

DESCRIPTION

PLASTIC OIL-AND-FAT COMPOSITION FOR COOKIES

Technical Field

[0001]

The present invention relates to a plastic oil-and-fat composition for cookies, cookie dough, a method for producing cookie dough, a method for producing cookies, and a method for improving the mechanical resistance of cookie dough.

Background Art

[0002]

Cookies are confectioneries produced by mixing sugar into edible oil and fat such as shortening, butter or margarine, then blending flour and the like with the mixture to obtain dough, then molding the dough into a suitable shape, and then baking it.

The types of such cookies are broadly classified into three types, namely, rolled dough cookies, squeezed cookies, and ice box cookies, depending on the method of molding cookie dough. In all cases, in order to mold cookie dough into a suitable shape, the cookie dough is required to have chewy texture (plasticity). In particular, in the case of producing rolled dough cookies, in which cookie dough is extended in the shape of a plate and is then cut, such as cut-out cookies, or squeezed cookies, in which cookie dough is squeezed out in the shape of a plate and is then cut, since cookie dough is extended in the shape of a thin plate before the cookie dough is cut, the cookie dough is required to have sufficient chewy texture, so that it is not torn or cracked in the middle of the production line. Moreover, in particular, in the case of using a machine in the production line, cookie dough is required to have mechanical resistance, namely, chewy texture sufficient for enduring the use of a machine. In particular, in the case of cut-out cookies, cookie dough remaining after die cutting is put on a conveyer and is returned to a hopper, and the remaining cookie dough is reused as cookie dough. Thus, the cookie dough is required to have sufficient chewy texture, so that it is not torn or cracked due to the movement of the conveyer.

For example, in the case of producing cut-out cookies, generally, after cookie dough has been subjected to die cutting in the production line, the remaining cookie dough climbs a return conveyer and then returns to a hopper, while maintaining the die-cut condition, and it is then reused as cookie dough. Hence, the cookie dough is required to have chewy texture sufficient for

climbing the return conveyer. However, if the chewy texture of the cookie dough is too strong, the cookie dough cannot follow the movement of the conveyer, and the cookie dough peels from the return conveyer. In contrast, if the chewy texture of the cookie dough is too weak, the cookie dough becomes sticky and hardly peels from the winding conveyer or the return conveyer.

Citation List

Patent Literature

[0003]

Patent Literature 1: Japanese Patent No. 4032596

Patent Literature 2: Japanese Patent No. 4841136

Summary of Invention

Technical Problem

[0004]

Under such circumstances, it is required to improve the mechanical resistance of cookie dough, and to stably produce cookie dough. For that reason, it is desired to improve the chewy texture of cookie dough.

[0005]

The present inventors have found that edible oil and fat mixed into cookie dough can impart chewy texture to the cookie dough.

With regard to edible oil and fat used in cookie dough, for example, Patent Literature 1 discloses that oil and fat hardly cause the softening or stickiness of dough, when pressurization is performed during the cooling crystallization of the oil and fat or an emulsion thereof, and thus that workability can be improved upon molding.

Moreover, Patent Literature 2 discloses, as a plastic oil-and-fat composition suitable for production of confectioneries and breads, a plastic oil-and-fat composition comprising oil and fat that is formed by transesterification of an oil and fat mixture consisting of animal oil and fat and extremely hydrogenated oil and fat.

However, it has not been studied to stabilize the chewy texture of cookie dough to improve workability upon the molding of the cookie dough, so as to stably produce the cookie dough.

Solution to Problem

[0006]

The present invention relates to a plastic oil-and-fat composition for cookies, cookie dough, a method for producing cookie dough, a method for producing cookies, and a method for improving the mechanical resistance of

cookie dough, as described below.

[1] A plastic oil-and-fat composition for cookies, comprising one or more types selected from beef tallow and beef tallow-fractionated fat in the oil phase thereof, wherein

the total content of the beef tallow and the beef tallow-fractionated fat is 20% by mass or more and 70% by mass or less, with respect to the total amount of components constituting the oil phase.

[2] The plastic oil-and-fat composition for cookies according to the above [1], wherein the total content of the beef tallow and the beef tallow-fractionated fat is 40% by mass or more and 70% by mass or less, with respect to the total amount of components constituting the oil phase.

