

DESCRIPTION

TITLE OF INVENTION: FAT OR OIL COMPOSITION

TECHNICAL FIELD

[0001]

The present disclosure relates to an oil and fat composition suitable for spreads, fillings and the like.

BACKGROUND ART

[0002]

Oily foods such as chocolate spread and peanut butter containing oils and fats and sugars as main components are used for spreads, fillings, or the like. Such oily foods are required to have good melting mouthfeel and physical properties that are easy to apply or pack, that is, soft physical properties. However, such oily foods have a problem that they harden over time to be difficult to apply. In addition, there is also a problem that the oils and fats and solids are separated when the oily foods are placed at room temperature or higher. In recent years, reduction of the content of saturated fatty acids contained in the oily foods has also become an issue. The properties of such oily foods are affected by the oil and fat composition used. Therefore, the oil and fat composition has ever been improved.

[0003]

An example of WO2007/090477 discloses fillings using low SAFA oils and fats (oils and fats I). The low SAFA oils and fats (oils and fats I) contain 30 wt% of SOS oils and fats which are obtained through enzymatic transesterification and fractionation and have an iodine value (IV) of 33.7, and 70 wt% of high oleic sunflower

oil. Further, an example of WO2018/149974 discloses confectionery filling cream with cold melting mouthfeel using a formulation based on middle melting point fraction in hardened palm oil, shea stearin, rapeseed oil, and/or structuring agents.

[0004]

However, the oily foods using the low SAFA oils and fats (oils and fats I) disclosed in WO2007/090477 have a low saturated fatty acid content, but do not have sufficient heat resistance. Further, in the oily foods using the formulation disclosed in WO2018/149974, when the formulation does not contain a structuring agent, the oily foods do not have sufficient heat resistance. Further, the formulation containing the structuring agent does not give cold melting mouthfeel.

CITATION LIST

PATENT LITERATURE

[0005]

Patent Literature 1: WO 2007/090477

Patent Literature 2: WO 2018/149974

SUMMARY OF INVENTION

PROBLEMS TO BE SOLVED BY INVENTION

[0006]

Therefore, there has been a demand for the oil and fat composition having a low saturated fatty acid content, good melting mouthfeel, and good heat resistance, and suitable for spreads, fillings and the like.

[0007]

An object of the present disclosure is to provide the oil and fat composition

having a low saturated fatty acid content, good melting mouthfeel, and good heat resistance, and suitable for spreads, fillings and the like.

SOLUTION TO PROBLEMS

[0008]

The present inventors have conducted diligent research to solve the above problems. As a result, it was found that the above-mentioned problems can be solved by using the oil and fat composition having a specific triglyceride composition, that is mainly characterized by the SU2 content and a ratio of StUU contained in SU2. This completed the present disclosure. That is, the present disclosure can have the following aspects.

[0009]

[1]

An oil and fat composition which includes: 1.0 to 8 mass% of S3; 5 to 30 mass% of S2U; 35 to 80 mass% of SU2; and 5 to 45 mass% of U3, and having a mass ratio (StUU/SU2) of StUU content to SU2 content of 0.15 to 0.95. (Where S, U, St, S3, S2U, SU2, U3, and StU2 respectively indicate the following, S: saturated fatty acid having 16 to 22 carbon atoms, U: unsaturated fatty acid having 18 carbon atoms, St: stearic acid S3: triglyceride including three bonded S molecules, S2U: triglyceride including two bonded S molecules and one bonded U molecule, SU2: triglyceride including one bonded S molecule and two bonded U molecules, U3: triglyceride including three bonded U molecules, StUU: triglyceride including St bonded to the 1-position and Us bonded to the 2-position and the 3-position, and triglyceride including Us bonded to the 1-position and the 2-position and St bonded to the 3-position)

[2]

The oil and fat composition according to [1], having a mass ratio (H3/S3) of

H3 content to S3 content of 0.5 or more. (Where H and H3 respectively indicate the following, H: saturated fatty acid having 18 to 22 carbon atoms, H3: triglyceride including three bonded H molecules)

[3]

The oil and fat composition according to [1] or [2], including 1 to 10 mass% of diglyceride.

[4]

The oil and fat composition according to any one of [1] to [3], including: 30 mass% or less of P; 10 to 35 mass% of St; 40 to 65 mass% of O; and 5 to 30 mass% of L, as constituent fatty acids. (Where P, O, and L respectively indicate the following, P: palmitic acid, O: oleic acid, L: fatty acid having 18 carbon atoms and two or more double bonds)

[5]

An oily food including oils and fats and sugars, in which a ratio of the oil and fat composition according to any one of [1] to [4] to the oils and fats contained in the oily food is 80 mass% or more.

EFFECTS OF INVENTION

[0010]

According to the present disclosure, it is possible to provide the oil and fat composition having a low saturated fatty acid content, good melting mouthfeel, and good heat resistance, and suitable for spreads, fillings and the like.

