

Description

FINE FOOD-PARTICLE-CONTAINING OIL/FAT COMPOSITION AND
METHOD FOR PRODUCING SAME

Technical Field

[0001]

The present invention relates to a fine food particle-containing oil/fat composition containing a vegetable or the like, and a method for producing the same.

Background Art

[0002]

Vegetables, fruits, algae and the like contain various active components and, accordingly, it has conventionally been desired so far that compositions containing them were used in various applications. However, such compositions are unstable, and their utility is impaired as the compositions are altered, thus they are hindered from use in various applications. To date, there has been no composition which allows various vegetables, fruits, algae, or the like to stably exist in the composition and which has extensive utility where the composition can be used in various applications.

[0003]

There is a method where vegetables, fruits, algae, or the like are used as powder compositions, but the

method is disadvantageous due to their low stability. There are reports of compositions containing vegetables, fruits, algae, or the like, such as a condiment which contains pulverized green and yellow vegetables and is obtained by pulverizing green and yellow vegetables in the presence of an oil (Patent Literature 1), and a spread which is obtained by pulverizing a non-nut plant material to form a powder having an average particle size of less than about 100 μm and then exposing the powder having an average particle size of less than about 100 μm to an increased temperature (Patent Literature 2). There are reports of sweet-bread and sandwich fillings containing fairly small amounts of dried vegetables and fruits (Patent Literature 3 and Patent Literature 4).

Citation List

Patent Literature

[0004]

Patent Literature 1: JP-A-2006-141291

Patent Literature 2: JP-A-2009-543562

Patent Literature 3: JP-A-hei 2-186942

Patent Literature 4: JP-A-hei 7-327605

Summary of Invention

Technical Problem

[0005]

However, the means of Patent Literature 1 does not solve the stability issue because the obtained food

contains a large amount of vegetable-derived water, and the composition becomes unstable due to the large amount of water. In addition, Patent Literature 1 relates to an invention concerning beans which, in general, barely contain water, and it is difficult to apply the teaching of Patent Literature 1 to vegetables which generally contain a large amount of water. The method of Patent Literature 2 is not preferable because the powder after particle size reduction is further exposed to an increased temperature to create the desired nut flavor, thereby impairing the stability of the composition by excessive heating. Accordingly, none of these means can achieve a composition which allows various vegetables, fruits, algae, or the like to stably exist in the composition and which has extensive utility where the composition can be used in various applications. In Patent Literature 3 and Patent Literature 4, although vegetables and fruits are contained in an amount of 5 to 14%, they are used merely as supplements for imparting a flavor, and the powdered foods are mostly composed of sugars and food materials such as tuna and are not stabilized in the composition.

Accordingly, the present invention aims to provide a composition which allows various vegetables, fruits, algae, or the like to stably exist in the composition and which has extensive utility where the composition can be used in various applications.

Solution to Problem

[0006]

Having conducted extensive research concerning a means of providing a composition which allows various vegetables, fruits, algae, or the like to stably exist in the composition and which has extensive utility where the composition can be used in various applications, the present inventors found that a composition having industrially preferable properties, in which various vegetables, fruits, algae, or the like are stably retained in an oil/fat and which can be used in various applications, can be formed not by mixing vegetables, fruits, algae, or the like with an oil/fat as they are, but by regulating properties such as the moisture content and the modal diameter of a composition containing fine particles of various vegetables, fruits, algae, or the like and an oil/fat in a specific quantity ratio, and accomplished the present invention.

[0007]

That is, the present invention relates to [1] to [54] below.

[0008]

[1] A fine food particle-containing oil/fat composition comprising:

fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga;
and

an oil/fat,

and having:

(1) a fine food particle content of 2% by mass or more and 98% by mass or less,

(2) a total oil/fat proportion of 10% by mass or more and 98% by mass or less,

(3) a modal diameter in an ultrasonicated state of 0.3 μm or more and 200 μm or less, and

(4) a water content of less than 20% by mass.

[2] The fine food particle-containing oil/fat composition according to [1], having a maximum particle size of 30 μm or more before ultrasonication.

[3] The fine food particle-containing oil/fat composition according to [1] or [2], having a consistency of 0.1 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[4] The fine food particle-containing oil/fat composition according to any one of [1] to [3], having a fine food particle content of 15% by mass or more.

[5] The fine food particle-containing oil/fat composition according to any one of [1] to [4], wherein an oil/fat portion of the composition has a Bostwick consistency of 10 cm or more as measured at 20°C for 10 seconds by using a Bostwick consistometer.

[6] The fine food particle-containing oil/fat composition according to any one of [1] to [5], wherein two or more fats and oils including a liquid oil/fat are used, and 90% by mass or more of an entirety of the fats and oils is a liquid edible oil/fat.

[7] The fine food particle-containing oil/fat composition according to any one of [1] to [6], wherein a total mass of the vegetables, the fruits, and the algae accounts for 30% by mass or more of a total mass of insoluble components in the composition.

[8] The fine food particle-containing oil/fat composition according to any one of [1] to [7], wherein the fine food particles are fine particles of a food having an oil/fat content of 50% by mass or less.

[9] The fine food particle-containing oil/fat composition according to any one of [1] to [8], having a total luminous transmittance of 99% or less when diluted to a fine food particle content of 0.06% by mass.

[10] The fine food particle-containing oil/fat composition according to any one of [1] to [9], having a haze value of 11% to 70% when diluted to a fine food particle content of 0.06% by mass.

[11] The fine food particle-containing oil/fat composition according to any one of [1] to [10], having a diffuse transmittance of 11% or more when diluted to a fine food particle content of 0.06% by mass.

[12] The fine food particle-containing oil/fat composition according to any one of [1] to [11], having a water activity of 0.97 or less.

[13] The fine food particle-containing oil/fat composition according to any one of [1] to [12], having a water absorption index of 0.5 or more and 10 or less.

[14] The fine food particle-containing oil/fat composition according to any one of [1] to [13], having a 50% cumulative diameter (median diameter) in an ultrasonicated state of 0.3 μm or more and 150 μm or less.

[15] The fine food particle-containing oil/fat composition according to any one of [1] to [14], having a consistency of 1.0 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[16] The fine food particle-containing oil/fat composition according to any one of [1] to [15], wherein the fine food particles are obtained by subjecting a dried food to a medium stirring mill processing.

[17] The fine food particle-containing oil/fat composition according to any one of [1] to [16], wherein the food has a water activity of 0.10 or more and 0.95 or less.

[18] The fine food particle-containing oil/fat composition according to any one of [1] to [17], not comprising an emulsifier as a food additive preparation.

[19] A food/drink comprising the fine food particle-containing oil/fat composition according to any one of [1] to [18].

[20] A liquid condiment comprising the fine food particle-containing oil/fat composition according to any one of [1] to [18].

[21] A method for producing the fine food particle-containing oil/fat composition according to any one of [1] to [18], the method comprising blending an oil/fat with dried fine food particles of at least one selected from the group consisting of a dried vegetable, a dried fruit and a dried alga.

[22] A method for producing the fine food particle-containing oil/fat composition according to any one of [1] to [21], the method comprising subjecting a dried food of at least one selected from the group consisting of a dried vegetable, a dried fruit and a dried alga to a pulverization processing in the presence of an oil/fat.

[23] The method according to [22], wherein the pulverization processing is a medium stirring mill pulverization processing.

