 1.0 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less.

Results of intensive research by the inventors of the present invention showed that the obtained pudding has meltability-in-the-mouth and smoothness on the tongue superior to conventional puddings by homogenizing the base liquid in the manner as described above. Accordingly, the method for producing a pudding according to the embodiment of the present invention can be used to produce a pudding with meltability-in-the-mouth and smoothness on the tongue superior to conventional puddings.

[0027] (2)

In the method for producing a pudding according to the embodiment of the present invention, when the base liquid contains milk fat in the range of 5% by mass or more to 40% by mass or less (preferably in the range of 13% by mass or more to 25% by mass or less), a creamy pudding with a remarkable smoothness in the mouth compared to conventional puddings can be produced.

[0028] Modified Examples

(A)

Although not being particularly mentioned in the foregoing embodiment, in the primary cooling step, the base liquid can be cooled to the temperature lower than or equal to the temperature at which the gelatinizing agent gelatinizes and can be preserved in a state where the base liquid has lost a gelatinizing ability. It should be noted that in this case, after the base liquid is reheated to a temperature higher than or equal to the temperature at which the gelatinizing agent melts and is melted, and the gelatinizing ability of the base liquid is restored, the base liquid is re-cooled to the primary cooling temperature (a temperature higher by 5 to 15°C than the temperature at which the gelatinizing agent contained in the base liquid gelatinizes). After that, the cup filling step and the secondary cooling step are performed.

[0029] It should be noted that the reheating temperature is preferably set to a temperature in the range of 80°C or more to 90°C or less in the case of using agar, 70°C or more to 80°C or less in the case of using carageenan, 70°C or more to 80°C or less in the case of using furcellaran, and 40°C or more to 50°C or less in the case of using gelatin. It should be also noted that a too high reheating temperature causes loss of energy, and a too low reheating temperature does not enable the gelatinizing ability of the gelatinizing agent to be completely restored and results in imperfect gelatinization.

[0030] Moreover, a multitubular heat exchanger or a plate heat exchanger can be used to perform these reheating and re-cooling steps. Performing the reheating and re-cooling steps in this manner has the advantage that a series of steps to the secondary cooling step can be temporally divided into two groups.

Thereby, temporal flexibility of the producing operation can be increased.

[0031] (B)

Although not being particularly mentioned in the foregoing embodiment, the method for producing a pudding according to the embodiment
5 of the present invention can be applied to producing a custard pudding. In this case, a custard pudding is produced basically through a preparing step, homogenizing step, sterilizing step, primary cooling step, cup filling step, coagulating step, and secondary cooling step. It should be noted that the order of these steps may be changed or a portion of these steps may be omitted as
10 appropriate due to the properties of the base liquid or the like.

[0032] In the coagulating step, the base liquid of a custard pudding may be coagulated by being steamed or by being highly pressurized.

[0033] <Working Examples>

Hereinafter, the present invention will be more specifically described by
15 way of working examples. It should be noted that the present invention is not limited to the following working examples.

Working Example 1

[0034] (1) Preparation of base liquid

A primary base liquid was prepared by dissolving and blending 5.8
20 parts by weight of skimmed milk powder (Q) (manufactured by Meiji Co., Ltd.), 7.6 parts by weight of sugar (manufactured by Meiji Food Materia Co., Ltd), 10.5 parts by weight of fresh cream (manufactured by Meiji Co., Ltd.), 0.3 parts by weight of gelatin (manufactured by Nitta Gelatin Inc.), 0.4 parts by weight of agar (manufactured by San-Ei Gen F.F.I., Inc.), 14.7 parts by weight of
25 Dextrin MD220 (manufactured by Hayashibara Shoji Inc.), 0.05 parts by weight of an emulsifying agent (manufactured by Taiyo Kagaku Co., Ltd.), 0.02 parts by weight of xanthan gum (manufactured by Taiyo Kagaku Co., Ltd.), 0.14 parts by weight of Cream Flavor BD-03799 (manufactured by Soda Aromatic Co., Ltd.), and 0.16 parts by weight of Vanilla Flavor MV-0603
30 (manufactured by Showa Noge Co., Ltd.) into 60.33 parts by weight of raw

ingredient water. It should be noted that, here, the primary base liquid contains 6.03% by mass of a nonfat milk solid content, 5.05% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.22% by mass of a solid content. Moreover, the calculated
 5 sweetness of the primary base liquid was 8.24. The sweetness was calculated using the following formula.