BEST MODE OF CARRYING OUT INVENTION

[0011]

Hereinafter, the present disclosure will be described in detail. In this

disclosure, A (numerical value) to B (numerical value) means A or more and B or less.

Note that a preferable embodiment and a more preferable embodiment illustrated below can be used in combination with each other as appropriate regardless of expressions such as “preferable” or “more preferable”. Further, description of a numerical range is an example. Regardless of the expressions such as “preferable” or “more preferable”, a range defined by an appropriate combination of an upper limit or a lower limit of each numerical range and numerical values of examples can also be preferably used.

[0012]

A main component of an oil and fat composition of the present disclosure is triglyceride (hereinafter, also referred to as TG). According to one aspect of the present disclosure, the oil and fat composition preferably contains 80% mass% or more, more preferably 85 mass% or more, still more preferably 90 mass% or more of triglyceride. The upper limit of the triglyceride content contained in the oil and fat composition is not particularly limited. The content is preferably 99 mass% or less, more preferably 97 mass% or less, still more preferably 96 mass% or less. According to the aspect of the present disclosure, the oil and fat composition can be a mixture of two or more oils and fats. According to the aspect of the present disclosure, the oil and fat composition may contain trace components contained in natural oils and fats in addition to glycerides. Examples of the trace components include free fatty acids, tocopherols, sterols, terpene alcohols, chlorophyll, chlorophyll degradation products and the like.

[0013]

The oil and fat composition of the present disclosure contains 1.0 to 8 mass% of S3. Here, S refers to a saturated fatty acid having 16 to 22 carbon atoms. Specific examples of S include palmitic acid, stearic acid, arachidic acid, and behenic acid. S3

refers to a triglyceride including three bonded S molecules. In S3, two or three different Ss may be bonded. According to the aspect of the present disclosure, the S3 content contained in the oil and fat composition is preferably 1.5 to 7 mass%, more preferably 2 to 6.5 mass%, and still more preferably 2.5 to 6 mass%.

[0014]

The oil and fat composition of the present disclosure contains 5 to 30 mass% of S2U. Here, U refers to an unsaturated fatty acid having 18 carbon atoms. Specific examples of U include oleic acid, linoleic acid, and linolenic acid. S2U refers to a triglyceride including two bonded S molecules and one bonded U molecule. Bonding positions of two Ss and one U of S2U in a glycerin skeleton do not matter. Further, there is no limitation on combination of Ss and U constituting S2U. Further, two different Ss may be bonded. According to the aspect of the present disclosure, the S2U content contained in the oil and fat composition is preferably 8 to 28 mass%, more preferably 9 to 26 mass%, and still more preferably 10 to 25 mass%.

[0015]

The oil and fat composition of the present disclosure contains 35 to 80 mass% of SU2. Here, SU2 refers to a triglyceride including one bonded S molecule and two bonded U molecules. The bonding positions of one S and two Us of SU2 in the glycerin skeleton do not matter. There is no limitation on combination of S and Us constituting SU2. Further, two different Us may be bonded. According to the aspect of the present disclosure, the SU2 content contained in the oil and fat composition is preferably 40 to 75 mass%, more preferably 45 to 72 mass%, and still more preferably 50 to 70 mass%.

[0016]

The oil and fat composition of the present disclosure has a mass ratio

(StUU/SU2) of the StUU content to the SU2 content of 0.15 to 0.95. Here, St refers to stearic acid. StUU is a triglyceride including St bonded to the 1-position of the glycerin skeleton and Us bonded to the 2-position and the 3-position of the glycerin skeleton, and a triglyceride including Us bonded to the 1-position and the 2-position of the glycerin skeleton and St bonded to the 3-position of the glycerin skeleton. In StUU, two different Us may be bonded. According to the aspect of the present disclosure, when the S3 content in the oil and fat composition is 1.0 mass% or more and less than 4 mass%, StUU/SU2 of the oil and fat composition is preferably 0.75 to 0.95, more preferably 0.81 to 0.93, and still more preferably 0.85 to 0.92. Further, according to the aspect of the present disclosure, when the S3 content contained in the oil and fat composition is 4 to 8 mass%, StUU/SU2 of the oil and fat composition is preferably 0.15 to 0.75, more preferably 0.2 to 0.65, still more preferably 0.23 to 0.6, and particularly more preferably 0.25 to 0.55. When the S3 content and StUU/SU2 are approximately in the above ranges, an oily food containing the oil and fat composition has a good balance between heat resistance and melting mouthfeel.

[0017]

The oil and fat composition of the present disclosure contains 5 to 45 mass% of U3. Here, U3 refers to a triglyceride including three bonded U molecules. In U3, two or three different Us may be bonded. According to the aspect of the present disclosure, the U3 content contained in the oil and fat composition is preferably 7 to 35 mass%, more preferably 8 to 30 mass%, and still more preferably 9 to 28 mass%.