[24] A fine food particle-containing oil/fat composition, wherein at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga is subjected to a particle size reduction processing in the presence of an oil/fat, and the fine food particle-containing oil/fat composition has:

- (1) a fine food particle content of 2% by mass or more and 98% by mass or less,
- (2) a total oil/fat proportion of 10% by mass or more and 98% by mass or less,
- (3) a modal diameter in an ultrasonicated state of 0.3 μm or more and 200 μm or less, and

(4) a water content of less than 20% by mass.

[25] The fine food particle-containing oil/fat composition according to [24], having a maximum particle size of 30 μm or more before ultrasonication.

[26] The fine food particle-containing oil/fat composition according to [24] or [25], having a consistency of 0.1 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[27] The fine food particle-containing oil/fat composition according to any one of [24] to [26], having a fine food particle content of 15% by mass or more.

[28] The fine food particle-containing oil/fat composition according to any one of [24] to [27], wherein an oil/fat portion of the composition has a Bostwick consistency of 10 cm or more as measured at 20°C for 10 seconds by using a Bostwick consistometer.

[29] The fine food particle-containing oil/fat composition according to any one of [24] to [28], wherein two or more fats and oils including a liquid oil/fat are used, and 90% by mass or more of an entirety of the fats and oils is a liquid edible oil/fat.

[30] The fine food particle-containing oil/fat composition according to any one of [24] to [29], wherein a total weight of the vegetables, the fruits, and the algae accounts for 30% by mass or more of a total weight of insoluble components in the composition.

[31] The fine food particle-containing oil/fat composition according to any one of [24] to [30], wherein the fine food particles are fine particles of a food having an oil/fat content of 50% by mass or less.

[32] The fine food particle-containing oil/fat composition according to any one of [24] to [31], having a total luminous transmittance of 99% or less when diluted to a fine food particle content of 0.06% by mass.

[33] The fine food particle-containing oil/fat composition according to any one of [24] to [32], having a haze value of 11% to 70% when diluted to a fine food particle content of 0.06% by mass.

[34] The fine food particle-containing oil/fat composition according to any one of [24] to [33], having a diffuse transmittance of 11% or more when diluted to a fine food particle content of 0.06% by mass.

[35] The fine food particle-containing oil/fat composition according to any one of [24] to [34], having a water activity of 0.97 or less.

[36] The fine food particle-containing oil/fat composition according to any one of [24] to [35], having a water absorption index of 0.5 or more and 10 or less.

[37] The fine food particle-containing oil/fat composition according to any one of [24] to [36], having a 50% cumulative diameter (median diameter) in an ultrasonicated state of 0.3 μm or more and 150 μm or less.

[38] The fine food particle-containing oil/fat composition according to any one of [24] to [37], having a consistency of 1.0 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[39] A food/drink comprising the fine food particle-containing oil/fat composition according to any one of [24] to [38].

[40] A liquid condiment comprising the fine food particle-containing oil/fat composition according to any one of [24] to [38].

[41] A method for producing a fine food particle-containing oil/fat composition, the method comprising subjecting a food-containing oil/fat composition having a total content of at least one food selected from the group consisting of a vegetable, a fruit and an alga of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and water activity of the food-containing oil/fat composition after the processing is at least 0.01 lower than the water activity before the processing.

[42] A method for lowering water activity of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a

dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[43] A fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and water activity of the food-containing oil/fat composition after the processing is at least 0.01 lower than the water activity before the processing.

[44] A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, the method comprising subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an

ultrasonicated state is 0.3 μm or more and 200 μm or less, and a water absorption index of the food-containing oil/fat composition after the processing is at least 0.1 higher than the water absorption index before the processing.

[45] A method for increasing a water absorption index of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[46] A fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a water absorption index of the food-containing oil/fat composition after the processing is at least 0.1 higher than the water absorption index before the processing.

[47] A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, the method comprising subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a haze value of the food-containing oil/fat composition after the processing is at least 1 higher than the haze value before the processing.

[48] A method for increasing a haze value of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[49] A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by

mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a haze value of a food-containing oil/fat after the processing is at least 1 higher than the haze value before the processing.

[50] A method for enhancing taste extension of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[51] A method for enhancing a swallowing sensation of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[52] A method for enhancing stability of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried

food-containing oil/fat composition to a particle size reduction processing.

[53] A method for improving smoothness of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[54] A method for improving an initial taste of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

Advantageous Effects of Invention

[0009]

The present invention provides a composition which allows various vegetables, fruits, algae, or the like to stably exist in the composition and which has extensive utility where the composition can be used in various applications.

Description of Embodiments

[0010]

Below, two aspects are mainly described as examples of the embodiments of the present invention, but the present invention is not limited to those aspects and can be reduced to practice by adding any modifications without departing from the gist of the present invention.

[0011]

[First Aspect]

The fine food particle-containing oil/fat composition of the present invention is a composition comprising:

fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga; and

an oil/fat,

and having:

(1) a fine food particle content of 2% by mass or more and 98% by mass or less,

(2) a total oil/fat proportion of 10% by mass or more and 98% by mass or less,

(3) a modal diameter in an ultrasonicated state of 0.3 μm or more and 200 μm or less, and

(4) a water content of less than 20% by mass.

[0012]

Recently, with increasing health consciousness, it has been strongly desired to efficiently consume foods such as vegetables and fruits containing vitamins, dietary fiber, minerals, and other nutrients because malnutrition leads to lifestyle-related diseases, but due

to reasons such as a high water content, it has been physically and psychologically difficult to consume large amounts of vegetables, fruits and the like. Meanwhile, methods for supplementing such nutrients by dietary supplements or the like are also proposed, but such methods are nothing but supplementary, and methods of consuming such nutrients by way of daily diet have been sought after. According to the invention of the first aspect, various vegetables, fruits, and algae can be easily and efficiently consumed in a daily diet.

That is, the invention of the first aspect can provide a fine food particle-containing oil/fat composition having excellent edibility, which tastes well and has industrially superior qualities such as good storability and dispersibility as well as extensive utility when used in a food/drink.

[0013]

The food (food material) which is the ingredient of fine food particles used in the first aspect is at least one selected from the group consisting of a vegetable (including potato and mushroom), a fruit and an alga, including processed products thereof (including those subjected to pre-processing such as cooking, removal of harshness, peeling, removal of seeds, ripening, salting, and pericarp processing).

[0014]

Any vegetables can be used as long as they are consumed as food and, in particular, radish, carrot,

burdock, rutabaga, beet, beetroot, parsnip, turnip, black salsify, sweet potato, cassava, yacon, taro, aroid, konjac yam, tashiroimo (Polynesian arrowroot), lotus root, potato, purple sweet potato, Jerusalem artichoke, kuwai, shallot, garlic, rakkyou, lily bulb, adder's-tongue, kale, yam, yamanoimo, nagaimo, onion, asparagus, udo, cabbage, lettuce, spinach, Chinese cabbage, rape, komatsuna, bok choy, leek, spring onion, nozawana, butterbur, fudansou (swiss chard), potherb mustard, tomato, eggplant, pumpkin, bell pepper, cucumber, Japanese ginger, cauliflower, broccoli, edible chrysanthemum, bitter melon, okra, artichoke, zucchini, sugar beet, ginger, perilla, wasabi, paprika, herbs (watercress, coriander, water spinach, celery, tarragon, chives, chervil, sage, thyme, laurel, parsley, mustard green (leaf mustard), Japanese ginger, mugwort, basil, oregano, rosemary, peppermint, savory, lemongrass, dill, wasabi leaf, leaf of Japanese pepper, and stevia), bracken, Asian royal fern, kudzu, tea plant (tea), bamboo shoot, shiitake, matsutake, Jew's ear, hen of the woods, polypore, oyster mushroom, king trumpet mushroom, enokitake, shimeji, honey mushroom, common mushroom, butterscotch mushroom, Jersey cow mushroom, hatsutake, chichitake and the like can be preferably used. Moreover, carrot, pumpkin, tomato, paprika, cabbage, beet, beet root, onion, broccoli, asparagus, purple sweet potato, and sweet potato are particularly preferable, and

carrot, pumpkin, tomato, paprika, and broccoli are most preferable.