[0035] (Sweetening agent) = sugar content (% by mass) + nonfat milk solid content (% by mass) $\times$ 0.533 $\times$ 0.2

where 0.533 is the ratio of lactose in a nonfat milk solid content and 0.2
 10 is the sweetness of lactose relative to sugar.

[0036] Next, after this primary base liquid was maintained at 70°C for 10 minutes, slight amounts of flavor and a coloring agent were added to the primary base liquid and the moisture therein was adjusted to prepare a secondary base liquid.

15 [0037] (2) Preparation of milk pudding

After being homogenized at a homogenizing pressure of 2 MPa, the secondary base liquid was sterilized at 95°C for 5 minutes and was cooled to 70°C, and each cup was filled with 80 g of the secondary base liquid. Then, the secondary base liquid in the cup was cooled by immersion in ice water to obtain
 20 a desired milk pudding.

[0038] (3) Evaluation of milk pudding

(3-1) Measurement of breaking strength

The milk pudding obtained as described above was refrigerated in a refrigerator at 10°C overnight and was coagulated. Then, a portion of the milk
 25 pudding was set on Rheoner II (manufactured by Yamaden Co., Ltd) and the breaking strength of the milk pudding was measured. A cylindrical plunger with a diameter of 1.0 mm was used. The moving speed of the plunger was 1 mm/second.

At that time, the breaking strength of the milk pudding according to
 30 this working example was 22.5 gf/cm² (see Table 1).

[0039] (3-2) Sensory test

When testers ate the milk pudding obtained as described above, they felt that the milk pudding had meltability-in-the-mouth and smoothness on the tongue superior to conventional milk puddings and had a moderate firmness.

5 [0040] (4) Evaluation of secondary base liquid after sterilization

The secondary base liquid after sterilization was cooled to 70°C to prepare a sample liquid.

This sample liquid was set on a laser diffraction particle size analyzer (SALD-2100, manufactured by Shimadzu Corporation), and the median
10 diameter (particle diameter of the dispersoid when the number of the accumulated dispersoids becomes 50%) of the dispersoids in the secondary base liquid was measured and the standard deviation of the median diameter was found. It should be noted that the dispersoids of the secondary base liquid according to this working example had a median diameter of 2.30 μm and the
15 standard deviation of the median diameter was 0.27 (see Table 1).

Working Example 2

[0041] A base liquid was prepared in the same manner as in Working Example 1, except that the additive amount of skimmed milk powder (Q) was changed into 5.3 parts by weight, the additive amount of fresh cream was changed into
20 21.0 parts by weight, the additive amount of Dextrin MD220 was changed into 9.5 parts by weight, and the additive amount of raw ingredient water was changed into 55.53 parts by weight, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.05% by mass of a nonfat milk solid content, 10.03% by mass of milk fat, and 7.60% by mass of
25 sugar. In addition, the primary base liquid contained 33.26% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

[0042] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were
30 obtained (see Table 1).

- Breaking strength of the milk pudding: 15.4 gf/cm²

- Testers felt that the milk pudding had meltability-in-the-mouth and smoothness on the tongue superior to conventional milk puddings and had a moderate firmness.

5 · Median diameter of the dispersoids in the secondary base liquid: 2.44 μ m

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.21

Working Example 3

10 [0043] A base liquid was prepared in the same manner as in Working Example 1, except that the additive amount of skimmed milk powder (Q) was changed into 4.95 parts by weight, the additive amount of fresh cream was changed into 27.6 parts by weight, the additive amount of Dextrin MD220 was changed into 6.25parts by weight, and the additive amount of raw ingredient water was

15 changed into 52.53 parts by weight, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.02% by mass of a nonfat milk solid content, 13.16% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.27% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid

20 was 8.24.

[0044] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 1).

- Breaking strength of the milk pudding: 14.4 gf/cm²

25 · Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.