[0018]

When the S3, S2U, SU2, and U3 contents and StUU/SU2 of the oil and fat composition of the present disclosure are approximately in the above ranges, the oily food containing the oil and fat composition has good melting mouthfeel and heat

resistance. In addition, a phenomenon of hardening over time (post-hardening) is unlikely to occur.

[0019]

According to the aspect of the present disclosure, the oil and fat composition contains H3. Here, H refers to a saturated fatty acid having 18 to 22 carbon atoms. Specific examples of H include stearic acid, arachidic acid, and behenic acid. H3 refers to a triglyceride including three bonded H molecules. In H3, two or three different Hs may be bonded. The oil and fat composition has a mass ratio (H3/S3) of the H3 content to the S3 content of preferably 0.5 or more, more preferably 0.55 or more, still more preferably 0.60 or more, particularly more preferably 0.65 or more, and most preferably 0.7 or more. The upper limit of H3/S3 is 1.0 or less. However, the preferred H3/S3 is 0.95 or less. When H3/S3 of the oil and fat composition is approximately in the above range, the oily food containing the oil and fat composition has good heat resistance.

[0020]

According to the aspect of the present disclosure, the oil and fat composition contains 10 to 65 wt% of StUU. The StUU content contained in the oil and fat composition is preferably 12 to 63 mass%, more preferably 14 to 61 mass%, and still more preferably 15 to 58 mass%. When the StUU content of the oil and fat composition is approximately in the above range, the oily food containing the oil and fat composition has good melting mouthfeel. Further, according to the aspect of the present disclosure, the oil and fat composition has a mass ratio (StOO/StUU) of the StOO content to the StUU content of preferably 0.7 or more, more preferably 0.75 or more, and still more preferably 0.8 or more. Here, O refers to oleic acid. StOO is a triglyceride including St bonded to the 1-position of the glycerin skeleton and Os

bonded to the 2-position and the 3-position of the glycerin skeleton, and a triglyceride including Os bonded to the 1-position and the 2-position of the glycerin skeleton and St bonded to the 3-position of the glycerin skeleton. The upper limit of StOO/StUU is 1.0, and preferably 0.92. When StOO/StUU of the oil and fat composition is approximately in the above range, the oily food containing the oil and fat composition has good heat resistance.

[0021]

According to the aspect of the present disclosure, the oil and fat composition contains 1 to 10 mass% of diglyceride (hereinafter, also referred to as DG). The diglyceride is a glyceride containing two fatty acid molecules bonded to the glycerin skeleton. The types of fatty acids constituting the diglyceride and their bonding positions on the glycerin skeleton are not limited. However, the fatty acids constituting the diglyceride preferably have 16 to 22 carbon atoms. The content of diglyceride contained in the oil and fat composition is preferably 2 to 8 mass%, and more preferably 3 to 6 mass%.

[0022]

According to the aspect of the present disclosure, the oil and fat composition may have the following fatty acid (hereinafter, also referred to as FA) composition. That is, the oil and fat composition contains 30 mass% or less of P, 10 to 35 mass% of St, 40 to 65 mass% of O, and 5 to 30 mass% of L. Here, P refers to palmitic acid. L refers to a fatty acid having 18 carbon atoms and having two or more double bonds. The oil and fat composition preferably contains 5 to 28 mass% of P, 10 to 33 mass% of St, 43 to 63 mass% of O, and 6 to 20 mass% of L as constituent fatty acids. The oil and fat composition more preferably contains 8 to 27 mass% of P, 10 to 31 mass% of St, 45 to 62 mass% of O, and 7 to 15 mass% of L as the constituent fatty acids. Further,

the oil and fat composition preferably contains 25 to 45 mass%, and more preferably 30 to 42 mass% of saturated fatty acid as the constituent fatty acids. Further, the oil and fat composition preferably contains 0 to 3 mass%, and more preferably 0 to 2 mass% of fatty acid having 14 or less carbon atoms as the constituent fatty acid. Furthermore, the oil and fat composition preferably contains 0 to 2 mass%, and more preferably 0 to 1 mass% of trans-fatty acid as the constituent fatty acid.

[0023]

In the present disclosure, a conventionally known analysis method can be applied to a method for specifying the numerical values. Specifically, the content of each triglyceride contained in the oils and fats can be measured by a gas chromatography method (for example, according to AOCS Ce5-86). Symmetry of triglyceride can be measured according to a silver ion column chromatography method (for example, J. High Resol. Chromatogr., 18, 105-107 (1995)). The content of each constituent fatty acid contained in the oils and fats can be measured by a gas chromatography method (for example, according to AOCS Ce1f-96).

