

DESCRIPTION

METHOD FOR MANUFACTURING OIL AND FAT COMPOSITION, AGENT FOR
REDUCING OILINESS, AGENT FOR SUPPRESSING HEATING ODOR, METHOD
FOR MANUFACTURING AN EDIBLE OIL AND FAT FOR COOKING, METHOD
5 FOR REDUCING OILINESS, METHOD FOR SUPPRESSING HEATING ODOR,
AND METHOD FOR MANUFACTURING FOOD PRODUCTS

TECHNICAL FIELD

[0001]

The present invention relates to an oil and fat
10 composition with which it is possible to reduce oiliness
imparted to food products by deep-frying or other types of
cooking with heat, and to suppress a heating odor of the oils
and fats that is generated during the cooking with heat.

BACKGROUND ART

15 [0002]

Rapeseed oil, soybean oil, corn oil, sesame oil, and
other edible oils and fats are used in fried products such as
tempura and deep-fried meat and fish; however, there has been
a demand to reduce the oiliness of food products cooked using
20 these edible oils and fats. An additional problem is presented
in that, because edible oils and fats generate irritating
heating odors when heated for extended periods of time, the
heating odors are avoided by workers, etc.

[0003]

25 In response to such problems, Patent Document 1, for
example, discloses an oil and fat composition formed so as to

contain, in specific blending amounts: a palm-based oil and fat having an iodine value of 35-58; a transesterified oil and fat obtained by transesterifying a mixed oil and fat that includes, in a mass ratio ranging from 80:20 to 100:0,

5 fractionated palm oil having an iodine value of 25-35 and liquid oil having an iodine value of 100-130; and a polyglycerin fatty acid ester that contains stearic acid and/or behenic acid as constituent fatty acids. Patent Document 1 also indicates that oiliness and the tendency to
10 stain paper with oil were reduced in doughnuts, fried dough, French fries, fried chicken, and other food products cooked using the oil and fat composition.

[0004]

Patent Document 2 discloses an oil and fat composition
15 formed so as to contain a partially hydrogenated palm oil, a hard portion of fractionated palm oil having an iodine value of 26-46, and a palm oil in specific blending amounts. Patent Document 2 also indicates that oiliness and the tendency to stain paper with oil were reduced in doughnuts, fried dough,
20 French fries, fried chicken, and other food products cooked using the oil and fat composition.

[0005]

Patent Document 3 discloses an oil and fat composition for frying, the composition being formed so as to contain,
25 with respect to the entire oil and fat composition for frying: 10 wt.% or less of liquid oil and fat; 75-88 wt.% of non-

fractionated refined palm oil; 10-24 wt.% of fractionated palm oil having an iodine value of 58-70; and 1-4 wt.% of an ultra-hardened oil of at least one oil selected from the group consisting of rapeseed oil, soybean oil, and corn oil. Patent Document 3 also indicates that in fried foods cooked using the oil and fat composition for frying, the flavor of food product ingredients that were fried was not lost, and no or less oiliness or stickiness was tasted.

[Related Art Documents]

10 [Patent Documents]

[0006]

[Patent Document 1] Japanese Laid-Open Patent Application No. 2012-19700

[Patent Document 2] Japanese Laid-Open Patent Application
15 No. 2013-243958

[Patent Document 3] Japanese Laid-Open Patent Application No. 2016-029920

DISCLOSURE OF THE INVENTION

[Problems the Invention is Intended to Solve]

20 [0007]

However, in Patent Documents 1 to 3, the base composition of the oils and fats must be changed; Patent Documents 1 to 3 do not provide features that can be applied to a normal edible oil and fat such as corn oil, rapeseed oil, or soybean oil
25 without modification.

[0008]

It is accordingly an object of the present invention to provide an oil and fat composition with which it is possible to reduce oiliness imparted to food products cooked using oils and fats and also to suppress a heating odor of the oils and fats that is generated during cooking with heat, the oil and fat composition being a general-purpose composition and being applicable to a variety of edible oils and fats.

[Means for Solving the Aforementioned Problems]

[0009]

As a result of through research aimed at achieving the aforementioned object, the inventors perfected the present invention upon discovering that an oil and fat composition obtained by heating an oil and fat to which an oil raw material or a processed article thereof have been added can reduce the oiliness imparted to food products cooked using oils and fats and can suppress a heating odor of the oils and fats that is generated during cooking with heat.

[0010]

Specifically, the present invention provides a method for manufacturing an oil and fat composition, the method being characterized by including: an addition step for adding one or more selected from an oil raw material and a processed article of the oil raw material to an oil and fat; and a heating step for heating the resultant mixture at a heating temperature greater than 100°C but no greater than 220°C and for a heating time of 5 minutes or more to 240 minutes or less, the heating

furthermore being performed under conditions that satisfy expression (1).

Expression (1): $85 - 6000 \div (270 - T) < t < 240$

(In expression (1), T is the heating temperature (°C), and t is the heating time (minutes); $85 - 6000 \div (270 - T)$ is assigned a value of "5" when the value thereof is negative.)

[0011]

According to the method for manufacturing an oil and fat composition in the present invention, adding one or more selected from the group consisting of an oil raw material and a processed article of the oil raw material to an edible oil and then heating the resultant mixture under prescribed conditions makes it possible to obtain an oil and fat composition having effects for reducing the oiliness of food products cooked using oils and fats and suppressing a heating odor.

[0012]

In the method for manufacturing an oil and fat composition of the present invention, it is preferable that: the oil raw material includes one or more selected from the group consisting of corn germs, soybeans, rapeseed, cottonseed, rice bran, sesame, olives, sunflower, perilla, and linseed; and the processed article of the oil raw material includes one or more selected from pulverized articles, meal, and roasted articles.