- Median diameter of the dispersoids in the secondary base liquid: 2.40 μ m

30 · Standard deviation of the median diameter of the dispersoids in the

secondary base liquid: 0.20

Working Example 4

[0045] A base liquid was prepared in the same manner as in Working Example 1, except that the additive amount of skimmed milk powder (Q) was changed into 4.775 parts by weight, the additive amount of fresh cream was changed into 31.75 parts by weight, the additive amount of Dextrin MD220 was changed into 4.15 parts by weight, and the additive amount of raw ingredient water was changed into 50.505 parts by weight, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.05% by mass of a nonfat milk solid content, 15.13% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.27% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.25.

[0046] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 1).

- Breaking strength of the milk pudding: 13.4 gf/cm²

- Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.

- Median diameter of the dispersoids in the secondary base liquid: 2.43 μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.16

Working Example 5

[0047] A base liquid was prepared in the same manner as in Working Example 1, except that the additive amount of skimmed milk powder (Q) was changed into 3.75 parts by weight, the additive amount of sugar was changed into 1.5 parts by weight, the additive amount of fresh cream was changed into 53.0 parts by weight, and the additive amount of raw ingredient water was changed

into 40.68 parts by weight and no Dextrin MD220 was added, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.07% by mass of a nonfat milk solid content, 25.21% by mass of milk fat, and 1.50% by mass of sugar. In addition, the primary base liquid
 5 contained 33.29% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 2.15.

[0048] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 1).

- 10 · Breaking strength of the milk pudding: 10.1 gf/cm²
- Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.
- Median diameter of the dispersoids in the secondary base liquid: 2.53
 15 μm
- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.19

Working Example 6

[0049] A base liquid was prepared in the same manner as in Working Example
 20 1, except that the homogenizing pressure was changed into 5 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.03% by mass of a nonfat milk solid content, 5.05% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.22% by mass of a solid content. Moreover, the calculated
 25 sweetness of the primary base liquid was 8.24.

[0050] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 2).

- Breaking strength of the milk pudding: 20.9 gf/cm²
- 30 · Testers felt that the milk pudding had a meltibility-in-the-mouth and

smoothness on the tongue superior to conventional milk puddings and had a moderate firmness.

- Median diameter of the dispersoids in the secondary base liquid: 1.83 μm

5 · Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.28

Working Example 7

[0051] A base liquid was prepared in the same manner as in Working Example 2, except that the homogenizing pressure was changed into 5 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.05% by mass of a nonfat milk solid content, 10.03% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.26% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

15 [0052] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 2).

- Breaking strength of the milk pudding: 14.5 gf/cm²

20 · Testers felt that the milk pudding had meltability-in-the-mouth and smoothness on the tongue superior to conventional milk puddings and had a moderate firmness.

- Median diameter of the dispersoids in the secondary base liquid: 1.89 μm

25 · Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.22

Working Example 8

[0053] A base liquid was prepared in the same manner as in Working Example 3, except that the homogenizing pressure was changed into 5 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.02% by mass of a nonfat milk solid content, 13.16% by mass of

milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.27% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

[0054] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 2).

- Breaking strength of the milk pudding: 13.7 gf/cm²

- Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.

- Median diameter of the dispersoids in the secondary base liquid: 1.95 μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.22

Working Example 9

[0055] A base liquid was prepared in the same manner as in Working Example 1, except that the additive amount of skimmed milk powder (Q) was changed into 4.800 parts by weight, the additive amount of fresh cream was changed into 30.000 parts by weight, the additive amount of Dextrin MD220 was changed into 5.00 parts by weight, the additive amount of emulsifying agent was changed into 0.10 parts by weight, and the additive amount of raw ingredient water was changed into 51.640 parts by weight and the homogenizing pressure was changed into 5 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.00% by mass of a nonfat milk solid content, 14.3% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.10% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

[0056] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were

obtained (see Table 2).

- Breaking strength of the milk pudding: 12.1 gf/cm²

- Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.

- Median diameter of the dispersoids in the secondary base liquid: 2.14 μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.16

10 Working Example 10

[0057] A base liquid was prepared in the same manner as in Working Example 4, except that the homogenizing pressure was changed into 5 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.05% by mass of a nonfat milk solid content, 15.13% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.27% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.25.

[0058] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 2).

- Breaking strength of the milk pudding: 12.7 gf/cm²

- Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.