[0024]

According to the aspect of the present disclosure, a method for preparing the oil and fat composition is not particularly limited. However, the oil and fat composition may be prepared from one oil and fat suitable for food or two or more oils and fats. Examples of edible oils and fats that can be used in the oil and fat composition include animal and vegetable oils and fats such as cocoa butter, palm oil, shea fat, sal fat, illipe fat, kokum fat, mango fat, soybean oil, rapeseed oil, cottonseed oil, safflower oil, sunflower oil, rice oil, corn oil, sesame oil, olive oil, coconut oil, palm kernel oil, beef tallow, pork fat, and milk fat. In addition, the other examples include processed oils and fats obtained by applying one or more of treatments such as mixing,

fractionation, transesterification, and hydrogenation to the animal and vegetable oils and fats. One or more oils and fats selected from these exemplified oils and fats can be used.

[0025]

According to the aspect of the present disclosure, the oil and fat composition contains oils and fats containing 50 mass% or more of StUU (hereinafter, also referred to as StUU oils and fats). The StUU oils and fats may be, for example, the oils and fats obtained based on a known method by removing fatty acid ethyl ester by distillation from a reaction product obtained by transesterification reaction using a mixture of high oleic sunflower oil and stearic acid ethyl ester and a 1,3-position selective lipase preparation. Further, the StUU oils and fats may be a liquid portion obtained by further fractionating the obtained oils and fats. Further, the StUU oils and fats may be a low melting point portion fractionated from oils and fats containing 30 mass% of StOSt (1,3-distearoyl-2-oleoylglycerol) such as sal fat, shea fat, moller fat, mango kernel oil, allanblackia fat, or pentadesma fat. The StUU oils and fats preferably have an iodine value of 55 to 85, more preferably 60 to 80.

[0026]

According to the aspect of the present disclosure, the oil and fat composition contains oils and fats containing 40 mass% or more of PU2 (hereinafter, also referred to as PU2 oils and fats). Here, P refers to palmitic acid, and PU2 refers to a triglyceride containing one bonded P molecule and two bonded U molecules. The bonding positions of one P and two Us of PU2 in the glycerin skeleton do not matter. There is no limitation on combination of Us constituting PU2. Two different Us may be bonded. Examples of the PU2 oils and fats include a low melting point portion (palm olein) obtained by one-stage or two-stage fractionation of the palm oil. The palm olein

preferably has an iodine value of 62 to 75, more preferably 64 to 70. Preferably, the PU2 oils and fats contain 50 mass% or more of SU2, and the PU2 content in SU2 is 80 mass% or more.

[0027]

According to the aspect of the present disclosure, the oil and fat composition contains oils and fats containing 90 mass% or more of S3 (hereinafter, also referred to as S3 oils and fats). Examples of the S3 oils and fats include various extremely hardened oils. Examples of raw material oils and fats for the extremely hardened oil include soybean oil, rapeseed oil, high erucic acid rapeseed oil, corn oil, cottonseed oil, safflower oil, sesame oil, sunflower oil, grape seed oil, palm oil, beef tallow, pork fat, and fish oil, as well as a fractionated oil and a transesterified oil of the preceding oils and fats. Note that the extremely hardened oil refers to an oil and fat obtained by hydrogenating the raw material oils and fats until the iodine value is 5 or less, preferably 2 or less. The S3 oil and fat is preferably an extremely hardened high erucic acid rapeseed oil.

[0028]

According to the aspect of the present disclosure, the oil and fat composition contains oils and fats containing 60 mass% or more of U3 (hereinafter, also referred to as U3 oils and fats). Examples of the U3 oils and fats include soybean oil, rapeseed oil, corn oil, cottonseed oil, safflower oil, sesame oil, sunflower oil, grape seed oil, and high oleic species of these oils.

[0029]

According to the aspect of the present disclosure, the oil and fat composition may contain 60 to 99 mass% of StUU oils and fats, 1 to 5 mass% of S3 oils and fats, and 0 to 39 mass% of U3 oils and fats. The oil and fat composition may preferably

contain 70 to 98 mass% of StUU oils and fats, 2 to 5 mass% of S3 oils and fats, and 0 to 28 mass% of U3 oils and fats. The oil and fat composition may more preferably contain 75 to 97 mass% of StUU oils and fats, 3 to 5 mass% of S3 oils and fats, and 0 to 22 mass% of U3 oils and fats. Further, according to the aspect of the present disclosure, the oil and fat composition may contain 10 to 80 mass% of StUU oils and fats, 19 to 89 mass% of PU2 oils and fats, 1 to 5 mass% of S3 oils and fats, and 0 to 30 mass% of U3 oils and fats. The oil and fat composition may preferably contain 20 to 70% by mass of StUU oils and fats, 28 to 78 mass% of PU2 oils and fats, 2 to 5 mass% of S3 oils and fats, and 0 to 20 mass% of U3 oils and fats. The oil and fat composition may more preferably contain 30 to 60 mass% StUU oils and fats, 27 to 67 mass% PU2 oils and fats, 3 to 5 mass% S3 oils and fats, and 0 to 10 mass% U3 oils and fats.