[3] The plastic oil-and-fat composition according to the above [1] or [2], wherein the solid fat content at 20°C of the components constituting the oil phase is 21% or more and 34% or less.

[4] The plastic oil-and-fat composition for cookies according to any one of the above [1] to [3], wherein the content of water is 3% by mass or more and 30% by mass or less, with respect to the total amount of the plastic oil-and-fat composition.

[5] The plastic oil-and-fat composition for cookies according to any one of the above [1] to [4], which is for use in extruded plate-shaped cookies.

[6] Cookie dough comprising the plastic oil-and-fat composition for cookies according to any one of the above [1] to [5].

[7] A method for producing cookie dough, comprising mixing the plastic oil-and-fat composition for cookies according to any one of the above [1] to [5] into cookie dough.

[8] A method for producing cookies, comprising:
mixing the plastic oil-and-fat composition for cookies according to any one of the above [1] to [5] into cookie dough to prepare cookie dough; and
heating the cookie dough.

[9] A method for improving the mechanical resistance of cookie dough, comprising mixing the plastic oil-and-fat composition for cookies according to any one of the above [1] to [5] into cookie dough.

Advantageous Effects of Invention

[0007]

According to a preferred aspect of the present invention, by using the plastic oil-and-fat composition for cookies of the present invention, it is possible to stabilize the chewy texture of cookie dough, and further, to improve the mechanical resistance of cookie dough upon the molding thereof.

Description of Embodiments

[0008]

Hereinafter, the plastic oil-and-fat composition, the cookie dough, the method for producing cookie dough, the method for producing cookies, and the method for improving the mechanical resistance of cookie dough of the present invention will be described in order.

[0009]

1. Plastic oil-and-fat composition for cookies

The plastic oil-and-fat composition of the present invention is a plastic oil-and-fat composition for cookies comprising one or more types selected from beef tallow and beef tallow-fractionated fat in the oil phase thereof,

the plastic oil-and-fat composition of the present invention being characterized in that the total content of the beef tallow and the beef tallow-fractionated fat is 20% by mass or more and 70% by mass or less, with respect to the total amount of components constituting the oil phase.

[0010]

The plastic oil-and-fat composition of the present invention comprises one or more types selected from beef tallow and beef tallow-fractionated fat, at a predetermined amount ratio, in the oil phase thereof, so that the plastic oil-and-fat composition of the present invention can stabilize the chewy texture of cookie dough, when it is mixed into the cookie dough. Accordingly, the plastic oil-and-fat composition of the present invention can be preferably used as a plastic oil-and-fat composition to be mixed into cookie dough. Hereafter, the plastic oil-and-fat composition of the present invention will be described.

[0011]

(1) Beef tallow and beef tallow-fractionated fat

The plastic oil-and-fat composition of the present invention comprises one or more types selected from beef tallow and beef tallow-fractionated fat in the oil phase thereof.

The beef tallow is not particularly limited, as long as it is edible beef tallow. The production center and type thereof are not particularly limited. In addition, the beef tallow may be or may not be purified. The method of purifying the beef tallow is not particularly limited, either.

The beef tallow-fractionated fat is obtained by fractionating the beef tallow into a fraction containing a large amount of solid and a fraction containing a large amount of liquid. In the present invention, either the fraction containing a large amount of solid, or the fraction containing a large amount of liquid can be used. The beef tallow-fractionated fat may be or may

not be purified. In addition, the method of fractionating the beef tallow is not particularly limited, as long as the method does not involve chemical modification processing.

[0012]

In the plastic oil-and-fat composition of the present invention, the total content of the beef tallow and the beef tallow-fractionated fat is 20% by mass or more and 70% by mass or less, preferably 40% by mass or more and 70% by mass or less, and more preferably 40% by mass or more and 50% by mass or less, with respect to the total amount of components constituting the oil phase. When the total content of the beef tallow and the beef tallow-fractionated fat is within the above-described range, the chewy texture of cookie dough can be stabilized when the beef tallow and the beef tallow-fractionated fat are mixed into the cookie dough. According to a preferred aspect of the present invention, the beef tallow and the beef tallow-fractionated fat can impart sufficient chewy texture to cookie dough upon the molding of the cookie dough in the production line, so that the mechanical resistance of the cookie dough can be improved. Besides, in the present description, when a numerical value range is provided, the upper limit value and lower limit value of the numerical value range can be combined, as appropriate.