[0013]

In addition, in the method for manufacturing an oil and fat composition of the present invention, a removal step for removing solid content is preferably included after the heating step.

5 [0014]

Furthermore, in the method for manufacturing an oil and fat composition of the present invention, a deodorization step for deodorizing the composition is preferably included after the removal step.

10 [0015]

Furthermore, in the method for manufacturing an oil and fat composition of the present invention, it is preferable that one or more selected from the oil raw material and the processed article of the oil raw materials is/are added so that the mass of the oil raw material and the processed article of the oil raw material is 0.05 times or more to 1 times or less in relative to the mass of the oils and fats.

[0016]

In addition, the present invention provides an agent for reducing oiliness, characterized by having, as an active component, an oil and fat composition obtained through the method for manufacturing an oil and fat composition described above. According to the agent for reducing oiliness of the present invention, it is possible to reduce the oiliness of food products cooked using oils and fats.

[0017]

Furthermore, the present invention provides an agent for suppressing heating odor, characterized by having, as an active component, an oil and fat composition obtained through the method for manufacturing an oil and fat composition described above. According to the agent for suppressing heating odor of the present invention, it is possible to suppress a heating odor of oils and fats that is generated during cooking with heat.

[0018]

Furthermore, the present invention provides a method for manufacturing an edible oil and fat for cooking, the method being characterized in that 0.01 parts or more to 10 parts or less of an oil and fat composition obtained through the method for manufacturing an oil and fat composition described above is added to 100 parts by mass of an edible oil and fat. According to the method for manufacturing an edible oil and fat for cooking of the present invention, it is possible to provide an edible oil and fat for cooking with which it is possible to reduce oiliness of food products cooked using oils and fats and to suppress a heating odor of the oils and fats that is generated during cooking with heat.

[0019]

Furthermore, the present invention provides a method for reducing oiliness, the method being characterized in that a food product is cooked using an edible oil and fat for cooking obtained through the method for manufacturing an edible oil

and fat for cooking described above. According to the method for reducing oiliness of the present invention, it is possible to reduce the oiliness of food products cooked using oils and fats.

5 [0020]

In the method for reducing oiliness of the present invention, the cooking is preferably deep-frying.

[0021]

Furthermore, the present invention provides a method for
10 suppressing heating odor, the method being characterized in that a food product is cooked using an edible oil and fat for cooking obtained through the method for manufacturing an edible oil and fat for cooking described above. According to the method for suppressing heating odor of the present
15 invention, it is possible to suppress a heating odor of oils and fats that is generated during cooking with heat.

[0022]

In the method for suppressing heating odor of the present invention, the cooking is preferably deep-frying.

20 [0023]

Furthermore, the present invention provides a method for manufacturing a food product, the method being characterized in that a food product is manufactured using an edible oil and fat for cooking obtained through the method for manufacturing
25 an edible oil and fat for cooking described above. According to the method for manufacturing a food product of the present

invention, it is possible to suppress the oiliness in food products cooked using oils and fats.

[Effect of the Invention]

[0024]

5 According to the method for manufacturing an oil and fat composition in the present invention, adding one or more selected from the group consisting of an oil raw material and a processed article thereof to an edible oil and then heating the resultant mixture makes it possible to provide an oil and
10 fat composition with which it is possible to reduce the oiliness of food products cooked using oils and fats and to suppress a heating odor of the oils and fats that is generated during cooking with heat.

[0025]

15 According to the agent for reducing oiliness of the present invention, it is possible to reduce the oiliness of food products cooked using oils and fats.

[0026]

 According to the agent for suppressing heating odor of
20 the present invention, it is possible to suppress a heating odor of oils and fats that is generated during cooking with heat.

[0027]

 According to the method for manufacturing an edible oil
25 and fat for cooking of the present invention, it is possible to provide an edible oil and fat for cooking, the edible oil

and fat obtained through this method making it possible to reduce the oiliness of food products cooked using oils and fats and to suppress a heating odor of the oils and fats that is generated during cooking with heat.

5 [0028]

According to the method for reducing oiliness of the present invention, it is possible to reduce the oiliness of food products cooked using oils and fats.

[0029]

10 According to the method for suppressing heating odor of the present invention, it is possible to suppress a heating odor of oils and fats that is generated during cooking with heat.

[0030]

15 According to the method for manufacturing food products of the present invention, it is possible to reduce the oiliness of food products cooked using oils and fats.

BEST MODE FOR CARRYING OUT THE INVENTION

[0031]

20 There is no particular limitation as to the oil and fat (base oil and fat) used in the method for manufacturing an oil and fat composition of the present invention; the oil and fat are preferably used as edible oils. Specific examples include: corn oil, soybean oil, rapeseed oil (canola oil), cottonseed
25 oil, rice-bran oil, sesame oil, olive oil, sunflower oil, perilla oil, linseed oil, peanut oil, safflower oil, palm oil,

palm kernel oil, ultra-hard palm oil, coconut oil, cacao butter, and other plant oils and fats; fish oil, beef tallow, pig fat, chicken fat, and other animal oils and fats; and processed oils and fats obtained by implementing one or more
5 selected from fractionation, hydrogenation, transesterification, etc., on these oils and fats. Preferred examples among these include corn oil, rapeseed oil, soybean oil, palm oil, and other plant oils and fats. One of these base oils and fats may be used alone, or a blend of two or
10 more may be used.

[0032]

There is no particular limitation as to the oil raw materials used in the method for manufacturing an oil and fat composition of the present invention; it is possible to use
15 raw ingredients from which edible oils can be harvested. Specific examples include corn germs (wet corn germs, dry corn germs), soybeans, rapeseed, cottonseed, rice bran, sesame, olives, sunflower, perilla, linseed, pumpkin, almonds, peanuts, safflower, oil palm, and coconut. Preferred examples
20 among these include corn germs, soybeans, rapeseed, cottonseed, rice bran, sesame, olives, sunflower, perilla, and linseed; more preferred examples include wet corn germs, rapeseed, cottonseed, sesame, and linseed. One of these oil raw materials may be used alone, or a blend of two or more
25 types may be used.