[0015]

That is, the present invention includes the following embodiments:

[1] An embodiment wherein a pumpkin is used as one of the vegetables.

[2] An embodiment wherein a tomato is used as one of the vegetables.

[3] An embodiment wherein a paprika is used as one of the vegetables.

[4] An embodiment wherein a cabbage is used as one of the vegetables.

[5] An embodiment wherein a beetroot is used as one of the vegetables.

[6] An embodiment wherein an onion is used as one of the vegetables.

[7] An embodiment wherein a broccoli is used as one of the vegetables.

[8] An embodiment wherein an asparagus is used as one of the vegetables.

[9] An embodiment wherein a purple sweet potato is used as one of the vegetables.

[10] An embodiment wherein a sweet potato is used as one of the vegetables.

[0016]

Any fruits may be employed as long as they are consumable and, in particular, Chinese quince, Chinese

white pear, pear, quince, medlar, juneberry, shipova, apple, American cherry (black cherry, dark cherry), apricot, plum, cherry (sweet cherry), sour cherry, blackthorn, Japanese plum, peach, gingko, chestnut, chocolate vine, fig, persimmon, black currant, raspberry, kiwifruit (kiwi), oleaster, mulberry, cranberry, cowberry, pomegranate, hardy kiwi, sea buckthorn (saji, hippophae, seaberry), gooseberry, jujube, Japanese bush cherry, honeysuckle, bilberry, red currant, grape, blackberry, blueberry, pawpaw, matsubusa, raspberry, Nanking cherry, mandarin orange, kumquat, trifoliate orange, olive, loquat, wax myrtle, monk fruit, tropical fruits (such as mango, mangosteen, papaya, cherimoya, atemoya, banana, durian, star fruit, guava, pineapple, acerola, passion fruit, dragon fruit, litchi, and canistel), strawberry, watermelon, melon, avocado, miracle fruit, orange, lemon, prune, yuzu citron, sudachi citron, grapefruit, bitter orange, shiikwaasa and the like can be preferably used. Moreover, avocado, yuzu citron, grape, peach, banana, orange, mandarin orange, and fig are particularly preferable, and avocado and yuzu citron are most preferable.

[0017]

Any algae may be employed as long as they are consumable, such as large algae, e.g., kelp, wakame, nori, green laver, and gelidiaceae, and microalgae such as green algae, red algae, blue-green algae, dinoflagellate, and euglena. In particular, sea lettuce,

green laver, anaaosa, sea grape (kubirezuta),
katashiogusa, kubirezuta, kuromiru, tamamiru, Japanese
sea lily, hitoegusa, hiraaonori, fusaiwazuta, gutweed,
akamoku, amijigusa, sea oak, antokume, ishige,
ichimegasu, iroro, iwahige, umi toranoo, umi uchiwa,
oobamoku, Okinawa mozuku, kaigaraamanori, kagomenori,
kajime, kajime (sea oak), kayamonori, gibasa (akamoku,
ginbasou, jinbasou, jibasa), sanadagusa, shiwanokawa,
shiyayahazu, European hanover, tsuruarame, nanori
(kayamonori), nebarimo, nokogirimoku, habanori, hijiki,
hirome, fukuronori, futomozuku, hondawara, kelp
(onikonbu, makonbu), hornwort, mugiwaranori (kayamonori),
muchimo, mozuku, yuna, wakame, asakusanori, ibotsunomata,
ushikenori, usukawakaninote, ezotsunomata
(kurohaginansou), oobusa, ogonori, okitsunori, obakusa,
katanori, kabanori, kamogashiranori, kijinoo,
kurohaginansou (ezotsunomata), sakuranori, shiramo,
tanbanori, tsunomata, tsurushiramo, tsurutsuru,
tosakanori, tosakamatsu, nogenori (fukurofunori), nori
(susabinori), hanafunori, harigane, hiragaragara,
hirakusa, hiramukade, pirihiba, fukurofunori,
fushitsunagi, makusa, marubaamanori, mitsutesozo,
euglena, chlorella, mirin, mukadenori, yuikiri, yukari,
agar and the like can be suitably used. Moreover, kelp
(onikonbu, makonbu) and nori are particularly suitable,
and makonbu is most suitable.

[0018]

Algae contain large amounts of polysaccharides and the like and so they are hard to reduce in size, and therefore vegetables and fruits are more preferable. Since food materials having a water content of 50% or more in an undried state have poor stability (light resistance in particular) when formed into oil/fat compositions, the technique of the present invention, which is capable of producing a highly stable oil/fat composition, is useful. That is, as long as a specific amount of the foods of the present invention (vegetables, fruits, and algae) is contained as an insoluble component in fine food particles, other insoluble components including beans, grains, and seeds may be contained in the composition of the present invention. Since the effects of the present invention are exerted in embodiments where the mass of the foods of the present invention (vegetables, fruits, and algae) accounts for 30% by mass or more of the total mass of insoluble components in the composition, an embodiment where the mass of the food of the present invention accounts for 30% by mass or more is preferable, an embodiment where the mass of the food of the present invention accounts for 50% by mass or more is more preferable because the effect is more likely exerted, an embodiment where the mass of the food of the present invention accounts for 70% by mass or more is more preferable, an embodiment where the mass of the food of the present invention accounts for 90% by mass or more is more preferable, and

an embodiment where the mass of the food of the present invention accounts for 100% by mass is most preferable. For example, in the case of a composition containing 20 parts by mass of fine food particles derived from a dried product of a carrot which is a vegetable as an insoluble component, 30 parts by mass of sugar which is another food material, and 50 parts by mass of an oil/fat, sugar does not dissolve in the oil/fat in the composition, so the proportion of the food of the present invention (dried carrot: 20% by mass) in insoluble components (dried carrot + sugar: 50% by mass) is 40% by mass.

The present invention includes an embodiment where beans (such as mung beans) are not contained in the composition of the present invention, an embodiment where grains (such as rice) are not contained in the composition of the present invention, an embodiment where neither beans nor grains are contained in the composition of the present invention, and an embodiment where none of the beans, grains, and seeds are contained in the composition of the present invention.

One of those food materials may be used singly, or two or more can be used in combination.

[0019]

An oil/fat composition in which a dried food is used as the food material has a remarkably increased property of exerting an oil/fat consistency when water is added, and thus a dried food is preferably used. As for the quality of the dried food, the water activity of the food

(food material) is preferably 0.95 or less because the oil/fat consistency is likely exerted when water is added and the applicability to various foods and drinks is increased, and more preferably 0.9 or less, more preferably 0.8 or less, and even more preferably 0.65 or less. Moreover, for facilitating storage and management, the water activity of the food is preferably 0.10 or more, more preferably 0.20 or more, even more preferably 0.30 or more, and most preferably 0.40 or more.