- Median diameter of the dispersoids in the secondary base liquid: 2.03 μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.26

Working Example 11

[0059] A base liquid was prepared in the same manner as in Working Example

5, except that the homogenizing pressure was changed into 5 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.07% by mass of a nonfat milk solid content, 25.21% by mass of milk fat, and 1.50% by mass of sugar. In addition, the primary base liquid
 5 contained 33.29% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 2.15.

[0060] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 2).

- 10 · Breaking strength of the milk pudding: 10.3 gf/cm²
- Testers felt that the milk pudding had a creamier feel in the mouth than conventional milk puddings, and had good meltability-in-the-mouth and smoothness on the tongue.
- Median diameter of the dispersoids in the secondary base liquid: 2.17
 15 μm
- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.17

Working Example 12

[0061] A base liquid was prepared in the same manner as in Working Example
 20 1, except that the homogenizing pressure was changed into 15 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.03% by mass of a nonfat milk solid content, 5.05% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.22% by mass of a solid content. Moreover, the calculated
 25 sweetness of the primary base liquid was 8.24.

[0062] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 3).

- Breaking strength of the milk pudding: 19.5 gf/cm²
- 30 · Testers felt that the milk pudding had meltability-in-the-mouth and

smoothness on the tongue superior to conventional milk puddings and had a moderate firmness.

·Median diameter of the dispersoids in the secondary base liquid: 1.14 μm

5 ·Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.16

Working Example 13

[0063] A base liquid was prepared in the same manner as in Working Example 2, except that the homogenizing pressure was changed into 15 MPa, and then, a
10 milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.05% by mass of a nonfat milk solid content, 10.03% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.26% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

15 [0064] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 3).

·Breaking strength of the milk pudding: 16.2 gf/cm²

·Testers felt that the milk pudding had meltability-in-the-mouth and
20 smoothness on the tongue superior to conventional milk puddings and had a moderate firmness.

·Median diameter of the dispersoids in the secondary base liquid: 1.53 μm

·Standard deviation of the median diameter of the dispersoids in the
25 secondary base liquid: 0.23

[0065] (Comparative Example 1)

A base liquid was prepared in the same manner as in Working Example 1, except that the additive amount of skimmed milk powder (Q) was changed into 4.800 parts by weight, the additive amount of fresh cream was changed
30 into 30.000 parts by weight, the additive amount of Dextrin MD220 was

changed into 5.00 parts by weight, the additive amount of emulsifying agent was changed into 0.10 parts by weight, and the additive amount of raw ingredient water was changed into 51.640 parts by weight and the homogenizing pressure was changed into 25 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.00% by mass of a nonfat milk solid content, 14.3% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.10% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

[0066] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 4).

- Breaking strength of the milk pudding: 24.1 gf/cm²

- Testers felt that the milk pudding was firm and sticky, and had poor meltability-in-the-mouth.

- Median diameter of the dispersoids in the secondary base liquid: 5.80 μ m

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.33

[0067] (Comparative Example 2)

A base liquid was prepared in the same manner as in Working Example 3, except that the homogenizing pressure was changed into 15 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.02% by mass of a nonfat milk solid content, 13.16% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.27% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 8.24.

[0068] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 3).

- Breaking strength of the milk pudding: 16.4 gf/cm²

- Testers felt that the milk pudding was slightly firm and sticky, and had poor meltability-in-the-mouth.

- Median diameter of the dispersoids in the secondary base liquid: 2.40

5 μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.32

[0069] (Comparative Example 3)

10 A base liquid was prepared in the same manner as in Working Example 4, except that the homogenizing pressure was changed into 15 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base liquid contains 6.05% by mass of a nonfat milk solid content, 15.13% by mass of milk fat, and 7.60% by mass of sugar. In addition, the primary base liquid contained 33.27% by mass of a solid content. Moreover, the calculated

15 sweetness of the primary base liquid was 8.25.

[0070] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 3).

- Breaking strength of the milk pudding: 18.9 gf/cm²

20 · Testers felt that the milk pudding was firm and sticky, and had poor meltability-in-the-mouth.