[0030]

According to the aspect of the present disclosure, ordinary additives used for the edible oils and fats can be appropriately used in the oil and fat composition as needed. Use of the additives is aimed at, for example, improving oxidative stability, improving thermal stability, or modifying physical properties. Examples of specific additives include emulsifiers including glycerin fatty acid esters, polyglycerin fatty acid esters, sucrose fatty acid esters, sorbitan fatty acid esters, polysorbates, and lecithin, antioxidants including tocopherols, ascorbic acid fatty acid esters, lignans, and coenzyme Q, colorants, and fragrances. The content of the additive contained in the oil and fat composition is preferably 0 to 2 mass%, more preferably 0 to 1 mass%, and further preferably 0 to 0.5 mass%.

[0031]

According to the aspect of the present disclosure, the oil and fat composition can be prepared by mixing raw material oils and fats such as the above-mentioned StUU

oils and fats, the S3 oils and fats, or the U3 oils and fats with an appropriately selected additive after heating and melting as needed. Further, according to the aspect of the present disclosure, the oil and fat composition may be plasticized by undergoing a process such as quenching and kneading after melting and mixing the raw material oils and fats and the like.

[0032]

The oily food of the present disclosure is a food having a continuous phase of oils and fats. The oils and fats contained in the oily food contain 80 mass% or more of the above-mentioned oil and fat composition of the present disclosure. That is, a ratio (content) of the oil and fat composition of the present disclosure to the oils and fats contained in the oily food is 80 mass% or more. Here, the oils and fats contained in the oily food also include oils and fats (for example, cocoa butter or milk fat) derived from oil-containing raw materials (for example, cacao mass, cocoa powder, or whole milk powder) in addition to the oil and fat composition of the present disclosure. Generally, the oils and fats (cocoa butter) content of the cacao mass is 55 mass% (oil content 0.55). The oils and fats (cocoa butter) content of the cocoa powder is 11 mass% (oil content 0.11). The oils and fats (milk fat) content of the whole milk powder is 25 mass% (oil content 0.25). For example, the oily food containing 10 mass% of cocoa powder contains 1.1 mass% ($= 10 \times 0.11$) of oils and fats derived from the cocoa powder. Therefore, the content of the oils and fats contained in the oily food is a sum of values obtained by multiplying a blending amount (mass%) of each raw material in the oily food by the oil content.

[0033]

Notwithstanding the above, when the total content of the cocoa butter and the milk fat in the oils and fats contained in the oily food is less than 20 mass%, and a

composition of the oils and fats obtained by removing the cocoa butter and the milk fat from the oils and fats contained in the oily food satisfies the composition of the oil and fat composition of the present disclosure, the oily food is included in the aspect of the oily food of the present disclosure. That is, the oily food of the present disclosure includes aspects of foods that substantially contain the oil and fat composition of the present disclosure. According to the aspect of the present disclosure, the content of oils and fats in the oily food is preferably 25 to 55 mass%, more preferably 25 to 50 mass%, still more preferably 27 to 45 mass%, particularly more preferably 28 to 42 mass%, and most preferably 29 to 40 mass%.

[0034]

The oily food of the present disclosure contains sugars. Examples of the sugars contained in the oily food of the present disclosure include sugar (sucrose), lactose, glucose, maltose, oligosaccharide, fructooligosaccharide, soybean oligosaccharide, galactooligosaccharide, lactosucrose, palatinose oligosaccharide, enzyme saccharified starch syrup, reduced starch saccharified product, isomerized liquid sugar, sucrose-bonded starch syrup, honey, reduced sugar polydextrose, raffinose, lactulose, reduced lactose, sorbitol, xylose, xylitol, maltitol, erythritol, mannitol, and trehalose. As the sugars, sugar alcohol may be used. According to the aspect of the present disclosure, the content of the sugars contained in the oily food is preferably 25 to 65 mass%, more preferably 30 to 60 mass%, and still more preferably 35 to 55 mass%, particularly more preferably 38 to 52 mass%. Note that an amount of sugars contained in the oily food of the present disclosure does not include the amount of sugars (for example, lactose contained in milk powder) contained in the raw materials of the oily food other than the sugars.