[0020]

In the composition of the first aspect, the water content needs to be regulated to a specific range, and a drying processing may be performed to regulate the water content. The drying processing may be performed at any time, and a method involving a food material which has been subjected to a drying processing in advance is preferable. The method for drying the food material may be any method commonly used for drying a food, and examples of drying methods include drying in the sun, drying in the shade, freeze drying, air drying (such as hot-air drying, fluidized-bed drying, spray drying, drum drying, and low-temperature drying), pressure drying, reduced-pressure drying, microwave drying, and oil heat drying. It is more preferable to use a method involving air drying or freeze drying because it hardly changes color or flavor which the food material originally has, and it hardly produces a smell (such as a burning smell) other than that of the food.

It is more preferable to perform a particle size reduction processing in an oil/fat by using a food material which has been subjected to a drying processing in advance because a variety of preferable properties are exerted, such as lowered water activity, enhanced taste extension, enhanced smoothness, and an increased water absorption index.

[0021]

Oil/fat compositions, in which a food material having a low lipid content is used, likely have a poor separation stability when left to stand, and therefore the technique of the present invention, which is capable of producing a highly stable oil/fat composition, is more useful and is thus preferable. Specifically, the fine food particles used in the present invention are preferably a food material having an oil/fat content of 50% by mass or less, more preferably a food material having an oil/fat content of 40% by mass or less, even more preferably a food material having an oil/fat content of 30% by mass or less, and most preferably a food material having an oil/fat content of 20% by mass or less.

[0022]

The modal diameter of the composition of the first aspect in an ultrasonicated state is 0.3 μm or more and 200 μm or less. The modal diameter is preferably regulated to 200 μm or less because the aftertaste can be felt for a long time (hereinafter referred to as "taste

extension") during eating, more preferably regulated to 150 μm or less, more preferably regulated to 100 μm or less, even more preferably regulated to 80 μm or less, even more preferably regulated to 45 μm or less, even more preferably regulated to 30 μm or less, even more preferably regulated to 20 μm or less, and most preferably regulated to 11 μm or less. The modal diameter is 0.3 μm or more for production efficiency, 2.8 μm or more for greater efficiency, and 4.6 μm or more for greater efficiency.

[0023]

Particle sizes in the present invention all represent those measured in terms of volume, and unless specified otherwise, the measured value of a particle size represents a result obtained by analyzing an ultrasonicated sample (there is a tendency that ultrasonication breaks clusters formed of a plurality of fine particles and that a measured value is about several times to several tens of times smaller, and therefore a value completely different from the measured value of the particle size before ultrasonication is obtained). The modal diameter represents the particle size of a channel having the largest particle frequency % concerning a particle size distribution for each channel obtained by measuring a composition using a laser diffraction particle size distribution analyzer. When there are a plurality of channels having exactly the same particle frequency %, the particle size of a channel having the

smallest particle size among those channels is employed. When the particle size distribution is a normal distribution, the value matches the median diameter, but when the particle size distribution is biased and, in particular, when there are multiple particle size distribution peaks, the numerical values vary greatly. The particle size distribution measurement of a sample by a laser diffraction particle size distribution analyzer can be performed by, for example, the following method. Note that when the sample is a thermoplastic solid, the sample can be heat-treated to liquefy the sample and then subjected to an analysis by a laser diffraction particle size distribution analyzer.

For example, the Microtrac MT3300 EX II system of MicrotracBEL Corp. can be used as a laser diffraction particle size distribution analyzer. As a solvent during measurement, 95% ethanol (such as Japan Alcohol Trading Co., Ltd., special type of alcohol, traceable 95, 95 degrees, first grade) can be used, and as measurement application software, Data Management System version 2 (DMS2, MicrotracBEL Corp.) can be used. In the measurement, washing is performed by pressing the washing button on the measurement application software, then the Set Zero button on the software is pressed to set zero, and a sample can be directly introduced until within an appropriate concentration range in sample loading. As for the maximum particle size before ultrasonication, the measurement result of laser diffraction at a flow rate of

60% for a measurement time of 10 seconds after entering an appropriate concentration range can be regarded as a measured value, and as for the modal diameter, 90% cumulative diameter (d90), median diameter (d50), and arithmetic standard deviation in an ultrasonicated state, the measurement results of laser diffraction at a flow rate of 60% for a measurement time of 10 seconds after the ultrasonication button on the aforementioned software is pressed to perform ultrasonication at a frequency of 40 kHz at an output of 40 W for 180 seconds and then performing degassing 3 times can be regarded as measured values.

As for the measurement conditions, measurement can be performed under conditions having distribution indicator: volume, particle refractive index: 1.60, solvent refractive index: 1.36, upper measurement limit (μm) = 2,000.00 μm , lower measurement limit (μm) = 0.021 μm .

When measuring the particle size distribution for each channel (CH) in the present invention, measurement can be made by using the particle size for each measurement channel provided in Table 1 as a standard. The particle size specified for each channel is also referred to as the "particle size of XX channel". The particle frequency % of each channel (also referred to as the "particle frequency % of XX channel") can be determined by measuring for each channel the frequency of particles having a particle size which is equal to or

smaller than the particle size specified for each channel and which is larger than the particle size specified for a channel having one larger number (in the largest channel in the measurement range, the particle size at the lower measurement limit) and using the total frequency of all channels within the measurement range as a denominator. For example, the particle frequency % of channel 1 represents the frequency % of particles having 2,000.00 μm or less and more than 1,826.00 μm .

[0024]

The particle size of the composition of the first aspect is preferably regulated such that the median diameter in an ultrasonicated state is 150 μm or less because a good swallowing sensation is provided during eating, more preferably regulated to 135 μm or less, more preferably regulated to 80 μm or less, more preferably regulated to 40 μm or less, even more preferably regulated to 30 μm or less, particularly preferably regulated to 25 μm or less, and most preferably regulated to 16 μm or less. The median diameter in an ultrasonicated state is 0.3 μm or more for production efficiency, 2.5 μm or more for greater efficiency, and 9.0 μm or more for greater efficiency. The swallowing sensation represents the tactile sensation when a food/drink passes through the throat.

[0025]

The median diameter (50% cumulative diameter) represents a numerical value at which the cumulative

values of particle frequency % on the larger side and the smaller side are equal when the particle size distribution obtained by measuring the composition using a laser diffraction particle size distribution analyzer is divided into halves at a certain particle size, and is also denoted as d50.

[0026]

The particle size of the oil/fat composition is preferably regulated such that the 90% cumulative diameter (d90) in an ultrasonicated state is 360 μm or less because the light resistance of the composition is remarkably enhanced and the visual agreeability is enhanced, more preferably regulated to 220 μm or less, more preferably regulated to 190 μm or less, more preferably regulated to 150 μm or less, even more preferably regulated to 90 μm or less, even more preferably regulated to 45 μm or less, particularly preferably regulated to 35 μm or less, and most preferably regulated to 28 μm or less. The 90% cumulative diameter in an ultrasonicated state is 0.4 μm or more for production efficiency, 5.9 μm or more for greater efficiency, and 11.1 μm or more for greatest efficiency. The 90% cumulative diameter represents a numerical value at which the ratio between the cumulative values of particle frequency % on the larger side and the smaller side is 1:9 when the particle size distribution obtained by measuring the composition using a laser diffraction particle size distribution analyzer is

divided into halves at a certain particle size, and is also denoted as d90.