- Median diameter of the dispersoids in the secondary base liquid: 6.64

μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.34

25

[0071] (Comparative Example 4)

A base liquid was prepared in the same manner as in Working Example 5, except that the homogenizing pressure was changed into 15 MPa, and then, a milk pudding was prepared. It should be noted that, here, the primary base

30 liquid contains 6.07% by mass of a nonfat milk solid content, 25.21% by mass of

milk fat, and 1.50% by mass of sugar. In addition, the primary base liquid contained 33.29% by mass of a solid content. Moreover, the calculated sweetness of the primary base liquid was 2.15.

[0072] When the milk pudding and the secondary base liquid were evaluated in the same manner as in Working Example 1, the following results were obtained (see Table 3).

- Breaking strength of the milk pudding: 28.6 gf/cm²

- Testers felt that the milk pudding was firm and sticky, and had poor meltability-in-the-mouth.

- Median diameter of the dispersoids in the secondary base liquid: 8.44 μm

- Standard deviation of the median diameter of the dispersoids in the secondary base liquid: 0.40

[Table 1]

	Working Example 1	Working Example 2	Working Example 3	Working Ex Example. 4	Working Example 5
Homogenizing pressure (MPa)	2	2	2	2	2
Fat (% by mass)	5.05	10.03	13.16	15.13	25.21
Nonfat milk solid content (% by mass)	6.03	6.05	6.02	6.05	6.07
Solid content (% by mass)	33.22	33.26	33.27	33.27	33.29
Sweetness	8.24	8.24	8.24	8.25	2.15
Breaking strength (gf/cm ²)	22.5	15.4	14.4	13.4	10.1
Meltability-in-the-mouth Smoothness on the tongue	Good/Good	Good/Good	Good/Good	Good/Good	Good/Good
Median diameter of dispersoids (μm)	2.30	2.44	2.40	2.43	2.53
Standard deviation	0.27	0.21	0.20	0.16	0.19

[Table 2]

	Working Example 6	Working Example 7	Working Example 8	Working Example 9	Working Example 10	Working Example 11
Homogenizing pressure (MPa)	5	5	5	5	5	5
Fat (% by mass)	5.05	10.03	13.16	14.3	15.13	25.21
Nonfat milk solid content (% by mass)	6.03	6.05	6.02	6.00	6.05	6.07
Solid content (% by mass)	33.22	33.26	33.27	33.10	33.27	33.29
Sweetness	8.24	8.24	8.24	8.24	8.25	2.15
Breaking strength (gf/cm ²)	20.9	14.5	13.7	12.1	12.7	10.3
Meltability-in-the-mouth Smoothness on the tongue	Good/Good	Good/Good	Good/Good	Good/Good	Good/Good	Good/Good
Median diameter of dispersoids (μm)	1.83	1.89	1.95	2.14	2.03	2.17
Standard deviation	0.28	0.22	0.22	0.16	0.26	0.17

[Table 3]

	Working Example 12	Working Example 13	Comparative Example 2	Comparative Example 3	Comparative Example 4
Homogenizing pressure (MPa)	15	15	15	15	15
Fat (% by mass)	5.05	10.03	13.16	15.13	25.21
Nonfat milk solid content (% by mass)	6.03	6.05	6.02	6.05	6.07
Solid content (% by mass)	33.22	33.26	33.27	33.27	33.29
Sweetness	8.24	8.24	8.24	8.25	2.15
Breaking strength (gf/cm ²)	19.5	16.2	16.4	18.9	28.6
Meltability-in-the-mouth Smoothness on the tongue	Good/Good	Good/Good	Poor/Poor	Poor/Poor	Poor/Poor
Median diameter of dispersoids (μm)	1.14	1.53	2.40	6.64	8.44
Standard deviation	0.16	0.23	0.32	0.34	0.40

[Table 4]

	Comparative Example 1
Homogenizing pressure (MPa)	25
Fat (% by mass)	14.3
Nonfat milk solid content (% by mass)	6.00
Solid content (% by mass)	33.10
Sweetness	8.24
Breaking strength (gf/cm ²)	24.1
Meltability-in-the-mouth Smoothness on the tongue	Poor/Poor
Median diameter of dispersoids (μm)	5.80
Standard deviation	0.33