[0033]

Examples of processed articles of the oil raw materials used in the method for manufacturing an oil and fat composition of the present invention include pulverized (cracked) articles, meal, and roasted articles of the oil raw materials above. Specific examples of the processed articles of oil raw materials preferably include cracked soybeans, rapeseed meal, cottonseed meal, olive meal, and roasted perilla. One of these processed articles of oil raw materials may be used alone, or a blend of two or more types may be used. As used herein, the term "meal" refers to a solid residue obtained after oils and fats have been squeezed from the oil raw materials.

[0034]

In the method for manufacturing an oil and fat composition of the present invention, first there is performed an addition step for adding one or more selected from an oil raw material and a processed article of the oil raw material (also referred to as "oil raw material and/or processed article thereof" hereinafter) to a base oil and fat. In this instance, the oil raw material and/or processed article thereof is/are added so that the total mass of the oil raw material and the processed article thereof is preferably 0.05 times or more to 1 times or less in relative to the mass of the base oil and fat, more preferably 0.1 times or more to 1 times or less in relative to the aforementioned mass, and even more preferably 0.4 times or more to 1 times or less in

relative to the aforementioned mass. Setting the total mass of the oil raw material and the processed article thereof relative to the mass of the base oil and fat within the aforementioned ranges makes it possible to obtain exceptional effects for reducing oiliness and suppressing heating odor.

[0035]

Next there is performed a heating step for heating the oil and fat to which the oil raw material and/or processed article thereof have been added, the heating process being performed at a heating temperature greater than 100°C but no greater than 220°C and for a heating time of 5 minutes or more to 240 minutes or less, the heating furthermore being performed under conditions that satisfy expression (1).

Expression (1): $85 - 6000 \div (270 - T) < t < 240$

(In expression (1), T is the heating temperature (°C), and t is the heating time (minutes); $85 - 6000 \div (270 - T)$ is assigned a value of "5" when the value thereof is negative.)

[0036]

As used herein, the term "heating time" in the present description refers to a time in which a state where the temperature has exceeded 100°C but is no greater than 220°C is in effect. The temperature in the heating time is preferably included in this range, but does not need to remain fixed at a certain temperature. The term "heating temperature" in the present description refers to an average temperature in the state where the temperature has exceeded 100°C but is no

greater than 220°C. The heating temperature is greater than 100°C but no greater than 220°C, preferably greater than 110°C but no greater than 210°C, and more preferably greater than 130°C but no greater than 200°C. The heating time is 5 minutes or more to 240 minutes or less, preferably 15 minutes or more to 200 minutes or less, and more preferably 20 minutes or more to 120 minutes or less. Heating the oil raw material and/or processed article thereof under the aforementioned heating conditions makes it possible to manufacture an oil and fat composition with which it is possible to reduce the oiliness of food products cooked using oils and fats and to suppress a heating odor of the oils and fats that is generated during cooking with heat.

[0037]

In the method for manufacturing an oil and fat composition of the present invention, in continuation from the heating step, a removal step for removing solid content in the oil and fat composition manufactured in the aforementioned heating step may be performed. There is no particular limitation as to the method of removal, provided that the method is generally used in steps for refining edible oils and is capable of removing unnecessary solid content; examples include methods performed through filtration (pressurizing, depressurizing, suction, unassisted filtration, centrifugation, etc.).

[0038]

Furthermore, in continuation from the removal step, a deodorization step for deodorizing the oil and fat composition manufactured in the aforementioned heating step and the removal step may be performed. There is no particular
5 limitation as to the method of deodorization, provided that the method is generally used in steps for refining edible oils; examples include methods for removing volatile odorous components included in oil content by performing steam distillation under reduced pressure. Specifically, steam is
10 blown into the oil and fat composition obtained through the heating step and the removal step under reduced pressure, and volatile odorous components are removed to obtain a deodorized oil. Conditions that are generally used in steps for manufacturing refined oils and fats can be employed as the
15 treatment conditions of the deodorization step; for example, it is preferable to employ treatment conditions that satisfy (1) to (4) below.

(1) Amount of steam used: 0.1 mass% or more to 10 mass% or less, preferably 0.3 mass% or more to 8 mass% or less, and
20 more preferably 0.3 mass% or more to 5 mass% or less relative to the oil and fat.

(2) Deodorization temperature: 180°C or higher to 300°C or lower, preferably 200°C or higher to 300°C or lower, more preferably 230°C or higher to 300°C or lower, and even more
25 preferably 240°C or higher to 280°C or lower.

(3) Deodorization time: 10 minutes or more to 240 minutes or less, and preferably 20 minutes or more to 240 minutes or less.

(4) Extent of reduced pressure: 150 Pa or higher to 1000 Pa or lower, and preferably 200 Pa or higher to 800 Pa or lower.

[0039]

Before the deodorization step is performed, a degumming step for degumming the composition, a deacidification step for deacidifying the composition, a decoloration step, or other processes may be performed on the oil and fat composition manufactured in the heating step and the removal step. In this instance, means and conditions that are generally used in steps for refining edible oils can be employed in the methods for degumming, deacidification, decoloration, etc.

[0040]

Using the oil and fat composition manufactured in this manner by adding the oil and fat composition to oils and fats for cooking of food products makes it possible to reduce the oiliness imparted to the cooked food products. Therefore, the oil and fat composition can be used as an agent for reducing the oiliness of food products cooked using oils and fats. In addition, the oil and fat composition is capable of suppressing a heating odor of oils and fats that is generated during cooking with heat. Therefore, the oil and fat composition can be used as an agent for suppressing a heating

odor of oils and fats that is generated during cooking with heat.