[0027]

The composition of the first aspect is regulated to the aforementioned modal diameter in an ultrasonicated state and/or to the aforementioned median diameter in an ultrasonicated state and also is preferably regulated such that the arithmetic standard deviation thereof is 1 μm or more and 147 μm or less because the taste presentation of the composition is improved and the palatability is enhanced, more preferably regulated to 135 μm or less, more preferably regulated to 90 μm or less, more preferably regulated to 70 μm or less, even more preferably regulated to 60 μm or less, even more preferably regulated to 31 μm or less, particularly preferably regulated to 15 μm or less, and most preferably regulated to 9.5 μm or less. Moreover, the arithmetic standard deviation is more preferably 220% or less based on the modal diameter because the initial taste of the composition is enhanced, more preferably 200% or less, more preferably 150% or less, more preferably 110% or less, and most preferably 70% or less. The initial taste is a taste immediately felt when a food/drink is placed in the oral cavity, and represents a sensation which can be referred to as the taste instantly provided in the mouth.

The arithmetic standard deviation is 1 μm or more for production efficiency, 1.8 μm or more for greater efficiency, and 5.0 μm or more for greater efficiency.

[0028]

As for the fine food particle content in the composition of the first aspect, the fine food particle content in a paste is measured where foods and the like larger than 2,000 μm (2 mm), which are not the measurement targets of laser diffraction particle size distribution measurement or a particle shape image analyzer, are excluded. When the paste contains foods and the like larger than 2 mm, for example, the content refers to the weight of the foods (vegetables, fruits, and algae) of the present invention in a precipitated fraction obtained by causing the paste to pass through a 9 mesh (2 mm openings) to remove foods and the like larger than 2 mm in the paste and then sufficiently removing the separated supernatant resulting from centrifugation. Since some of the oil/fat and water are incorporated in the precipitated fraction, the total amount of fine food particles represents the total weight of those components and the foods incorporated in the precipitated fraction. The fine food particle content in the composition is 2% by mass or more and 98% by mass or less, and a content of less than 2% by mass is not preferable because the composition exerts a greasy taste. A fine food particle content exceeding 98% by mass is not preferable because a "mealy" texture, which makes it

difficult to consume the composition, is exerted. Concerning the composition of the first aspect, in order for a large amount of fine food particles not to exert neither a "mealy" texture nor a greasy taste in the mouth and to facilitate consumption, the fine food particle content is preferably 2% by mass or more, more preferably 8% by mass or more, even more preferably 15% by mass or more, and most preferably 30% by mass or more. From the view point of the "mealy" texture in particular, the fine food particle content is preferably 98% by mass or less, more preferably 95% by mass or less, more preferably 85% by mass or less, and most preferably 80% by mass or less. The "mealy" texture represents the texture of a grainy, unmoistened, dry food.

As for the fine food particle content in the present invention, the fine food particle content in the composition can be measured by, for example, causing a given amount of the composition to pass through a 9 mesh (a Tyler mesh), centrifuging the passed fraction at 15,000 rpm for 1 minute to sufficiently remove the separated supernatant, and measuring the weight of the foods (vegetables, fruits, and algae) of the present invention in the precipitated fraction. Concerning the residues on the mesh when particles were passed through a 9 mesh, after being sufficiently left to stand, fine food particles smaller than the 9-mesh openings were caused to sufficiently pass through with a spatula or the like so

as not to change the particle size of the composition, and then the passed fraction was obtained.

[0029]

Examples of the oil/fat used in the present invention include edible fats and oils, various fatty acids, and foods in which they are used as ingredients. Edible fats and oils are preferably used.

Examples of edible fats and oils include sesame oil, rapeseed oil, high-oleic rapeseed oil, soybean oil, palm oil, palm kernel oil, palm stearin, palm olein, fractionated palm oil (PMF), cottonseed oil, corn oil, sunflower oil, high-oleic sunflower oil, safflower oil, olive oil, linseed oil, rice oil, camellia oil, perilla oil, flavor oil, coconut oil, grape seed oil, peanut oil, almond oil, cacao butter, avocado oil, salad oil, canola oil, fish oil, beef tallow, pork fat, chicken fat, or medium chain fatty acid triglyceride (MCT), diglyceride, hardened oil, trans-esterified oil, milk fat, and Ghee. In particular, liquid edible fats and oils such as sesame oil, olive oil, rapeseed oil, soybean oil, milk fat, sunflower oil, rice oil and palm olein have the effect of increasing the smoothness of the food composition, enable the present invention to be more effectively used, and thus are more preferable.

[0030]

The liquid edible oil/fat in the present invention represents an oil/fat having "a liquid-like fluidity at normal temperature (denoting 20°C in the present

invention) (specifically, a Bostwick consistency at 20°C for 10 seconds in a Bostwick consistometer (a measured value of a distance that a sample flowed down in a trough at a predetermined temperature in a predetermined time) of 10 cm or more, more preferably 15 cm or more, and even more preferably 28 cm or more)". In the present invention, the oil/fat portion in the composition (e.g., oil/fat components which are liberated when centrifuged at 15,000 rpm for 1 minute. Note that when the sample is a thermoplastic solid, the sample can be liquefied by a heating processing and then centrifuged) preferably has liquid-like fluidity (specifically, a Bostwick consistency at 20°C for 10 seconds in a Bostwick consistometer of 10 cm or more, more preferably 15 cm or more, and even more preferably 28 cm or more). Moreover, when two or more fats and oils including a liquid oil/fat are used, 90% by mass or more of the entirety of the fats and oils is preferably a liquid edible oil/fat, more preferably 92% by mass or more is a liquid oil/fat, more preferably 95% by mass or more is a liquid oil/fat, and most preferably 100% by mass is a liquid oil/fat. The edible oil/fat may be the oil/fat contained in the food material of the composition, but an oil/fat which has been subjected to an extractive purification is preferably added separately from the food material because such an oil/fat has better miscibility with the food material. An oil/fat which has been subjected to an extractive purification is preferably added in an amount

of 10% by mass or more of the entirety of the fats and oils, and an oil/fat which has been subjected to an extractive purification is preferably added more preferably in an amount of 30% by mass or more of the entirety of the fats and oils.

[0031]

The edible oil/fat is preferably an edible oil/fat in which the proportion of unsaturated fatty acids (the total proportion of monounsaturated fatty acids and polyunsaturated fatty acids) is greater than the proportion of saturated fatty acids in its composition because a particle size reduction processing can be efficiently performed, and an edible oil/fat in which the proportion of unsaturated fatty acids is greater than twice the proportion of saturated fatty acids is more preferable.

Examples of foods made from edible fats and oils as ingredients include butter, margarine, shortening, fresh cream, and soy-milk cream (such as "Ko-cream" (R) manufactured by Fuji Oil Co., Ltd.). In particular, foods whose physical property is liquid can be conveniently used. Among these, two or more edible fats and oils and foods made from such edible fats and oils as ingredients may be used in combination in a given ratio.

[0032]

The "total oil/fat proportion" in the present invention represents the weight ratio of all oil/fat in the composition (i.e., all oil/fat including not only the

oil/fat blended when preparing the composition but also the oil/fat contained in the fine food particles and other optional components) to the entirety of the composition. The total oil/fat proportion of the composition can be measured by, for example, analyzing the composition by the measurement method of "lipid" prescribed in The Law Concerning Standardization, etc. of Agricultural and Forestry Products (JAS method). A suitable measurement method can be used according to the properties of a composition, and the total oil/fat proportion can be measured by, for example, using the method for measuring a "oil/fat content" prescribed in the "Japan Agricultural Standards for Dressings". As described above, the total oil/fat proportion is 10% by mass or more and 98% by mass or less. When the proportion is less than 10% by mass, the amount of the oil/fat is excessively small, and fine food particles are not sufficiently dispersed in the oil/fat. Therefore, the total oil/fat proportion is preferably 10% by mass or more, more preferably 15% by mass or more, more preferably 20% by mass or more, and most preferably 30% by mass or more. When the total oil/fat proportion exceeds 98% by mass, a strongly greasy taste is exerted, which makes it difficult to consume the composition. Therefore, the total oil/fat proportion is preferably 98% by mass or less, more preferably 95% by mass or less, even more preferably 90% by mass or less, and most preferably 81% by mass or less.