- 5 [0073] The median diameter of the dispersoids in the secondary base liquid according to Working Examples 1 to 13 is 1.1 μm to 2.6 μm and the standard deviation of the median diameter is approximately 0.16 to 0.28. On the other hand, the median diameter of the dispersoids in the secondary base liquid according to Comparative Examples 1 to 4 is 2.4 μm to 8.44 μm and the standard deviation of the median diameter is approximately 0.32 to 0.40. That is, the median diameter and its standard deviation of the dispersoids in the secondary base liquid according to Working Examples 1 to 13 are smaller
- 10

than those of the dispersoids in the secondary base liquid according to Comparative Examples 1 to 4. Therefore, it is considered that the smaller and uniform median diameter the dispersoids have, the better meltability-in-the-mouth and smoothness on the tongue a milk pudding has.

5 It should be noted that if the secondary base liquid is not homogenized, the standard deviation of the dispersoids in the secondary base liquid is relatively large and a milk pudding obtained from such a secondary base liquid does not have a good smoothness on the tongue.

[0074] Moreover, the results of the working examples in Table 1 and Table 2
10 show that when the pudding according to the present invention is produced, the median diameter of the dispersoids in the secondary base liquid is in the range of 1.0 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less by setting the amount of fat to 2 to 30% by mass, preferably 3 to 28% by mass and more preferably 4 to 26% by
15 mass; a nonfat milk solid content to 5 to 10% by mass, preferably 5 to 7% by mass and more preferably 5.5 to 6.5% by mass; a solid content to 20 to 40% by mass, preferably 30 to 36% by mass and more preferably 32 to 34% by mass; and the homogenizing pressure with respect to the primary base liquid to 1 to 10 MPa, preferably 1 to 5 MPa, more preferably 2 to 5 MPa and even more
20 preferably 2 to 3 MPa, and therefore, a pudding that has good meltability-in-the-mouth and smoothness on the tongue can be produced.

[0075] In addition, the results of the working examples in Table 3 show that when the pudding according to the present invention is produced, the median diameter of the dispersoids in the secondary base liquid is in the range of 1.0
25 μm or more to 6.0 μm or less and the standard deviation of the median diameter of the dispersoids is 0.30 or less by setting the amount of fat to 3 to 12% by mass, preferably 4 to 11% by mass and more preferably 5 to 10% by mass; a nonfat milk solid content to 5 to 10% by mass, preferably 5 to 7% by mass and more preferably 5.5 to 6.5% by mass; a solid content to 20 to 40% by
30 mass, preferably 30 to 36% by mass and more preferably 32 to 34% by mass;

and the homogenizing pressure with respect to the primary base liquid to 11 to 20 MPa, preferably 13 to 17 MPa and more preferably 14 to 16 MPa, and therefore, a pudding that has good meltability-in-the-mouth and smoothness on the tongue can be produced.

CLAIMS

1. A method for producing a pudding comprising:
5 a preparing step for preparing a base liquid; and
a homogenizing step for homogenizing the base liquid such that a median diameter of dispersoids in the base liquid is in a range of 1.0 μm or more to 6.0 μm or less and a standard deviation of the median diameter of the dispersoids is 0.30 or less.
10
2. The method for producing a pudding according to claim 1,
wherein in the homogenizing step, the base liquid is homogenized at a homogenizing pressure in a range of 1 MPa or more to 15 MPa or less such that a median diameter of the dispersoids in the base liquid is in a range of 1.0 μm
15 or more to 6.0 μm or less and a standard deviation of the median diameter of the dispersoids is 0.30 or less.
3. The method for producing a pudding according to claim 1 or 2,
wherein the base liquid contains fat in a range of 5% by mass or more to
20 40% by mass or less.
4. The method for producing a pudding according to any one of claims 1 to 3,
wherein the base liquid contains a nonfat milk solid content in a range
25 of 5% by mass or more to 10% by mass or less.
5. The method for producing a pudding according to any one of claims 1 to 4,
wherein the base liquid contains a solid content in a range of 20% by
30 mass or more to 40% by mass or less.

6. A pudding obtained by the method for producing a pudding according to any one of claims 1 to 5.
- 5 7. A pudding obtained by the method for producing a pudding according to any one of claims 1 to 5, the pudding having
breaking strength in a range of 10.0 gf/cm² or more to 25.0 gf/cm² or less.