[0041]

The agent for reducing oiliness and the agent for
5 suppressing heating odor of the present invention have, as an
active component, the oil and fat composition obtained through
the manufacturing method described above. This oil and fat
composition is obtained by heating an oil and fat to which an
oil raw material and/or processed article thereof has/have
10 been added, as described above. Because the effect of the
present invention is not seen in compositions in which oils
and fats have merely been heated or in composition in which
oil raw materials have merely been immersed in oils and fats,
it is surmised that some type of component that is changed or
15 produced by heating the oil and fat raw material and/or
processed article thereof in the oil and fat might be related
to the effect of the present invention. Components that are
changed or produced by heating are extremely numerous, and
substances in amounts below the boundary for detection by an
20 analyzer are also included among such components. Therefore,
it may be impractical to analyze and specify which substances
contribute to the effect of the present invention from among
the extremely numerous components constituting the agent for
reducing oiliness and the agent for suppressing heating odor
25 of the present invention.

[0042]

As used herein, the term "oiliness" does not differ in meaning from the terminology generally understood by consumers and persons skilled in the art; specifically, this term refers to the sensation of stickiness from the oil remaining in the mouth during eating and/or the lingering aftertaste imparted by the oil in the mouth after eating. In addition, the term "heating odor" does not differ in meaning from the terminology generally understood by consumers and persons skilled in the art; specifically, this term refers to a pungent irritant odor of oils and fats that is generated during cooking with heat.

[0043]

Adding the oil and fat composition manufactured as described above to an edible oil and fat makes it possible to manufacture an edible oil and fat for cooking of the present invention. In this instance, the oil and fat composition is preferably added in an amount of 0.01 parts or more to 10 parts or less, more preferably added in an amount of 0.15 parts or more to 5 parts or less, and even more preferably added in an amount of 0.15 parts or more to 3 parts or less per 100 parts by mass of the edible oil and fat.

[0044]

There is no particular limitation as to the edible oil and fat used in the method for manufacturing an edible oil and fat for cooking of the present invention; the edible oils and fats are preferably used as edible oils. Specific examples include: corn oil, soybean oil, rapeseed oil (canola oil),

cottonseed oil, rice-bran oil, sesame oil, olive oil,
sunflower oil, perilla oil, linseed oil, peanut oil, safflower
oil, palm oil, palm kernel oil, ultra-hard palm oil, coconut
oil, cacao butter, and other plant oils and fats; fish oil,
5 beef tallow, pig fat, chicken fat, and other animal oils and
fats; and processed oils and fats obtained by implementing one
or more selected from fractionation, hydrogenation,
transesterification, etc., on these oils and fats. Preferred
examples among these include corn oil, rapeseed oil, soybean
10 oil, palm oil, and other plant oils and fats. One of these
edible oils and fats may be used alone, or a blend of two or
more may be used.

[0045]

Cooking food products using the edible oil and fat for
15 cooking manufactured in this manner makes it possible to
reduce the oiliness of the cooked food products and to
suppress a heating odor of the oil and fat that is generated
during cooking with heat. In the present invention, the term
"cooking" is not limited to deep-frying (frying in oil), stir-
20 frying, grilling, roasting, boiling, simmering, and other
types of cooking with heat, but rather can also include
pouring, dressing, mixing, kneading, immersing, soaking, and
other types of cooking without heat. Deep-frying is preferred.

[0046]

25 The edible oil and fat for cooking obtained through the
present invention is more preferably applied to food products

that are cooked by deep-frying, such as tempura, deep-fried meat and fish, fried pork cutlets, croquettes, French fries, fried fish, chicken nuggets, doughnuts, hash browns, corn dogs, fried tofu, fried dough, croutons, *karinto*, fried rice crackers, snack foods, and instant ramen. In addition, the edible oil and fat for cooking obtained through the present invention is preferably applied to: vegetable stir-fry, liver stir-fry, garlic chive stir-fry, bean sprout stir-fry, and other food products cooked by stir-frying; and hamburgers, gyoza, sunny-side-up eggs, and other food products cooked by grilling. Furthermore, the edible oil and fat for cooking obtained through the present invention also is preferably applied to dressings, mayonnaise, and other condiments that are used by being poured onto or mixed into food products. Food products cooked by deep-frying are most preferred.

[0047]

In particular, there are many cases where deep-frying oils are used in cooking with heat for extended periods of time, not only in the home but also in industrial settings, and deep-frying oils are subjects to which the oil and fat composition or the edible oil and fat for cooking obtained through the present invention is more preferably applied. There is no particular limitation as to the mode of cooking; cooking is preferably performed in a desired mode, as appropriate, by a method suited to the food product using the oil and fat composition or the edible oil and fat for cooking.

For example, in cases involving cooking with heat using the oil and fat composition or the edible oil and fat for cooking obtained through the present invention, the cooking with heat preferably includes: adding the oil and fat composition or the edible oil and fat for cooking of the present invention to cooking materials of a prescribed food product; and performing deep-frying, stir-frying, grilling, other cooking with heat, etc., typically at a temperature of 140-200°C, and more typically at a temperature of 150-190°C.

10 [0048]

Antioxidants, emulsifiers, flavorings, defoamers, and other additive ingredients may furthermore be blended into the oil and fat composition, the agent for reducing oiliness, the agent for suppressing heating odor, and the edible oil and fat for cooking obtained through the manufacturing methods of the present invention, within a range in which the effect achieved by the present invention is not hindered. Specific examples include fatty acid esters of ascorbic acid, lignans, coenzyme-Q, γ -oryzanol, tocopherol, and silicone.

20 Examples

[0049]

Examples are given below to more specifically describe the present invention, but these examples do not in any way limit the present invention.