[0035]

According to the aspect of the present disclosure, the oily food may contain other raw materials commonly used in oily foods such as chocolate, butter cream, or sugar cream, which contain the oils and fats and the sugars. Examples of the other raw materials include dairy products including whole milk powder and defatted milk powder, cacao ingredients including cacao mass and cocoa powder, pastes including nut paste and sesame paste, various powders including soybean flour, soybean protein, fruit processed powder, vegetable processed powder, green powdered tea and coffee powder, and emulsifiers including lecithin, lysolecithin, enzymatically decomposed lecithin, sucrose fatty acid ester, polyglycerin condensed ricinoleic acid ester, polyglycerin fatty acid ester and sorbitan fatty acid ester, antioxidants including tocopherol and ascorbic acid, gums, starches, colorants, and fragrances.

[0036]

According to the aspect of the present disclosure, the oily food can be prepared by a conventionally known method. Soft chocolate-type oily foods can be prepared using, for example, raw materials containing the oil and fat composition, sugars, cacao ingredients, dairy products, and emulsifiers, through a mixing step, a refining step, a conching step, and a cooling step. Sugar cream-type oily foods can be prepared using, for example, raw materials containing the oil and fat composition, sugars, dairy products, and fragrances, by thoroughly stirring and mixing with a mixer with or without aeration. Butter cream-type oily foods can be prepared, for example, by adding raw materials containing liquid sugar and fragrances to the oil and fat composition and by thoroughly stirring and mixing with the mixer with or without aeration.

[0037]

According to the aspect of the present disclosure, the oily food has soft

physical properties, good melting mouthfeel, and good heat resistance. Therefore, it is suitable for being spread on, filled in, sandwiched in, or coated on bakery foods.

Examples of the bakery foods include breads including doughnut, bread, Koppepan (Japanese), roll, fruit bread, butter roll, French bread, roll, pastry bread, steamed bread, sweet dough, muffin, bagel, croissant, and danish pastry, and baked goods including castella, waffle, bolo, Yatsushashi (Japanese), rice cracker, Karinto (Japanese), sponge cake, roll cake, pound cake, Baumkuchen, fruit cake, madeleine, cream puff, eclair, mille-feuille, pie, tart, macaroon, biscuit, cookie, cracker, pretzel, wafer, snack goods, crepe, souffle, and puff.

EXAMPLES

[0038]

Next, the present embodiment will be described in more detail with reference to examples and comparative examples. However, this embodiment is not limited to these examples and comparative examples.

[0039]

[Analysis method]

(Triglyceride)

The content of each triglyceride contained in the oils and fats was measured by the gas chromatography method (according to AOCS Ce5-86). Further, the symmetry of triglyceride was measured by a silver ion column-HPLC method according to J. High Resol. Chromatogr., 18, 105-107 (1995).

(Fatty acid)

The content of each fatty acid constituting the oils and fats was measured by the gas chromatography method (according to AOCS Ce1f-96).

[0040]

[Oils and fats used]

The following edible oils and fats (oils and fats refined to the extent suitable for edible use) were used as the raw material oils and fats for the oil and fat composition.

(StUU oils and fats-1)

After the transesterification reaction using a mixture of 40 parts by mass of high oleic sunflower oil and 60 parts by mass of stearic acid ethyl ester and a 1,3-position selective lipase preparation, the lipase preparation was removed by filtration. The fatty acid ethyl ester was removed from the reaction product by thin film distillation of the transesterification reaction product thus obtained. A high melting point portion was removed by dry fractionation from a distillation residue thus obtained. A high melting point portion of a second stage was removed from a residual low melting point portion by acetone fractionation. Acetone was removed from the low melting point portion of the second stage thus obtained by a conventional method. Thereafter, StUU oils and fats-1 (iodine value 64, StUU content 62.6 mass%) were obtained through decolorization treatment and deodorization treatment by a conventional method.

(StUU oils and fats-2)

Refined oils and fats of shea olein (iodine value 70, StUU content 54.3 mass%) as the low melting point portion obtained by acetone fractionation of the shea fat was used as StUU oils and fats-2.

(PU2 oils and fats-1)

Two-stage fractionated palm olein (iodine value 65, PU2 content 48.5 mass%, SU2 content 53.9 mass%) was used as PU2 oils and fats-1.

(S3 oils and fats-1)

The extremely hardened oil of high erucic rapeseed oil was used as S3 oils and fats-1.

(S3 oils and fats-2)

The extremely hardened oil of rapeseed oil was used as S3 oils and fats -2.

(S3 oils and fats-3)

The extremely hardened oil of palm oil was used as S3 oils and fats -3.

(U3 oils and fats-1)

The high oleic sunflower oil was used as U3 oils and fats-1.

(U3 oils and fats-2)

The rapeseed oil was used as U3 oils and fats-2.