[0033]

The composition of the first aspect may contain water, but since water is likely to cause the composition to be discolored during storage, the water content in the composition is desirably less than 20% by mass, more desirably less than 15% by mass, more desirably 10% by mass or less, and more desirably 6% by mass or less. The water content in the composition of the first aspect represents the weight ratio of the total water content of the composition (i.e., all water including not only the water blended when preparing the composition but also the water contained in the fine food particles and other optional components) to the entirety of the composition. The total water content of the composition can be measured by, for example, analyzing the composition by the measurement method of "water" prescribed in The Law Concerning Standardization, etc. of Agricultural and Forestry Products (JAS method). A suitable measurement method can be used according to the properties of a composition, and the total water content can be measured by, for example, using the method for measuring "water" prescribed in the "Semi-Solid Dressings and Emulsified Liquid Dressings".

[0034]

With a water activity exceeding 0.97, the composition of the first aspect is likely discolored during storage. Therefore, the water activity thereof is preferably regulated to 0.97 or less because the

composition becomes unlikely to be discolored during storage, more preferably regulated to 0.9 or less, even more preferably regulated to 0.8 or less, even more preferably regulated to 0.65 or less, even more preferably regulated to 0.60 or less, and most preferably regulated to 0.50 or less. The water activity of the composition of the first aspect is regulated to 0.20 or more for production efficiency, regulated to 0.25 or more for production efficiency, and regulated to 0.30 or more for greater production efficiency.

[0035]

Examples of methods for preparing the composition of the first aspect include a method involving blending or mixing an oil/fat with a food material which has been subjected to a particle size reduction processing, a method involving subjecting an oil/fat-containing food material to a specific pulverization processing or particle size reduction processing, and a method involving subjecting a food-containing oil/fat containing a specific food material in an oil/fat to a specific particle size reduction processing. In terms of simplicity of operation, a method involving subjecting an oil/fat-containing food material to a specific particle size reduction processing and a method involving subjecting a food-containing oil/fat containing a specific food material in an oil/fat to a specific particle size reduction processing are more preferable. A method involving subjecting a food-containing oil/fat

containing a specific food material in an oil/fat to a specific particle size reduction processing is even more preferable, and the food material is particularly preferably a dried food material.

[0036]

The means of a pulverization processing or particle size reduction used in the present invention is not particularly limited as long as it can reduce the food to a specific particle size, and may be any of the apparatuses referred to as a blender, a mixer, a mill, a kneader, a pulverizer, a disintegrator, an attritor and the like, may be any of dry pulverization and wet pulverization, and may be any of high temperature pulverization, normal-temperature pulverization, and low-temperature pulverization. For example, as a dry pulverizer, a medium stirring mill such as a dry bead mill or a ball mill (such as a tumbling type or a vibration type), a jet mill, a high-speed rotation impact mill (such as a pin mill), a roll mill, a hammer mill, or the like can be used. For example, as for wet pulverization, a medium stirring mill such as a bead mill or a ball mill (such as a tumbling type, vibration type, or planetary type mill), a roll mill, a colloid mill, a star burst, or a high-pressure homogenizer can be used. A means of particle size reduction by a medium stirring mill (a ball mill or a bead mill) or a high-pressure homogenizer can be more suitably used.

[0037]

When particle size reduction is performed by any of such means to such an extent that particles having a maximum particle size before ultrasonication of 30 μm or more (i.e., a particle size close to the maximum particle size observable with the eyes under a microscope) are not contained, the structure of a food material is destroyed, and an undesirable flavor is likely imparted, and when particle size reduction is performed to such an extent that particles having a maximum particle size after ultrasonication of 30 μm or more are not contained, the structure of a food material is destroyed, and an undesirable flavor is even more likely imparted. Therefore, a method involving particle size reduction performed such that fine food particles having a maximum particle size before ultrasonication of more than 30 μm are contained is preferable, and a method involving particle size reduction performed such that fine food particles having a maximum particle size after ultrasonication of more than 30 μm are contained is more preferable. In particular, in the case of using a means of performing particle size reduction in a medium, such as a medium stirring mill or a high-pressure homogenizer, the structure of a food material is destroyed when particle size reduction is performed to such an extent that particles having a maximum particle size before ultrasonication of 30 μm or more are not contained, and an undesirable flavor is even more likely imparted. Therefore, a method involving particle size reduction

performed such that fine food particles having a maximum particle size before ultrasonication of more than 30 μm are contained is preferable, and a method involving particle size reduction performed such that fine food particles having a maximum particle size after ultrasonication of more than 30 μm are contained is more preferable.

[0038]

The "ultrasonication" in the present invention represents treating a sample before measurement with ultrasonic waves at a frequency of 40 kHz at an output of 40 W for 180 seconds. The maximum particle size before ultrasonication (the maximum particle size in a non-ultrasonicated state) of the fine food particle-containing oil/fat composition is preferably 30 μm or more, more preferably 40 μm or more, more preferably 50 μm or more, and most preferably 80 μm or more.

Performing a medium stirring mill processing before a high-pressure homogenizer processing or performing a medium stirring mill processing after a high-pressure homogenizer processing enables the composition to be more suitably used. As a high-pressure homogenizer, any apparatus which is normally usable as a high-pressure homogenizer is usable, and, for example, a PANDA 2K homogenizer (manufactured by Niro Soavi) is usable. As for the processing conditions, for example, a particle size reduction processing can be performed by way of a

high-pressure homogenization processing performed at 100 MPa one or more times.

[0039]

In particular, a pulverizing method involving a wet bead mill is preferable because a highly stable food composition is obtained which more unlikely undergoes oil/fat separation when left to stand than other processing methods. Although the principle is not clear, this is considered to be because the particle state of fine food particles is favorably changed by the bead mill processing. As for the conditions during the wet bead mill processing, the size and the packing ratio of beads, the outlet mesh size, the feeding rate of an ingredient slurry, mill rotation strength, a method involving a single passage (one pass) or a method involving multiple circulations (circulation type), and the like are suitably selected and regulated according to the size and the properties of a food material and the properties of the intended fine food particle-containing oil/fat composition. In particular, although the principle is not clear, subjecting a powdered food material, the median diameter of which has been regulated to 1,000 μm or less and 100 μm or more in advance, to a particle size reduction processing further increases adhesion to a target object, and is more preferable.

[0040]

In producing the composition of the first aspect, although the principle is not clear, subjecting an

oil/fat where a dried food is contained in the oil/fat in advance to a medium stirring mill processing and, in particular, a wet bead mill processing results in a remarkably increased ease of consumption of a utilized food when the food is eaten together with the fine food particle-containing oil/fat composition and thus is useful. The consistency (measurement temperature 20°C) of the food-containing oil/fat where a food is contained in an oil/fat which is before a particle size reduction processing is preferably regulated to 20 Pa·s or less, and regulating it to 8 Pa·s or less further increases the efficiency of particle size reduction processing and is thus useful. The consistency (measurement temperature 20°C) of the fine food particle-containing oil/fat composition is preferably regulated to 100 mPa·s or more, and with the consistency being regulated to 500 mPa·s or more, the retentivity of the utilized food in the mouth is increased and is thus more preferable.