25 [0050]

<1. Examination of base oil and fat and oil raw material>

Using the combinations listed in table 1, 45 parts by mass of the oil raw material or the processed article of oil raw material were added to 55 parts by mass of the base oil and fat. An oil and fat composition was obtained by heating the resultant mixture at 180°C for 60 minutes and then filtering the mixture. Furthermore, 0.5 parts by mass of the oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking.

[0051]

"Kotsu no iranai tempurako agejizu" (product name, manufactured by Nisshin Foods Inc.) was used to create a batter liquid in the manner described on the package thereof. The batter liquid was fried at 170°C for one minute and 30 seconds using the edible oil and fat for cooking, and then was strained on a mesh to create *agedama*.

[0052]

After about 30 minutes, the *agedama* were sampled by three expert panelists, the oiliness thereof was evaluated using the evaluation criteria below, and scores were determined once an agreement was reached.

[0053]

(Oiliness)

0 points: Extremely strong

1 point: Strong

2 points: Moderate

3 points: Weak

4 points: Extremely weak

5 points: Completely imperceptible

[0054]

The results are shown in table 1. An effect for reducing oiliness was observed in the oil and fat compositions in which oil raw materials or processed articles of the oil raw materials were added to oils and fats and then the resultant mixture was heated. Specifically, the effect for reducing oiliness was observed in the oil and fat compositions in which heating was performed after wet corn germs, dry corn germs, cracked soybeans, first rapeseed meal, cottonseed meal, rice bran, sesame (non-roasted), olive meal, sunflower seeds, or roast linseed was added. Among these, oil and fat compositions in which heating was performed after wet corn germs, first rapeseed meal, cottonseed meal, or sesame (non-roasted) was added in particular exhibited a strong effect. The type of base oils and fats used did not greatly affect the effect for reducing oiliness.

[0055]

[Table 1]

Score (oiliness)		Base oil and fat				Source of oil raw material
		Corn oil	Canola oil	Soybean oil	IV67*	
	Wet corn germs	4	4	4	4	Ohta Oil Co., Ltd.
	Dry corn germs	3	3	—	—	Ohta Oil Co., Ltd.
	Cracked soybeans	—	3	3	—	J-oil Mills, Inc.
	Rapeseeds (in seed form)	—	1	—	—	J-oil Mills, Inc.
	First rapeseed meal	—	4	—	—	J-oil Mills, Inc.
	Cottonseed meal	—	4	—	—	Okamoto Seiyu KK
	Rice bran	—	3	—	3	Takada Beikokuten Ltd.
Oil raw material	Sesame (non-roasted)	—	4	—	—	Kadoya Sesami Mills Inc.
	Olive meal	—	3	—	—	Shodoshima Healthy Land KK
	Pumpkin seeds	—	2	—	—	4th Avenue KK
	Almonds	—	1	—	—	Minoya KK
	Peanuts	—	2	—	—	Minoya KK
	Sunflower seeds	—	3	—	—	Minoya KK
	Roasted linseed	—	4	—	—	Nippon Flour Mills Co., Ltd.
	No additive	—	0	—	—	—
	*IV67: Palm olein (iodine value: 67)					
	("—": test was not performed.)					

[0056]

<2. Examination of heating conditions>

An oil and fat composition was obtained by using 55 parts by mass of corn oil as the base oil and fat and 45 parts by mass of wet corn germ as the oil raw material, heating the resultant mixture under the conditions listed in table 2, and then filtering the mixture. Furthermore, 0.5 parts by mass of the oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking.

10 [0057]

A batter liquid was fried using the edible oil and fat for cooking in the same manner as in section <1. Examination of base oil and fat and oil raw material>, and the oiliness of the resultant *agedama* was evaluated.

15 [0058]

The results are shown in table 2. For oil and fat compositions in which the wet corn germs were heated at higher temperatures for longer periods of time, the effect for reducing oiliness increased.

20 [0059]

[Table 2]

Base oil and fat: Corn oil

Oil raw material: Wet corn germs

Heating temperature	Heating time	Score (oiliness)
120°C	10 min	1
	30 min	1
	60 min	3
	120 min	3
150°C	10 min	1
	30 min	2
	60 min	3
180°C	10 min	1
	30 min	3
	60 min	4
	120 min	4

5 [0060]

<3. Examination of proportions of base oil and fat and oil raw material>

An oil and fat composition was obtained by using corn oil as the base oil and fat and wet corn germs as the oil raw material in the amounts in parts by mass listed in table 3, heating the resultant mixture at 180°C for 60 minutes, and then filtering the mixture. Furthermore, 0.5 parts by mass of the resultant oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking.

[0061]

A batter liquid was fried using the edible oil and fat for cooking in the same manner as in section <1. Examination

of base oil and fat and oil raw material>, and the oiliness of the resultant *agedama* was evaluated.

[0062]

The results are shown in table 3. For oil and fat compositions in which the mass ratio of the wet corn germs was increased, the effect for reducing oiliness increased.

[0063]

[Table 3]

Score (oiliness)		Oil raw material: wet corn germs			
		10	20	30	45
Base oil and fat: corn oil	55				4
	70			4	
	80		3		
	90	2			

10 [0064]

<4. Examination of deodorizing step>

The oil and fat compositions created as in section <1. Examination of base oil and fat and oil raw material> all generated a burnt odor. To address this matter, an oil and fat composition was obtained by using 55 parts by mass of the base oil and fat in the combinations listed in table 4 and 45 parts by mass of the oil raw material or the processed article of oil raw material, heating the resultant mixture at 180°C for 60 minutes, and then filtering the mixture. Furthermore, the oil and fat composition was subjected to a deodorization step.

[0065]

The scent of the oil and fat compositions that had been subjected to the deodorization step was sniffed by three expert panelists, a burnt odor was evaluated using the evaluation criteria below, and scores were determined once an agreement was reached.