[0013]

(2) Edible oils and fats other than beef tallow and beef tallow-fractionated fat

The plastic oil-and-fat composition of the present invention can comprise edible oils and fats, other than the beef tallow and the beef tallow-fractionated fat, in the oil phase thereof.

Examples of such edible oils and fats, other than the beef tallow and the beef tallow-fractionated fat, may include: vegetable oils and fats, such as soybean oil, rapeseed oil, corn oil, cottonseed oil, rice oil, sunflower oil, safflower oil, sesame oil, olive oil, palm oil, palm kernel oil, and coconut oil; animal fats, such as pork fat (lard), chicken fat, rabbit fat, sheep fat, horse fat, fish oil, and whale oil; medium-chain triglyceride; and processed oils and fats prepared by performing one or two or more selected from the group consisting of transesterification, hydrogenation and fractionation on the aforementioned oils and fats, but the examples are not limited thereto. These edible oils and fats may be used as a single type, or may also be used in combination of two or more types.

[0014]

In addition, as such edible oils and fats other than the beef tallow and the beef tallow-fractionated fat, milk-derived oil and fat may be optionally used in the oil phase. The milk-derived oil and fat is not particularly limited, and examples of the milk-derived oil and fat may include oils and fats

contained in raw milk, bovine milk, special milk, raw goat milk, sterilized goat milk, raw sheep milk, homogenized milk, low-fat milk, non-fat milk, or processed milk. These milk-derived oils and fats may be used as a single type, or may also be used in combination of two or more types. By allowing the plastic oil-and-fat composition of the present invention to comprise such milk-derived oil and fat in the oil phase, butter taste can be imparted to the plastic oil-and-fat composition of the present invention.

Among these edible oils and fats, oil and fat contained in butter, anhydrous milk fat (hereinafter also referred to as "butter oil"), or processed oil and fat, such as fractionated oils and fats of the aforementioned oils and fats, or a combination of them is preferably used, and oil and fat contained in butter is more preferably used.

[0015]

(3) Optional components

The plastic oil-and-fat composition of the present invention may comprise other components in a range in which the purposes and effects of the present invention are not inhibited.

For example, the plastic oil-and-fat composition of the present invention may comprise: emulsifiers, such as lecithin, monoglycerin fatty acid ester, organic acid monoglycerin fatty acid ester, polyglycerin fatty acid ester, polyglycerin condensed lysinolenic acid ester, sorbitan fatty acid ester, propylene glycol fatty acid ester, sucrose fatty acid ester, and polysorbate; coloring agents, such as carotene; antioxidants, such as tocopherol and ascorbic acid ester; and oil-soluble components, such as perfume.

Moreover, when the plastic oil-and-fat composition of the present invention is in the form of an emulsion, the present plastic oil-and-fat composition may further comprise non-oil-soluble components, such as common salt, sugars, various types of extracts, milk processed products, skim milk powder, buttermilk, and buttermilk powder.

These optional components may be used as a single type, or may also be used in combination of two or more types.

[0016]

(4) Form of plastic oil-and-fat composition

The plastic oil-and-fat composition of the present invention may be either in the form of an oil composition that does not substantially contain water, or in the form of an emulsion that contains water. The plastic oil-and-fat composition of the present invention may be preferably in the form of an emulsion.

[0017]

When the plastic oil-and-fat composition of the present invention is

in the form of an oil composition (shortening), the total content of components constituting the oil phase is preferably 85% by mass or more and 99.9% by mass or less, more preferably 90% by mass or more and 99.5% by mass or less, and further preferably 95% by mass or more and 99% by mass or less, with respect to the total amount of the plastic oil-and-fat composition.

Moreover, the water content in the plastic oil-and-fat composition of the present invention is preferably 1% by mass or less.

[0018]

When the plastic oil-and-fat composition of the present invention is in the form of an emulsion, it is preferably a water-in-oil oil-and-fat composition (margarine), in which a water phase is dispersed in an oil phase that is a continuous phase.

When the plastic oil-and-fat composition of the present invention is in the form of a water-in-oil oil-and-fat composition, the total content of the components constituting the oil phase is preferably 50% by mass or more and 95% by mass or less, more preferably 60% by mass or more and 93% by mass or less, further preferably 70% by mass or more and 90% by mass or less, and still further preferably 80% by mass or more and 90% by mass or less, with respect to the total amount of the plastic oil-and-fat composition.