[0041]

The total luminous transmittance of the composition of the first aspect in a state of being diluted with water such that the fine food particle content thereof is 0.06% by mass is preferably regulated to 99% or less because the external color of the composition appears vividly, and most preferably regulated to 97.7% or less. The total luminous transmittance is preferably regulated to 90% or more because the external color of the composition appears vividly, and the total luminous

transmittance is most preferably regulated to 93.0% or more. The total luminous transmittance is a luminous transmittance which takes reflection and scattering in consideration, and can be measured by, for example, a conventional method using a turbidity analyzer WA6000T (manufactured by Nippon Denshoku Industries Co., Ltd.) which is based on integrating sphere photoelectric photometry. That is, for example, in the case of a fine food particle-containing oil/fat composition having a fine food particle content of 75% by mass, the weight of the composition corresponding to the fine food particle content of 0.06 g is 0.08 g ($0.08 \text{ g} \times 0.75 = 0.06 \text{ g}$), therefore the total luminous transmittance can be measured by adding water to 0.08 g of the composition so as to be 100 g in total, sufficiently stirring the mixture to produce a 0.06% by mass diluted solution, placing the solution in a quartz cell having an optical path length of 5 mm, and using water as a control.

[0042]

The diffuse transmittance of the composition of the first aspect in a state of being diluted with water such that the fine food particle content thereof is 0.06% by mass is preferably regulated to 11% or more because the external color of the composition appears more vividly, more preferably regulated to 19% or more, more preferably regulated to 26% or more, more preferably regulated to 30% or more, more preferably regulated to 35% or more, and most preferably regulated to 40% or more. The upper

limit of the diffuse transmittance is preferably 60% or less in order for the color of the composition to be a natural color. The diffuse transmittance is the transmittance of diffused light which includes light beams traveling through a sample but does not include components existing in parallel with the direction of the light beams, and can be measured by, for example, a conventional method using a turbidity analyzer WA6000T (manufactured by Nippon Denshoku Industries Co., Ltd.) which is based on integrating sphere photoelectric photometry. A measurement sample can be prepared by the same method as the total luminous transmittance.

[0043]

The haze value of the composition of the first aspect in a state of being diluted with water such that the fine food particle content thereof is 0.06% by mass is preferably regulated to 11% or more because the external color of the composition appears more vividly, more preferably regulated to 20% or more, more preferably regulated to 26% or more, more preferably regulated to 30% or more, more preferably regulated to 34% or more, and most preferably regulated to 41% or more. The upper limit of the haze value is preferably 70% or less in order for the color of the composition to be a natural color, and is more preferably 60% or less.

The composition which has been further subjected to a bead mill processing develops a more vivid color and is thus most preferable. Although the reason is not clear,

the composition which has undergone particle size reduction may have unmeasurable changes such as a conformational change.

The haze value can be determined according to the following formula by dividing the diffuse transmittance by the total luminous transmittance.

(Expression 1)

$$\text{Haze value (\%)} = \frac{\text{Diffuse transmittance}}{\text{Total luminous transmittance}} \times 100$$

[0044]

The acidity in terms of acetic acid of the composition of the first aspect is preferably regulated to 0.01% by mass or more because the taste of the composition can be felt for an extended period of time in the mouth, more preferably regulated to 0.1% by mass or more, and most preferably regulated to 0.2% by mass or more. Since the flavor of the oil/fat composition is impaired when the acidity in terms of acetic acid exceeds 10% by mass, the acidity in terms of acetic acid is preferably regulated to 10% by mass or less. The acidity in terms of acetic acid may be measured according to the method for measuring "acidity" prescribed in the Japanese Agricultural Standards for fermented vinegar except that the sample is collected on the weight basis, and can be regulated by using one or more acids such as acetic acid, citric acid, and hydrochloric acid, and by using one or more foods containing such acids.

[0045]

The water absorption index of the composition of the first aspect is preferably regulated to 0.5 or more because the consistency adjustment of the composition of the first aspect is facilitated, and more preferably regulated to 1.0 or more, more preferably regulated to 2.0 or more, more preferably regulated to 3.0 or more, more preferably regulated to 3.5 or more, and most preferably regulated to 4.0 or more. From the viewpoint of maintaining the favorable flavor of the oil/fat composition, the water absorption index is preferably regulated to 10.0 or less, more preferably regulated to 9.0 or less, and most preferably regulated to 8.0 or less. The water absorption index is an index for evaluating the water retentivity of the composition. Commonly used oil/fat compositions do not mix with water and thus show a water absorption index of 0 or a very small value. The water absorption index can be measured by, for example, the following method. A given weight of a sample is placed in a stirring vessel, pure water at about 25°C is added dropwise at a rate of about 20 mL/min while stirring the sample (about 120 rpm), and while observing the state of the stirred sample, water is added until water is no longer miscible (oil-water separation occurs, and oil droplets form on the liquid surface). The state where water and the oil/fat are no longer miscible is regarded as an end point, and the water absorption index can be determined by the following formula where the total amount of added water is the

amount of absorbed water. Measurement is performed at room temperature of about 25°C.

(Expression 2)

Water absorption index = Amount (mL) of absorbed water / Weight (g) of oil/fat composition

[0046]

The composition of the first aspect has physical properties of a substantially uniform dispersion without using a stabilizer or an emulsifier. Uniformity can be evaluated from the appearance after storing the fine food particle-containing oil/fat composition in a stationary state for about 12 hours. The composition having physical properties of a paste is preferable from the viewpoint of handleability. Moreover, the Bostwick consistency (measurement temperature 20°C) is more preferably 28.0 cm or less in one second, even more preferably 26.0 cm or less, even more preferably 20.0 cm or less, and most preferably 17.0 cm or less. From the viewpoint of taste, the Bostwick consistency (measurement temperature 20°C) is preferably 0.1 cm or more in one second, more preferably 1.0 cm or more, and most preferably 2.0 cm or more. The Bostwick consistency in the present invention can be measured by using a Bostwick consistometer (in the present invention, a Bostwick consistometer is used which has a trough length of 28.0 cm and a Bostwick consistency, i.e., a flow-down distance for a sample in the trough, of 28.0 cm at most). Specifically, the Bostwick consistency can be measured by

using a KO Bostwick consistometer (manufactured by Fukayatekkousyo). At the time of measurement, the apparatus is placed horizontally by using a level, the gate is closed, then the reservoir is filled with a sample having a temperature regulated to 20°C, the trigger is pressed down to open the gate, simultaneously the time is measured, the flow-down distance of the material in the trough after a lapse of 1 second is measured, and thereby the Bostwick consistency can be measured.

Commonly used fillings as cited in Patent Literature 3 and Patent Literature 4 lack fluidity, and thus the numerical value of the Bostwick consistency (measurement temperature 20°C, 1 second) is 0 cm. Moreover, since the applications of the fillings are stuffing bread and sandwiches, the fillings are intended to have a low fluidity and unlikely drip down.

[0047]

[Second Aspect]

The fine food particle-containing oil/fat composition of the second aspect is a fine food particle-containing oil/fat composition, where at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga is subjected to a particle size reduction processing in the presence of an oil/fat, and the fine food particle-containing oil/fat composition has:

(1) a fine food particle content of 2% by mass or more and 98% by mass or less,

(2) a total oil/fat proportion of 10% by mass or more and 98% by mass or less,

(3) a modal diameter in an ultrasonicated state of 0.3 μm or more and 200 μm or less, and

(4) a water content of less than 20% by mass.