(Other oils and fats-1)

After the transesterification reaction using a mixture of 40 parts by mass of high oleic sunflower oil and 60 parts by mass of stearic acid ethyl ester and a 1,3-position selective lipase preparation, the lipase preparation was removed by filtration. The fatty acid ethyl ester was removed from the reaction product by thin film distillation of the transesterification reaction product thus obtained. A high melting point portion was removed by dry fractionation from a distillation residue thus obtained. A low melting point portion of a second stage was removed from a residual low melting point portion by acetone fractionation. Acetone was removed from the middle melting point portion of the second stage thus obtained by a conventional method. Thereafter, other oils and fats-1 (S2U content 89.7 mass% and StOst content 73.1 mass%) were obtained through decolorization treatment and deodorization treatment by a conventional method.

[0041]

[Preparation of oil and fat composition]

The oil and fat compositions of Examples 1 to 12 were prepared by heating, melting and mixing the oils and fats according to formulations in Tables 1 and 2.

Tables 1 and 2 show analytical values of the oil and fat compositions.

[0042]

[Table 1]

Formulation of oil and fat composition and evaluation result of spread							
Oils and fats formulation (mass%)	Example 1 (Comparison)	Example 2	Example 3	Example 4	Example 5 (Comparison)	Example 6 (Comparison)	Example 7
StUU oils and fats-1	29	49	97	-	-	80	78
StUU oils and fats-2	-	-	-	97	-	-	-
PU2 oils and fats-1	-	-	-	-	97	-	-
S3 oils and fats-1	3	3	3	3	3	-	2
S3 oils and fats-2	-	-	-	-	-	-	-
S3 oils and fats-3	-	-	-	-	-	-	1
U3 oils and fats-1	68	48	-	-	-	20	19
U3 oils and fats-2	-	-	-	-	-	-	-
Other oils and fats-1	-	-	-	-	-	-	-
Total	100	100	100	100	100	100	100
TG composition (mass%)							
S3	2.9	3.0	3.1	3.8	3.1	0.2	3.0
S2U	6.8	8.2	12.7	13.2	29.5	11.0	10.7
SU2	33.2	43.0	69.6	59.6	53.2	59.3	57.5
U3	55.6	43.5	11.1	16.4	7.8	24.4	23.3
StUU	26.5	36.5	62.6	54.3	5.2	52.4	50.8
DG	1.3	2.1	3.4	5.8	5.6	2.8	2.7
TG composition (mass ratio)							
StUU/SU2	0.80	0.85	0.90	0.91	0.10	0.88	0.88
StOO/StUU	0.89	0.87	0.84	0.86	0.65	0.85	0.85
H3/S3	0.92	0.92	0.92	0.92	0.92	Unknown	0.65
FA composition (mass%)							
Saturated fatty acid	18.9	24.2	36.9	36.5	41.0	29.6	31.8
Trans-fatty acid	Less than 1	Less than 1	Less than 1	Less than 1	Less than 1	Less than 1	Less than 1
P	3.8	3.9	4.1	4.4	32.4	4.0	4.4
St	12.1	17.3	30.0	28.9	4.7	24.4	25.1
O	76.1	70.3	56.5	54.3	45.8	64.0	62.0
L	4.6	5.0	6.1	8.3	12.0	5.9	5.7
Evaluation of chocolate spread							
Heat resistance	C	B	A	A	B	C	B
Hardness change	B	B	B	B	C	B	A
Melting mouthfeel	B	B	A	A	A	A	A

[0043]

[Table 2]

Formulation of oil and fat composition and evaluation result of spread							
Oils and fats formulation (mass%)	Example 8	Example 9	Example 10 (Comparison)	Example 11	Example 12	Example 13	Example 14
StUU oils and fats-1	78	78	-	78	20	-	20
StUU oils and fats-2	-	-	-	-	-	40	-
PU2 oils and fats-1	-	-	-	-	75	55	77
S3 oils and fats-1	-	-	3	4	4	4	2
S3 oils and fats-2	-	3	-	-	-	-	-
S3 oils and fats-3	3	-	-	1	1	1	1
U3 oils and fats-1	19	-	58	17	-	-	-
U3 oils and fats-2	-	19	-	-	-	-	-
Other oils and fats-1	-	-	39	-	-	-	-
Total	100	100	100	100	100	100	100
TG composition (mass%)							
S3	3.0	3.0	3.6	5.2	5.2	5.9	3.3
S2U	10.7	10.4	37.2	10.7	24.9	22.2	25.3
SU2	57.5	58.8	13.0	57.3	56.8	54.7	58.0
U3	23.3	24.5	45.2	21.9	8.3	11.2	8.3
StUU	50.8	51.2	9.1	50.4	16.5	25.3	16.5
DG	2.7	2.7	0.9	2.7	4.5	5.5	4.5
TG composition (mass ratio)							
StUU/SU2	0.88	0.87	0.70	0.88	0.29	0.46	0.28
StOO/StUU	0.85	0.83	0.98	0.85	0.82	0.84	0.82
H3/S3	0.11	0.92	0.92	0.72	0.72	0.72	0.65
FA composition (mass%)							
Saturated fatty acid	31.8	31.7	32.5	33.9	41.3	40.5	39.7
Trans-fatty acid	Less than 1	Less than 1	Less than 1	Less than 1	Less than 1	Less than 1	Less than 1
P	5.2	4.1	3.4	4.5	26.4	20.8	26.7
St	25.4	26.3	26.0	26.0	10.4	15.3	9.8
O	62.0	57.1	63.2	60.8	46.5	48.4	47.7
L	5.7	10.3	3.0	5.5	10.5	7.7	10.7
Evaluation of chocolate spread							
Heat resistance	B	A	A	A	A	A	B
Hardness change	A	B	C	A	B	A	B
Melting mouthfeel	A	A	B	B	A	A	A