Moreover, when the plastic oil-and-fat composition of the present invention is a water-in-oil oil-and-fat composition, the water content in the plastic oil-and-fat composition is preferably 3% by mass or more and 30% by mass or less, more preferably 5% by mass or more and 20% by mass or less, and further preferably 7% by mass or more and 18% by mass or less.

[0019]

(5) Solid fat content

The solid fat content at 20°C of the components constituting the oil phase in the oil-and-fat composition of the present invention is preferably 21% or more and 34% or less, more preferably 23% or more and 32% or less, and further preferably 27% or more and 31% or less.

By setting the solid fat content of the components constituting the oil phase within the above-described range, the plastic oil-and-fat composition retains moderate shape retention and meltability, and thus, can impart moderate chewy texture to cookie dough.

It is to be noted that, in the present description, the solid fat content can be measured according to the method described in Examples.

[0020]

(6) Preparation of plastic oil-and-fat composition

The plastic oil-and-fat composition of the present invention can be prepared according to a conventionally known method.

For example, when the plastic oil-and-fat composition of the present invention is an oil composition, edible oil and fat, and as necessary, optional oil-soluble components are mixed with one another, while heating as necessary, and thereafter, the obtained mixture is kneaded using a quenching kneading device, thereby preparing the present plastic oil-and-fat composition.

When the plastic oil-and-fat composition of the present invention is an emulsion such as a water-in-oil oil-and-fat composition, an oil phase comprising edible oil and fat and optional oil-soluble components (including emulsifiers), and a water phase comprising water and, as necessary, optional non-oil-soluble components, are prepared, separately, and thereafter, the oil phase and the water phase are mixed with each other, while heating, as necessary. The obtained emulsion is kneaded using a quenching kneading device, so that the present plastic oil-and-fat composition can be prepared.

Examples of the quenching kneading device may include Perfector, Kombinator, Votator, and Nexus.

[0021]

2. Cookie dough and production method thereof

The plastic oil-and-fat composition of the present invention is preferably used as edible oil and fat to be mixed into cookie dough.

In general, cookies can be broadly classified into three types of cookies, namely, rolled dough cookies, squeezed cookies, and ice box cookies. The plastic oil-and-fat composition of the present invention can be mixed into the cookie dough for all types of these cookies. In particular, the plastic oil-and-fat composition of the present invention can be preferably used as edible oil and fat to be mixed into cookie dough for extruded plate-shaped cookies that are prepared by extruding cookie dough in the shape of a plate and then molding it.

Examples of the extruded plate-shaped cookies may include: rolled dough cookies, in which cookie dough is extended in the shape of a plate and is then cut, such as cut-out cookies; and squeezed cookies, in which cookie dough is squeezed out in the shape of a plate and is then cut.

In the case of producing these types of cookies, since cookie dough is extended in the shape of a thin plate before the cutting of the cookie dough, the cookie dough may be torn or cracked in the middle of the production line. According to the aspect of the present invention, even in a case where the plastic oil-and-fat composition of the present invention is mixed into dough for these types of cookies, the present plastic oil-and-fat composition can impart sufficient chewy texture to the cookie dough, and thus, the tearing or cracking of the cookie dough can be reduced in the production line.

[0022]

The cookie dough of the present invention comprises, at least, flour, a plastic oil-and-fat composition, and sugar. The cookie dough of the present invention comprises the plastic oil-and-fat composition of the present invention in an amount of preferably 5 parts by mass or more and 50 parts by mass or less, more preferably 15 parts by mass or more and 40 parts by mass or less, and further preferably 20 parts by mass or more and 30 parts by mass or less, with respect to 100 parts by mass of the flour.

[0023]

Examples of the flour may include wheat flour, rice flour, soybean flour, rye flour, barley flour, and corn flour.

The wheat flour is not particularly limited, as long as it is used in cookies. For example, strong flour (bread flour), all-purpose flour, cake flour (weak flour), and a combination thereof can be used. The cookie dough of the present invention preferably comprises cake flour.

The rice flour is not particularly limited, as long as it is used in cookies. For example, white rice flour can be used.