[0066]

(Burnt odor)

0 points: Burnt odor exceedingly strong

1 point: Burnt odor strong

10 2 points: Burnt odor easily perceptible

3 points: Burnt odor weak

4 points: Burnt odor barely perceptible

5 points: Burnt odor completely imperceptible

[0067]

15 The results are shown in table 4. For oil and fat compositions in which a burnt odor was perceptible, it was possible to carry out further deodorization steps to reduce the burnt odor until the burnt odor was substantially imperceptible.

20 [0068]

[Table 4]

Base oil and fat	Oil raw material	Score (burnt odor)	
		Before deodorization	After deodorization
Corn oil	Wet corn germs	1	4
Canola oil	Wet corn germs	1	4
Canola oil	Cracked soybeans	1	4
Canola oil	First rapeseed meal	2	5
Canola oil	Cottonseed meal	1	4
Canola oil	Rice bran	2	4
Canola oil	Sesame (non-roasted)	2	4
Canola oil	Olive meal	2	4

[0069]

<5. Evaluation of deodorized oil and fat composition

5 (agedama)>

An oil and fat composition was obtained by using 55 parts by mass of the base oil and fat in the combinations listed in table 5 and 45 parts by mass of the oil raw material or the processed article of oil raw material, heating the resultant mixture at 180°C for 60 minutes, and then filtering the mixture. Furthermore, the oil and fat composition was subjected to a deodorization step. In addition, 0.5 parts by mass of the oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking.

[0070]

A batter liquid was fried using the edible oil and fat for cooking in the same manner as in section <1. Examination

of base oil and fat and oil raw material>, and the oiliness of the resultant *agedama* was evaluated. The evaluation was performed by four expert panelists, and scores were determined once an agreement was reached.

5 [0071]

The results are shown in table 5. In a comparison with the results indicated in section <1. Examination of base oil and fat and oil raw material> (see table 1), any difference was not observed in the oiliness-reducing effect between

10 before and after deodorization.

[0072]

[Table 5]

Base oil and fat	Oil raw material	Score (oiliness)
Corn oil	Wet corn germs	4
Canola oil	Wet corn germs	4
Canola oil	Cracked soybeans	3
Canola oil	First rapeseed meal	4
Canola oil	Cottonseed meal	4
Canola oil	Rice bran	3
Canola oil	Sesame (non-roasted)	4
Canola oil	Olive meal	3

[0073]

15 <6. Evaluation of degraded edible oil and fat for cooking (*agedama*)>

An oil and fat composition was obtained by using 55 parts by mass of corn oil as the base oil and fat and 45 parts by mass of wet corn germs as the oil raw material, heating the resultant mixture at 180°C for 60 minutes, and then filtering

20

the mixture. Furthermore, the oil and fat composition was subjected to a deodorization step. In addition, 0.5 parts by mass of the oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking. Furthermore, the edible oil and fat for cooking were degraded by heating at 180°C for 48 hours on a magnetic dish.

[0074]

As a control, canola oil to which no oil and fat composition was added was similarly degraded by heating at 180°C for 48 hours on a magnetic dish.

[0075]

A batter liquid was fried using the degraded edible oil and fat for cooking or the degraded canola oil in the same manner as in section <1. Examination of base oil and fat and oil raw material>, and the oiliness of the resultant *agedama* was evaluated. The evaluation was performed by four expert panelists, and scores obtained by calculating averages were assigned.

[0076]

The results are shown in table 6. Even when the edible oil and fat for cooking to which the oil and fat composition of the present invention has been added was in a degraded state, an effect for reducing oiliness was observed.

[0077]

[Table 6]

Edible oil and fat	State of edible oil and fat	Added substance	Score (oiliness)
Canola oil	Degraded oil	—	2.5
		Oil and fat composition (base oil and fat: corn oil; oil raw material: wet corn germs)	3.3*

*Significant difference at 5% significance level in Wilcoxon test.

[0078]

<7. Evaluation of edible oil and fat for cooking (fried pork cutlets) (1)>

5 An oil and fat composition was obtained by using 55 parts by mass of corn oil as the base oil and fat and 45 parts by mass of wet corn germs as the oil raw material, heating the resultant mixture at 180°C for 60 minutes, and then filtering the mixture. Furthermore, the oil and fat composition was

10 subjected to a deodorization step. In addition, 0.4 parts by mass of the oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking.

[0079]

15 Two frozen pork cutlets (product name: "Yawaraka tonkatsu 160," manufactured by Ajinomoto Frozen Foods Co., Inc.) were fried for five minutes in the edible oil and fat for cooking, which had been heated to 170°C. This operation was performed five times at every two hours over one day. This operation was

20 repeated for six days. During this operation, the oil and fat for cooking was not exchanged. The pork cutlets were evaluated

such that the edible oil and fat for cooking on the first day was fresh oil, and the edible oil and fat on the sixth day was degraded oil.

[0080]

5 The oiliness of the fried pork cutlets fried on the first and sixth days was evaluated in the same manner as in section <1. Examination of base oil and fat and oil raw material>. In addition, the richness of the fried pork cutlets was evaluated using the evaluation criteria below. The evaluation was
10 performed using the number of expert panelists listed in table 7, and averages were calculated to determine scores. Canola oil to which no oil and fat composition was added was used as controls in each of these evaluations.

[0081]

15 (Richness)

0 points: Completely imperceptible
1 point: Very weak
2 points: Weak
3 points: Moderate
20 4 points: Strong
5 points: Very strong

[0082]

Furthermore, the overall evaluation of the fried pork cutlets was performed using the evaluation criteria below.

