CLAIMS

1. An oil- or fat-processed starch, satisfying the following conditions (A) and (B):

(A) a solubility is equal to or higher than 9.5 % by mass and equal to or lower than 45 % by mass, said solubility being obtained by the following procedure:

0.1 g by anhydride conversion of the oil- or fat-processed starch is dispersed in 10 mL of distilled water, and the mixture is heated in a thermostatic bath vessel at 90 degrees C for 30 minutes, and then is cooled down to 20 degrees C to obtain a gelatinized liquid; and

the gelatinized liquid is centrifuged to be separated; and total sugar content contained in a supernatant liquid is measured by a phenol-sulfuric acid method to obtain said solubility; and

(B) an emulsifying capacity is equal to or higher than 50 % and equal to or lower than 100%, said emulsifying capacity being obtained by the following procedure:

2.5 g of the oil- or fat-processed starch is dispersed in 30 g of distilled water and 30 g of canola oil is added therein and the mixture is stirred (at 3,000 rpm for 1 minute) by a homogenizer; and

then, promptly after the stirring, 50 mL of the dispersion is transferred in a measuring cylinder of a volume of 50 mL and is left for 30 minutes, and a volume fraction of an emulsified layer is measured to obtain said emulsifying capacity.

2. The oil- or fat-processed starch as set forth in claim 1, wherein a pH adjuster is contained at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass over 100 parts by mass of the raw starch.

3. The oil- or fat-processed starch as set forth in claim 2, wherein said oil- or fat-processed starch is obtainable by heating a mixture, said mixture containing an edible oil or fat and/or an edible oil- or fat-related substance at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass over 100 parts by mass of said raw starch.

4. The oil- or fat-processed starch as set forth in claim 3, wherein iodine value of said edible oil or fat is equal to or higher than 100.

5. The oil- or fat-processed starch as set forth in any one of claims 2 to 4, wherein degree of swelling of said raw starch is equal to or higher than 5 and equal to or lower than 45, said degree of swelling being obtained by the following procedure:

1 g of said raw starch is dispersed in 100 mL of water, and the dispersion is heated at 80 degrees C in a thermostatic chamber for 30 minutes, and then is cooled down to 30 degrees C, and is centrifuged to obtain a precipitation; and

the precipitation is thermally dried (at 105 degrees C for 4 hours), and (weight before dry)/(weight after dry) of said precipitation presents said degree of swelling.

6. The oil- or fat-processed starch as set forth in any one of claims 2 to 5, wherein said raw starch is one or more selected from a group consisting of: a cross-linked starch, an acetylated starch, a potato starch, a corn starch and a waxy corn starch.

7. The oil- or fat-processed starch as set forth in any one of claims 2 to 6, wherein pH of an aqueous solution of said pH adjuster at 1 % by mass (25 degrees C) is equal to or higher than 6.5.

8. A food improving agent, containing the oil- or fat-processed starch as set forth in any one of claims 1 to 7.

9. A food, containing the food improving agent as set forth in claim 8.

10. A method for producing the oil- or fat-processed starch as set forth in any one of claims 1 to 7, including:

preparing a mixture by blending an edible oil or fat and/or an edible oil- or fat-related substance at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass in 100 parts by mass of the raw starch; and

heat-treating said mixture.

11. The method for producing the oil- or fat-processed starch as set forth in claim 10, wherein said preparing the mixture is

preparing said mixture containing a pH adjuster at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass over 100 parts by mass of the raw starch.

12. The method for producing the oil- or fat-processed starch as set forth in claim 10 or 11, wherein said preparing the mixture is preparing said mixture containing a pH adjuster, an aqueous solution at 1 % by mass (25 degrees C) of which exhibits pH of equal to or higher than 6.5.

13. The method for producing the oil- or fat-processed starch as set forth in claim 11 or 12, wherein, in said preparing the mixture, said pH adjuster is dissolved in water of equal to or larger than 0.1 parts by mass and equal to or smaller than 10 parts by mass, and the solution is added in 100 parts by mass of said raw starch.

14. The method for producing the oil- or fat-processed starch as set forth in any one of claims 10 to 13, wherein said heat-treating is heating thereof at a temperature of equal to or higher than 40 degrees C and equal to or lower than 130 degrees C for equal to or longer than 0.5 hour and equal to or shorter than 25 days.

Claims

1. An oil- or fat-processed starch, satisfying the following conditions (A) and (B),

wherein said oil- or fat-processed starch is obtainable by heating a mixture, said mixture containing a pH adjuster at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass over 100 parts by mass of the raw starch and an edible oil or fat and/or an edible oil- or fat-related substance at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass over 100 parts by mass of said raw starch:

(A) a solubility is equal to or higher than 9.5 % by mass and equal to or lower than 45 % by mass, said solubility being obtained by the following procedure:

0.1 g by anhydride conversion of the oil- or fat-processed starch is dispersed in 10 mL of distilled water, and the mixture is heated in a thermostatic bath vessel at 90 degrees C for 30 minutes, and then is cooled down to 20 degrees C to obtain a gelatinized liquid; and

the gelatinized liquid is centrifuged to be separated; and total sugar content contained in a supernatant liquid is measured by a phenol-sulfuric acid method to obtain said solubility; and

(B) an emulsifying capacity is equal to or higher than 50 % and equal to or lower than 100%, said emulsifying capacity being obtained by the following procedure:

2.5 g of the oil- or fat-processed starch is dispersed in

30 g of distilled water and 30 g of canola oil is added therein and the mixture is stirred (at 3,000 rpm for 1 minute) by a homogenizer; and

then, promptly after the stirring, 50 mL of the dispersion is transferred in a measuring cylinder of a volume of 50 mL and is left for 30 minutes, and a volume fraction of an emulsified layer is measured to obtain said emulsifying capacity.