The soybean flour is not particularly limited, as long as it is used in cookies. For example, full-fat soybean flour, defatted soybean flour, and a combination thereof can be used.

The rye flour, the barley flour, and the corn flour are not particularly limited, as long as these flours are each used in cookies.

These flours may be used alone as a single type, or may also be used in combination of two or more types.

[0024]

In addition to the above-described flour, plastic oil-and-fat composition and sugar, one or two or more types of the following components may be further added to the cookie dough of the present invention: egg, water, an emulsifier, cheese, fresh cream, synthetic cream, yogurt, full-fat milk powder, skim milk powder, whey, casein, bovine milk, concentrated milk, synthetic milk, common salt, yeast, starch, a swelling agent, common salt, a sweetener, flavor powder, a quality improver, gluten, cocoa mass, cocoa powder, chocolate, coffee, tea, powdered green tea, vegetables, fruits, fruitage, fruit juice, jam, fruit sauce, meats, fish and shellfish, beans, soybean flour, *tofu*, soy milk, soy protein, seasonings, spices, colorings, flavors, and the like. The mixing amounts of these components may be determined, as appropriate, depending on intended use and purpose.

[0025]

The method for producing the cookie dough of the present invention is not particularly limited, as long as it comprises a step of mixing the plastic oil-and-fat composition of the present invention into cookie dough. For

example, known methods such as a sugar batter method, a flour batter method, and an all-in-mix method can be applied.

The sugar batter method is a method which comprises previously mixing sugar and the plastic oil-and-fat composition, and then mixing the obtained mixture and other materials such as egg and flour.

The flour batter method is a method which comprises previously mixing flour and the plastic oil-and-fat composition, and then mixing the obtained mixture and other materials such as egg and sugar.

The all-in-mix method is a method which comprises mixing materials other than the plastic oil-and-fat composition with one another, and finally mixing the dissolved plastic oil-and-fat composition into the obtained mixture.

The method for producing cookie dough may be determined, as appropriate, depending on the type of cookies, required properties, and the like. [0026]

3. Cookies and production method thereof

Cookies can be prepared by heating the cookie dough. The cookies of the present invention are not particularly limited, as long as the cookies are prepared by heating the aforementioned cookie dough. The cookies of the present invention may be any of rolled dough cookies, squeezed cookies, and ice box cookies. Extruded plate-shaped cookies, which are prepared by extruding the cookie dough in the shape of a plate and then molding it, can more effectively exhibit the effects of the plastic oil-and-fat composition of the present invention.

[0027]

The method for producing the cookies of the present invention comprises:

- a step of preparing cookie dough by mixing a plastic oil-and-fat composition for cookies into dough for cookies; and

- a step of heating the cookie dough.

[0028]

The step of preparing cookie dough comprises mixing a plastic oil-and-fat composition for cookies into cookie dough. This step is as mentioned in the above section "2. Cookie dough and production method thereof."

[0029]

In the step of heating the cookie dough, the method of heating the cookie dough is not particularly limited, and the cookie dough may be baked using an oven or the like.

The heating temperature may be determined, as appropriate, depending on the type of cookies, required properties, and the like. For example, the heating temperature is preferably 150°C or higher and 250°C or

lower, more preferably 170°C or higher and 240°C or lower, and further preferably 180°C or higher and 220°C or lower.

[0030]

4. Method for improving mechanical resistance of cookie dough

The present invention also includes a method for improving the mechanical resistance of cookie dough, comprising mixing the plastic oil-and-fat composition for cookies into cookie dough.

The plastic oil-and-fat composition for cookies is as mentioned in the above section "1. Plastic oil-and-fat composition for cookies." In addition, the cookie dough and the method of mixing the plastic oil-and-fat composition for cookies into the cookie dough are as mentioned in the above section "2. Cookie dough and production method thereof."

Herein, the "mechanical resistance of cookie dough" means the chewy texture of cookie dough that is sufficient for enduring the use of a machine, and thus, the mechanical resistance of cookie dough means the plasticity of cookie dough, namely, the property of cookie dough, by which the cookie dough reacts with external force and deforms when the cookie dough receives the external force, and the shape is retained. The mechanical resistance of cookie dough can be evaluated, for example, based on the time required until cookie dough is torn, after the cookie dough has been rolled to the shape of a plate having a predetermined thickness (3.5 mm), and the end of the dough has been lifted up to a predetermined height (10 cm) in 1 second. For example, the mechanical resistance of cookie dough can be evaluated by the method described in Examples.