[0044]

[Chocolate spread preparation]

The raw materials were mixed according to the formulations in Table 3.

Molten liquid chocolate doughs using the oil and fat compositions of Examples 1 to 14 were obtained according to a conventional method through the refining step and the conching step. Chocolate spreads were respectively obtained by solidifying the chocolate doughs in a refrigerator.

[0045]

[Table 3]

Raw material formulation of chocolate spread (mass%)	
Oil and fat compositions of Examples 1 to 14	32.50
Cocoa powder	15.00
Sugars	41.05
Whole milk powder	8.00
Defatted milk powder	3.00
Lecithin	0.40
Fragrance	0.05
Total	100
Content of oils and fats in chocolate spread	36.4
Content of oil and fat composition in oils and fats in chocolate spread	89.3

[0046]

[Evaluation of chocolate spread]

The chocolate spreads respectively obtained using the oil and fat compositions of Examples 1 to 14 were evaluated by the following method. In the evaluation, A and B mean pass, and C means fail. Results are shown in Tables 1 and 2.

(Heat-resistance)

The spreads were stored at temperatures of 30°C and 35°C. After 3 months, a separated state (heat resistance) of oils and fats was observed.

A: No separation of oils and fats, excellent (pass)

B: Slight bleeding, good (pass)

C: Separation of oils and fats, bad (fail)

(Hardness change)

The spreads were stored at a temperature of 5°C. After one month and three months, stresses (hardness) of the spreads were measured using a texture analyzer (CT3 manufactured by Brookfield) under the following measurement conditions. A ratio of the stress after three months to the stress after one month (stress measured after three months/stress measured after one month) was determined.

Measurement conditions: Depth 10 mm

Speed 2.0 mm/s

A: Less than 1.2 hardness change is quite small, excellent (pass)

B: 1.2 or more and less than 1.5 hardness change is small, good (pass)

C: 1.5 or more hardness change is present, bad (fail)

(Melting mouthfeel)

The spreads stored at a temperature of 5°C for three months were comprehensively evaluated by three specialized panelists according to the following criteria.

A: Good melting mouthfeel (pass)

B: Acceptable melting mouthfeel (pass)

C: Bad melting mouthfeel (fail)

CLAIMS

1. An oil and fat composition comprising:
1.0 to 8 mass% of S3;
5 to 30 mass% of S2U;
35 to 80 mass% of SU2; and
5 to 45 mass% of U3, and
having a mass ratio (StUU/SU2) of StUU content to SU2 content of 0.15 to 0.95.

(where S, U, St, S3, S2U, SU2, U3, and StU2 respectively indicate the following,

S: saturated fatty acid having 16 to 22 carbon atoms,

U: unsaturated fatty acid having 18 carbon atoms,

St: stearic acid

S3: triglyceride including three bonded S molecules,

S2U: triglyceride including two bonded S molecules and one bonded U molecule,

SU2: triglyceride including one bonded S molecule and two bonded U molecules,

U3: triglyceride including three bonded U molecules,

StUU: triglyceride including St bonded to the 1-position and Us bonded to the 2-position and the 3-position, and triglyceride including Us bonded to the 1-position and the 2-position and St bonded to the 3-position)

2. The oil and fat composition according to claim 1, having a mass ratio (H3/S3) of H3 content to S3 content of 0.5 or more.

(where H and H3 respectively indicate the following,

H: saturated fatty acid having 18 to 22 carbon atoms,

H3: triglyceride including three bonded H molecules)

3. The oil and fat composition according to claim 1 or 2, comprising 1 to 10 mass% of diglyceride.

4. The oil and fat composition according to any one of claims 1 to 3, comprising:
30 mass% or less of P;
10 to 35 mass% of St;
40 to 65 mass% of O; and
5 to 30 mass% of L, as constituent fatty acids.

(where P, O, and L respectively indicate the following,

P: palmitic acid,

O: oleic acid,

L: fatty acid having 18 carbon atoms and two or more double bonds)

5. An oily food comprising oils and fats and sugars, wherein
a ratio of the oil and fat composition according to any one of claims 1 to 4 to
the oils and fats contained in the oily food is 80 mass% or more.