25 (Overall evaluation)

0 points: Not at all delicious

1 point: Not delicious

2 points: Somewhat not delicious

3 points: Moderate

4 points: Delicious

5 5 points: Very delicious

[0083]

The results are shown in table 7. Both the fresh oil and the degraded oil were capable of being reduced in oiliness to a greater extent than the controls, and the richness and overall evaluation was rated higher for these oils than for the controls.

[0084]

[Table 7]

Edible oil and fat	State of edible oil and fat	Added substance	Score (oiliness)	Score (richness)	Score (overall evaluation)	Number of evaluators
Canola oil	Fresh oil	—	1.8	2.5	2.5	27
		Oil and fat composition (base oil and fat: corn oil; oil raw material: wet corn germs)	2.8*	3.1*	3.2*	
	Degraded oil	—	1.6	2.6	2.5	33
		Oil and fat composition (base oil and fat: corn oil; oil raw material: wet corn germs)	2.6*	3.1	3.2*	

*Significant difference at 5% significance level in Wilcoxon test.

[0085]

<8. Evaluation of edible oil and fat for cooking (fried pork cutlets) (2)>

The oiliness, richness, and overall evaluation of fried
5 pork cutlets were evaluated in the same manner as in section
<7. Evaluation of edible oil and fat for cooking (fried pork
cutlets) (1)>. The evaluation was performed using the number
of expert panelists listed in table 8, and averages were
calculated to determine scores. A mixed oil in which soybean
10 oil, corn oil, and palm olein were blended in a mass ratio of
50:30:20 was used as the edible oil and fat.

[0086]

The results are shown in table 8. Even when the edible
oil and fat was a mixed oil, both the fresh oil and the
15 degraded oil were capable of being reduced in oiliness to a
greater extent than the controls, and the richness and overall
evaluation was rated higher for these oils than for the
controls.

[0087]

[Table 8]

Edible oil and fat	State of edible oil and fat	Added substance	Score (oiliness)	Score (richness)	Score (overall evaluation)	Number of evaluators
Mixed oil	Fresh oil	—	2.2	2.4	2.1	18
		Oil and fat composition (base oil and fat: corn oil; oil raw material: wet corn germs)	3.7*	3.0*	3.4*	
	Degraded oil	—	2.3	2.5	2.7	11
		Oil and fat composition (base oil and fat: corn oil; oil raw material: wet corn germs)	3.1*	2.5	3.6*	

*Significant difference at 5% significance level in Wilcoxon test.

[0088]

<9. Evaluation of heating odor>

An oil and fat composition was obtained by using 55 parts by mass of corn oil as the base oil and fat and 45 parts by mass of wet corn germs as the oil raw material, heating the resultant mixture at 180°C for 60 minutes, and then filtering the mixture. Furthermore, the oil and fat composition was subjected to a deodorization step. In addition, 0.5 parts by mass of the oil and fat composition was added to 100 parts by mass of canola oil to obtain an edible oil and fat for cooking, and the resultant edible oil and fat for cooking was degraded by heating at 180°C for one hour or 32 hours on a magnetic dish.

[0089]

As controls, canola oil to which no oil and fat composition was added was similarly degraded by heating at 180°C for one hour or 32 hours on a magnetic dish.

[0090]

The scent of the oil and fat compositions that had been subjected to the deodorization step was sniffed by the number of expert panelists listed in table 9, the heating odor (overall scent, irritant odor) was evaluated using the evaluation criteria below, and averages were calculated to determine scores.

[0091]

(Overall scent)

0 points: Very strong

1 point: Strong

2 points: Moderate

3 points: Weak

5 4 points: Very weak

5 points: Completely imperceptible

(Irritant odor)

0 points: Very strong

1 point: Strong

10 2 points: Moderate

3 points: Weak

4 points: Very weak

5 points: Completely imperceptible

[0092]

15 The results are shown in table 9. Even under heating conditions of 180°C for either one hour or 32 hours, the oil and fat composition made it possible to suppress overall scent and irritant odor to a greater extent than in the controls.

[0093]

[Table 9]

Edible oil and fat	Heating conditions	Added substance	Score (overall scent)	Score (irritant odor)	Number of evaluators
Canola oil	After heating at 180°C for one hour	—	2.2	2.5	31
		Oil and fat composition (base oil: corn oil; oil raw material: wet corn germs)	2.7*	3.5*	
	After heating at 180°C for 32 hours	—	1.8	2.7	26
		Oil and fat composition (base oil: corn oil; oil raw material: wet corn germs)	2.7*	3.3*	

*Significant difference at 5% significance level in Wilcoxon test.

[0094]

<10. Examination of added amount of oil and fat composition>

An oil and fat composition was obtained by using 55 parts
5 by mass of canola oil as the base oil and fat and 45 parts by
mass of wet corn germs as the oil raw material, heating the
resultant mixture at 180°C for 60 minutes, and then filtering
the mixture. The oil and fat composition was added to canola
oil in the amount listed in table 10 to obtain an edible oil
10 and fat for cooking.

[0095]

A batter liquid was fried using the edible oil and fat
for cooking in the same manner as in section <1. Examination
of base oil and fat and oil raw material>, and the oiliness of
15 the resultant *agedama* was evaluated.

[0096]

The results are shown in table 10. It was found that an
effect for reducing oiliness was achieved by adding 0.005
parts by mass of the oil and fat composition to 100 parts by
20 mass of the edible oil and fat. The added amount of the oil
and fat composition must essentially be greater than 0.001
parts by mass, preferably is no less than 0.01 parts by mass,
more preferably is no less than 0.3 parts by mass, and even
more preferably is no less than 1 part by mass relative to 100
25 parts by mass of the edible oil and fat.