According to the present invention, the mechanical resistance of cookie dough can be improved by mixing the plastic oil-and-fat composition for cookies of the present invention into the cookie dough.

In the present invention, the cookie dough capable of improving mechanical resistance is not particularly limited, and the cookie dough may be cookie dough for any of rolled dough cookies, squeezed cookies, and ice box cookies. Among these cookie doughs, cookie doughs for use in: rolled dough cookies, in which cookie dough is extended in the shape of a plate and is then cut, such as cut-out cookies; and squeezed cookies, in which cookie dough is squeezed out in the shape of a plate and is then cut; are required to have sufficient chewy texture. Hence, the above-described method of the present invention is particularly useful for improving the mechanical resistance of these cookie doughs.

Moreover, when a machine is used in the production line, in particular, in the case of cut-out cookies, cookie dough remaining after die cutting is put on a conveyer and is returned to a hopper, so that the remaining dough is reused

as cookie dough. The remaining cookie dough is required to have sufficient chewy texture, so that it is not torn or cracked due to the movement of the conveyer. According to the aspect of the present invention, even in such a case, sufficient chewy texture can be imparted to the cookie dough.

Examples

[0031]

The present invention will be described in more detail with reference to the following Examples, however, the present invention is not limited to these Examples.

[0032]

1. Preparation of plastic oil-and-fat composition

A plastic oil-and-fat composition was prepared as follows. Besides, Examples 1 to 7 are examples of margarine, and Example 8 is an example of shortening. In addition, Comparative Examples 1 to 3 are all examples of margarine.

[0033]

(1) Preparation of margarine (Examples 1 to 7 and Comparative Examples 1 to 3)

A plastic oil-and-fat composition was prepared with the composition shown in Table 1 by the following procedures. It is to be noted that the term "Oil and fat" shown in Table 1 means the oil and fat obtained by each of the compositions shown in Tables 2 and 3.

First, individual components in the oil phase were placed in a mixing tank, and thereafter, the components were stirred and mixed, while the temperature in the mixing tank was controlled at 65°C by heating.

Subsequently, individual components in the water phase were added into the mixing tank, and the stirring was continuously carried out, while retaining the temperature in the mixing tank at 65°C, thereby obtaining an emulsified liquid.

The obtained emulsified liquid was passed through Perfector, and was then subjected to quenching kneading, so that the filling temperature became 15°C, thereby obtaining a plastic oil-and-fat composition.

[0034]

(2) Preparation of shortening (Example 8)

A plastic oil-and-fat composition was prepared with the composition shown in Table 1 by the following procedures. It is to be noted that the term "Oil and fat" shown in Table 1 means the oil and fat obtained by each of the compositions shown in Tables 2 and 3.

Individual components were placed in a mixing tank, and thereafter,

the components were stirred and mixed, while the temperature in the mixing tank was controlled at 65°C by heating.

The obtained mixed solution was passed through Perfector, and was then subjected to quenching kneading, so that the filling temperature became 15°C, thereby obtaining a plastic oil-and-fat composition.

[0035]

[Table 1]

Table 1

part by mass

	Plastic oil-and-fat composition (shortening)	Plastic oil-and-fat composition (margarine)
Oil and fat	99.59	83.59
Lecithin FA	0.16	0.16
Glycerin fatty acid ester	0.25	0.25
Water		16

Lecithin FA (manufactured by J-OIL MILLS, Inc.)

Glycerin fatty acid ester (manufactured by Riken Vitamin Co., Ltd., "Emergy HRO")

[0036]

[Table 2]

Table 2

% by mass

	Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Ex.6	Ex.7	Ex.8
Lard						40	40	40
Beef tallow	40	40	50	70	20	30	20	20
Transesterification oil A	20	20	15	10	25	30	20	20
Transesterification oil B	30	30	30		45			
Palm olein oil	10						20	20
Rapeseed oil		10	5	20	10			
Solid fat content (20°C)	31.0	27.8	28.2	30.4	28.7	27.4	23.0	23.0
Chewy texture of cookie dough	5	5	5	4	3	4	3	3
Crispy texture of cookies	4	4	4	4	3	3	4	4
Hardness of cookies	4	4	4	4	3	3	4	4

Lard: manufactured by J-OIL MILLS, Inc.