2. The oil- or fat-processed starch as set forth in claim 1, wherein iodine value of said edible oil or fat is equal to or higher than 100.

3. The oil- or fat-processed starch as set forth in any one of claims 1 or 2, wherein degree of swelling of said raw starch is equal to or higher than 5 and equal to or lower than 45, said degree of swelling being obtained by the following procedure:

1 g of said raw starch is dispersed in 100 mL of water, and the dispersion is heated at 80 degrees C in a thermostatic chamber for 30 minutes, and then is cooled down to 30 degrees C, and is centrifuged to obtain a precipitation; and

the precipitation is thermally dried (at 105 degrees C for 4 hours), and (weight before dry)/(weight after dry) of said precipitation presents said degree of swelling.

4. The oil- or fat-processed starch as set forth in any one of claims 1 to 3, wherein said raw starch is one or more selected from a group consisting of: a cross-linked starch, an acetylated

starch, a potato starch, a corn starch and a waxy corn starch.

5. The oil- or fat-processed starch as set forth in any one of claims 1 to 4, wherein pH of an aqueous solution of said pH adjuster at 1 % by mass (25 degrees C) is equal to or higher than 6.5.

6. A food improving agent, containing the oil- or fat-processed starch as set forth in any one of claims 1 to 5.

7. A food, containing the food improving agent as set forth in claim 6.

8. A method for producing the oil- or fat-processed starch, satisfying the following conditions (A) and (B), including:

preparing a mixture by blending an edible oil or fat and/or an edible oil- or fat-related substance at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass in 100 parts by mass of the raw starch; and

heat-treating said mixture,

wherein said preparing the mixture is preparing said mixture containing a pH adjuster at an amount of equal to or larger than 0.005 parts by mass and equal to or smaller than 2 parts by mass over 100 parts by mass of the raw starch,

(A) a solubility is equal to or higher than 9.5 % by mass and equal to or lower than 45 % by mass, said solubility being obtained by the following procedure:

0.1 g by anhydride conversion of the oil- or fat-processed starch is dispersed in 10 mL of distilled water, and the mixture is heated in a thermostatic bath vessel at 90 degrees C for 30 minutes, and then is cooled down to 20 degrees C to obtain a gelatinized liquid; and

the gelatinized liquid is centrifuged to be separated; and total sugar content contained in a supernatant liquid is measured by a phenol-sulfuric acid method to obtain said solubility; and

(B) an emulsifying capacity is equal to or higher than 50 % and equal to or lower than 100%, said emulsifying capacity being obtained by the following procedure:

2.5 g of the oil- or fat-processed starch is dispersed in 30 g of distilled water and 30 g of canola oil is added therein and the mixture is stirred (at 3,000 rpm for 1 minute) by a homogenizer; and

then, promptly after the stirring, 50 mL of the dispersion is transferred in a measuring cylinder of a volume of 50 mL and is left for 30 minutes, and a volume fraction of an emulsified layer is measured to obtain said emulsifying capacity.

9. The method for producing the oil- or fat-processed starch as set forth in claim 8, wherein iodine value of said edible oil or fat is equal to or higher than 100.

10. The method for producing the oil- or fat-processed starch as set forth in claim 8 or 9, wherein degree of swelling of said raw starch equal to or higher than 5 and equal to or lower than

45, said degree of swelling being obtained by the following procedure:

1 g of said raw starch is dispersed in 100 mL of water, and the dispersion is heated at 80 degrees C in a thermostatic chamber for 30 minutes, and then is cooled down to 30 degrees C, and is centrifuged to obtain a precipitation; and

the precipitation is thermally dried (at 105 degrees C for 4 hours), and (weight before dry)/(weight after dry) of said precipitation presents said degree of swelling.

11. The method for producing the oil- or fat-processed starch as set forth in any one of claims 8 to 10, wherein said raw starch is one or more selected from a group consisting of: a cross-linked starch, an acetylated starch, a potato starch, a corn starch and a waxy corn starch.

12. The method for producing the oil- or fat-processed starch as set forth in any one of claims 8 to 11, wherein said preparing the mixture is preparing said mixture containing a pH adjuster, an aqueous solution at 1 % by mass (25 degrees C) of which exhibits pH of equal to or higher than 6.5.

13. The method for producing the oil- or fat-processed starch as set forth in any one of claims 8 to 12, wherein, in said preparing the mixture, said pH adjuster is dissolved in water of equal to or larger than 0.1 parts by mass and equal to or smaller than 10 parts by mass, and the solution is added in 100 parts by mass

of said raw starch.

14. The method for producing the oil- or fat-processed starch as set forth in any one of claims 8 to 13, wherein said heat-treating is heating thereof at a temperature of equal to or higher than 40 degrees C and equal to or lower than 130 degrees C for equal to or longer than 0.5 hour and equal to or shorter than 25 days.