[0097]

[Table 10]

Base oil and fat: Canola oil

Oil raw material: wet corn germs

Added amount of oil and fat composition (parts by mass)	No additive	0.001	0.005	0.01	0.05	0.1	0.3	1	2	5	10
Score (oiliness)	0	1	2	3	3	3	4	5	5	5	5

[0098]

<11. Examination of added amount of oil and fat composition>

400 g of wet corn germs (oil raw material) was immersed
5 in 500 g of corn oil (base oil and fat) for one week.
Thereafter, a liquid was obtained by performing filtration.
0.5 parts by mass of the filtered liquid was added to 100
parts by mass of canola oil.

[0099]

10 A batter liquid was fried using the filtered-liquid-
containing canola oil in the same manner as in section <1.
Examination of base oil and fat and oil raw material>, and the
oiliness of the resultant *agedama* was evaluated.

[0100]

15 The score obtained as a result was 0, equivalent to the
evaluation of *agedama* fried using canola oil itself.
Specifically, it was understood that an effect for reducing
the oiliness imparted to food products due to cooking with
heat, such as by deep-frying, cannot be obtained by using
20 unheated oil raw materials.

[0101]

<12. Evaluation of agent for reducing oiliness
(dressing)>

An oil and fat composition was obtained by using 55 parts
25 by mass of canola oil as the base oil and fat and 45 parts by
mass of wet corn germ as the oil raw material, heating the

resultant mixture at 180°C for 60 minutes, and then filtering the mixture. Next, a dressing 1 formed from the oil and fat composition, and a dressing 2 formed from 88.9 parts by mass of the oil and fat composition and 11.1 parts by mass of vinegar, were prepared. Dressings in which the oil and fat composition was replaced by canola oil were used as control dressings.

[0102]

"*Aji furai*" (manufactured by Yachiyo Corp.) was fried at 175°C for four minutes, subsequently strained on a mesh, and, after about ten minutes, was divided into eight equal pieces, over which the dressings were poured in individual amounts of 1 mL.

[0103]

The "*aji furai*" was sampled by four expert panelists, and abnormal flavor, masking, and oiliness of the "*aji furai*" were evaluated using the evaluation criteria below, the evaluations being determined once an agreement was reached.

[0104]

(Abnormal flavor)

◎: Completely imperceptible

○: Slightly perceptible

△: Moderately perceptible

×: Strongly perceptible

(Masking)

◎: Odor of food strongly masked

○: Odor of food somewhat masked

△: Odor of food slightly masked

×: No masking effect

(Oiliness)

5 ◎: Completely imperceptible

○: Slightly perceptible

△: Moderately perceptible

×: Strongly perceptible

[0105]

10 The results are shown in tables 11 and 12. Dressings 1 and 2 including the oil and fat composition made it possible to reduce the oiliness of the "*aji furai*," and furthermore to minimize abnormal flavor and mask the odor of the food product.

15 [0106]

[Table 11]

	Control (canola oil alone)	Dressing 1 (oil and fat composition alone)
Abnormal flavor	×	◎
Masking	×	◎
Oiliness	×	◎

[0107]

[Table 12]

	Control (canola oil with vinegar)	Dressing 2 (oil and fat composition with vinegar)
Abnormal flavor	○	◎
Masking	○	◎
Oiliness	○	◎

CLAIMS

1. A method for manufacturing an oil and fat composition,
the method being characterized by including: an addition step
for adding one or more selected from an oil raw material and a
5 processed article of the oil raw material to an oil and fat;
and a heating step for heating the resultant mixture at a
heating temperature greater than 100°C but no greater than
220°C and for a heating time of 5 minutes or more to 240
minutes or less, the heating furthermore being performed under
10 conditions that satisfy expression (1).

Expression (1): $85 - 6000 \div (270 - T) < t < 240$

(In expression (1), T is the heating temperature (°C),
and t is the heating time (minutes); $85 - 6000 \div (270 - T)$ is
assigned a value of "5" when the value thereof is negative.)

15 2. The method for manufacturing an oil and fat
composition according to claim 1, wherein: the oil raw
material includes one or more selected from the group
consisting of corn germs, soybeans, rapeseed, cottonseed, rice
bran, sesame, olives, sunflower, perilla, and linseed; and the
20 processed article of the oil raw material includes one or more
selected from pulverized articles, meal, and roasted articles.

3. The method for manufacturing an oil and fat
composition according to claim 1 or 2, wherein a removal step
for removing solid content is included after the heating step.

25 4. The method for manufacturing an oil and fat
composition according to claim 3, wherein a deodorization step

for deodorizing the composition is included after the removal step.

5. The method for manufacturing an oil and fat composition according to any of claims 1 to 4, wherein one or more selected from the oil raw material and the processed article of the oil raw material is added so that the mass of the oil raw material and the processed article of the oil raw material is 0.05 times or more to 1 times or less in relative to the mass of the oil and fat.

6. An agent for reducing oiliness, characterized by having, as an active component, an oil and fat composition obtained through the manufacturing method according to any of claims 1 to 5.

7. An agent for suppressing heating odor, characterized by having, as an active component, an oil and fat composition obtained through the manufacturing method according to any of claims 1 to 5.

8. A method for manufacturing an edible oil and fat for cooking, the method being characterized in that 0.01 parts or more to 10 parts or less of an oil and fat composition obtained through the manufacturing method according to any of claims 1 to 5 is added to 100 parts by mass of an edible oil and fat.

9. A method for reducing oiliness, the method being characterized in that a food product is cooked using the

edible oil and fat for cooking obtained through the manufacturing method according to claim 8.

10. The method for reducing oiliness according to claim 9, wherein the cooking is deep-frying.

5 11. A method for suppressing heating odor, the method being characterized in that a food product is cooked using the edible oil and fat for cooking obtained through the manufacturing method according to claim 8.

10 12. The method for suppressing heating odor according to claim 11, wherein the cooking is deep-frying.

13. A method for manufacturing a food product, the method being characterized in that a food product is manufactured using the edible oil and fat for cooking obtained through the manufacturing method according to claim 8.

15