Beef tallow: manufactured by UEDA OILS & FATS MFG. CO., LTD.

Transesterification oil A: Transesterification oil produced by the after-mentioned method

Transesterification oil B: "PARKID-Y" manufactured by FUJI OIL CO., LTD.

Palm olein oil: manufactured by J-OIL MILLS, Inc.

Rapeseed oil: manufactured by J-OIL MILLS, Inc.

[0037]

(Preparation of transesterification oil A)

0.3 Parts by mass of sodium methoxide was added as a catalyst to 100 parts by mass of an oil-and-fat mixture comprising 75% by mass of palm stearin, 10% by mass of palm oil, and 15% by mass of soybean oil, and thereafter, a random transesterification reaction was carried out, while the obtained mixture was stirred under conditions of 80°C and a degree of vacuum of 2.7 kPa for 60 minutes. After completion of the random transesterification reaction, the catalyst was removed by water-washing, and a decolorization treatment was then carried out using activated clay. Thereafter, a deodorization treatment was further carried out to obtain transesterification oil A.

[0038]

[Table 3]

Table 3

% by mass

	Comp.Ex.1	Comp.Ex.2	Comp.Ex.3
Lard		40	20
Beef tallow			
Transesterification oil A	45	20	25
Transesterification oil B	35	30	45
Palm olein oil	10		
Rapeseed oil	10	10	10
Solid fat content (20°C)	27.4	25.0	25.7
Chewy texture of cookie dough	1	3	1
Crispy texture of cookies	1	3	3
Hardness of cookies	1	4	3

Lard: manufactured by J-OIL MILLS, Inc.

Beef tallow: manufactured by UEDA OILS & FATS MFG. CO., LTD.

Transesterification oil A: Transesterification oil produced by the above-described method

Transesterification oil B: "PARKID-Y" manufactured by FUJI OIL CO., LTD.

Palm olein oil: manufactured by J-OIL MILLS, Inc.

Rapeseed oil: manufactured by J-OIL MILLS, Inc.

[0039]

< Solid fat content (20°C) (%) >

The solid fat content (%) at 20°C of the oil phase of the plastic oil-and-fat composition obtained in each of Tables 2 and 3 was measured by the following method.

The plastic oil-and-fat composition was placed in a constant temperature water bath set at 70°C, and was then dissolved.

The upper layer was filtrated using a filter paper (qualitative filter paper No. 2, manufactured by ADVANTEC TOYO KAISHA, LTD) in the constant temperature water bath, and the filtrate was then recovered as an oil phase. The solid fat content (%) at 20°C of the obtained oil phase was measured in accordance with METHOD I described in AOCS Official Method Cd 16b-93.

[0040]

2. Preparation of cookie dough and cookies

Cookie dough and cookies were prepared by the following procedures.

First, 200 g of caster sugar was added to 300 g of each plastic oil-and-fat composition shown in Table 1, which was obtained by mixing the edible oil and fat shown in each of Tables 2 and 3, and the obtained mixture was mixed at a low speed for 1 minute, using Hobart Mixer (manufactured by HOBART CANADA). Thereafter, dough was scraped off, and it was further mixed at a low speed for 1 minute.

Subsequently, 50 g of whole egg was added at once to the dough, which was then mixed at a low speed, until it was emulsified.

After that, 500 g of cake flour was added to the resultant, and inching was then carried out 40 times, and thereafter, the obtained mixture was mixed at a low speed for 10 seconds.

The thus obtained dough was gathered, was then placed in a bag, and was then extended to the form of a square, which was then left at rest at 12°C overnight.

Thereafter, the obtained dough was kneaded 30 times, and was molded into a rectangle with a size of 17 cm x 19 cm.

Using a reverse seater, the dough was rolled three times, so that the thickness thereof successively became 30 mm, 20 mm, and then, 10 mm.

The dough after completion of the 10 mm rolling was cut into a size of 18 cm x 30 cm, and using the reverse seater, the dough was rolled three times, so that the thickness thereof successively became 7 mm, 5 mm, and then, 3.5 mm.

The dough having a thickness of 3.5 mm was cut into a size of 30 cm x 40 cm, and the obtained dough was then subjected to die cutting with intervals of 15 cm, using a circular mould having a diameter of 6.2 mm, thereby obtaining cut-out cookie dough.

The cut-out cookie dough was baked in a 180°C/180°C oven for 10.5 minutes to obtain cookies.

[0041]

3. Evaluation method

[0042]

(1) Chewy texture of cookie dough

The end of the cookie dough remaining after the die cutting was lifted up with a hand in 1 second to a height of 10 cm from the bottom, and the time required until the cookie dough was torn out was measured. The chewy texture of the cookie dough was evaluated according to the following evaluation criteria.

5: The dough is not torn out for 15 seconds or more, and the chewy texture is further favorable.

4: The dough is not torn out for 10 seconds or more, and the chewy texture is favorable.

3: The dough is not torn out for 5 seconds or more, and the chewy texture is favorable.

2: The dough is torn out within 5 seconds.

1: The dough is torn out within 3 seconds.

It is to be noted that the chewy texture of cookie dough is satisfactory, when the score is 3 or more.

[0043]

(2) Texture of cookies

Three professional panelists ate the obtained cookies, and evaluated the crispy texture and hardness of the cookies according to the following evaluation criteria. The mean value was defined to be an evaluation value. The results are shown in Tables 2 and 3.

[0044]

a) Crispy texture

4: The cookies are extremely crispy, providing good feeling.

3: The cookies are crispy, providing good feeling.

2: The cookies have slightly weak crispy texture.

1: The cookies have weak crispy texture.

It is to be noted that the crispy texture of cookies is satisfactory, when the score is 3 or more.

[0045]

b) Hardness

4: The cookies have moderate hardness, providing extremely good feeling.

3: The cookies have moderate hardness, providing good feeling.

2: The cookies are slightly hard.

1: The cookies are hard, and the texture is poor.

It is to be noted that the hardness of cookies is satisfactory, when the score is 3 or more.

[0046]

As demonstrated in the results shown in Tables 2 and 3, it was found that, by mixing the plastic composition for cookie dough of the present invention into cookie dough, the chewy texture of the cookie dough can be stabilized. In addition, cookies prepared by baking the cookie dough of the present invention had moderate crispy texture and hardness, and the texture thereof was favorable. According to a preferred aspect of the present invention, the mechanical resistance of cookie dough can be improved without impairing the texture thereof, and the workability can be improved upon the

molding of the cookie dough. Accordingly, the cookie dough can be stably produced.

CLAIMS

[Claim 1]

A plastic oil-and-fat composition for cookies, comprising one or more types selected from beef tallow and beef tallow-fractionated fat in the oil phase thereof, wherein

the total content of the beef tallow and the beef tallow-fractionated fat is 20% by mass or more and 70% by mass or less, with respect to the total amount of components constituting the oil phase.

[Claim 2]

The plastic oil-and-fat composition for cookies according to claim 1, wherein the total content of the beef tallow and the beef tallow-fractionated fat is 40% by mass or more and 70% by mass or less, with respect to the total amount of components constituting the oil phase.

[Claim 3]

The plastic oil-and-fat composition according to claim 1 or 2, wherein the solid fat content at 20°C of the components constituting the oil phase is 21% or more and 34% or less.

[Claim 4]

The plastic oil-and-fat composition for cookies according to any one of claims 1 to 3, wherein the content of water is 3% by mass or more and 30% by mass or less, with respect to the total amount of the plastic oil-and-fat composition.

[Claim 5]

The plastic oil-and-fat composition for cookies according to any one of claims 1 to 4, which is for use in extruded plate-shaped cookies.

[Claim 6]

Cookie dough comprising the plastic oil-and-fat composition for cookies according to any one of claims 1 to 5.

[Claim 7]

A method for producing cookie dough, comprising mixing the plastic oil-and-fat composition for cookies according to any one of claims 1 to 5 into cookie dough.

[Claim 8]

A method for producing cookies, comprising:
mixing the plastic oil-and-fat composition for cookies according to any one of claims 1 to 5 into cookie dough to prepare cookie dough; and
heating the cookie dough.

[Claim 9]

A method for improving the mechanical resistance of cookie dough,

comprising mixing the plastic oil-and-fat composition for cookies according to any one of claims 1 to 5 into cookie dough.