[0048]

As a result of having conducted extensive research on a method for producing the fine food particle-containing oil/fat composition of the first aspect, the present inventors found that by subjecting the food-containing oil/fat to a particle size reduction processing until a size equal to or less than a specific size is attained in the oil/fat, various useful and remarkable effects which have not been known to those skilled in the art are exerted. That is, according to the invention of the second aspect, a fine food particle-containing oil/fat composition having industrially superior qualities such as good storability (enhanced light resistance and enhanced color when stored) and dispersibility (oil/fat separation when left to stand) can be provided.

[0049]

Details of the vegetables, the fruits, and the algae used in the second aspect (such as kinds, components, processings, compositions, features, and production methods) are the same as those described in the first

aspect. In particular, the use of at least one selected from the group consisting of a dried vegetable, a dried fruit and a dried alga as a food material causes the particle size reduction processing in the oil/fat to be smoothly performed, and the particle size reduction processing in the oil/fat performed by using a pre-dried food material causes various preferable properties to be exerted such as extended taste extension, lowered water activity, enhanced smoothness, and an increased water absorption index, which are thus more preferable. As for the dried food, the water activity of the food (food material) is preferably 0.97 or less from the viewpoint that the oil/fat consistency is likely exerted when water is added and that the applicability of the composition is expanded, more preferably 0.95 or less, more preferably 0.9 or less, more preferably 0.8 or less, and even more preferably 0.65 or less.

[0050]

A food material having a low lipid content is preferable because the particle size reduction processing in the oil/fat is smoothly performed. Specifically, the food material used in the present invention is preferably a food material having an oil/fat content of 50% by mass or less, more preferably a food material having an oil/fat content of 40% by mass or less, even more preferably a food material having an oil/fat content of 30% by mass or less, and even more preferably a food

material having an oil/fat content of 20% by mass or less.

[0051]

In the composition of the second aspect as well, the oil/fat portion in the composition thereof (for example, oil/fat components which are liberated when centrifuged at 15,000 rpm for 1 minute) preferably has liquid-like fluidity (specifically, a Bostwick consistency at 20°C for 10 seconds in a Bostwick consistometer of 10 cm or more, more preferably 15 cm or more, and even more preferably 28 cm or more). Moreover, when two or more fats and oils including a liquid oil/fat are used, 90% by mass or more of the entirety of the fats and oils is preferably a liquid edible oil/fat, more preferably 92% by mass or more is a liquid oil/fat, more preferably 95% by mass or more is a liquid oil/fat, and most preferably 100% by mass is a liquid oil/fat.

[0052]

The particle size reduction processing to be performed in the food-containing oil/fat is preferably performed such that the modal diameter of the treated fine food particle-containing oil/fat composition in an ultrasonicated state is regulated to 0.3 μm or more and 200 μm or less because, although the reason is not clear, the treated composition exerts properties such as a lowered water activity, an increased water absorption index, a lowered total luminous transmittance and diffuse transmittance in a state of being diluted with water such

that the fine food particle content is 0.06% by mass, an increased haze value, lowered possibility of oil/fat separation, and enhanced taste extension. In order for those properties to be exerted, the modal diameter of the treated fine food particle-containing oil/fat composition in an ultrasonicated state is preferably regulated to 200 μm or less, more preferably regulated to 150 μm or less, more preferably regulated to 100 μm or less, even more preferably regulated to 80 μm or less, even more preferably regulated to 45 μm or less, even more preferably regulated to 30 μm or less, even more preferably regulated to 20 μm or less, and most preferably regulated to 11 μm or less. The particle size reduction processing is performed such that the modal diameter of the composition is regulated to 0.3 μm or more for production efficiency, 2.8 μm or more for greater efficiency, and 4.6 μm or more for greater efficiency. The definition and the measurement method of the modal diameter are the same as those described in the first aspect.

[0053]

The particle size reduction processing to be performed in the food-containing oil/fat is preferably performed such that the median diameter of the treated fine food particle-containing oil/fat composition in an ultrasonicated state is regulated to 0.3 μm or more and 150 μm or less because, although the reason is not clear, the treated composition exerts properties such as an

enhanced swallowing sensation. In order for those properties to be exerted, the median diameter of the treated fine food particle-containing oil/fat composition in an ultrasonicated state is preferably regulated to 0.3 μm or more and 150 μm or less, more preferably regulated to 135 μm or less, more preferably regulated to 80 μm or less, more preferably regulated to 40 μm or less, even more preferably regulated to 30 μm or less, particularly preferably regulated to 25 μm or less, and most preferably regulated to 16 μm or less. The particle size reduction processing is performed such that the median diameter of the composition is regulated to 0.3 μm or more for production efficiency, 2.5 μm or more for greater efficiency, and 9.0 μm or more for greater efficiency. The definition and the measurement method of the median diameter are the same as those described in the first aspect.

[0054]

The particle size reduction processing to be performed in the food-containing oil/fat is preferably performed such that the 90% cumulative diameter (d_{90}) of the treated fine food particle-containing oil/fat composition in an ultrasonicated state is regulated to 0.4 μm or more and 360 μm or less because, although the reason is not clear, the treated composition exerts properties such as enhanced light resistance. In order for those properties to be exerted, the 90% cumulative diameter (d_{90}) of the treated fine food particle-

containing oil/fat composition in an ultrasonicated state is preferably regulated to 0.4 μm or more and 360 μm or less, more preferably regulated to 220 μm or less, more preferably regulated to 190 μm or less, more preferably regulated to 150 μm or less, even more preferably regulated to 90 μm or less, even more preferably regulated to 45 μm or less, particularly preferably regulated to 35 μm or less, and most preferably regulated to 28 μm or less. The particle size reduction processing is performed such that the 90% cumulative diameter of the composition is regulated to 0.4 μm or more for production efficiency, 5.9 μm or more for greater efficiency, and 11.1 μm or more for greatest efficiency. The definition and the measurement method of the 90% cumulative diameter (d90) are the same as those described in the first aspect.

[0055]

The fine food particle content in the composition of the second aspect is, as in the first aspect, 2% by mass or more and 98% by mass or less, and a content of less than 2% by mass is not preferable because the composition exerts a greasy taste. A fine food particle content exceeding 98% by mass is not preferable because the composition exerts a "mealy" texture, which makes it difficult to consume the composition. Concerning the composition of the second aspect, in order for a large amount of fine food particles not to exert neither a "mealy" texture nor a greasy taste in the mouth and to

facilitate consumption, the fine food particle content is preferably 2% by mass or more, more preferably 8% by mass or more, even more preferably 15% by mass or more, and most preferably 30% by mass or more. From the view point of the "mealy" texture in particular, the fine food particle content is preferably 98% by mass or less, more preferably 95% by mass or less, more preferably 85% by mass or less, and most preferably 80% by mass or less. The "mealy" texture refers to the texture of a grainy, unmoistened, dry food.

[0056]

The particle size reduction processing to be performed in the food-containing oil/fat is preferably performed such that the modal diameter of the treated fine food particle-containing oil/fat composition in an ultrasonicated state and/or the median diameter in an ultrasonicated state are regulated to the aforementioned ranges and also the arithmetic standard deviation thereof is regulated to 1 μm or more and 147 μm or less because the quality of taste presentation of the treated fine food particle-containing oil/fat composition is enhanced and the palatability is enhanced, and the arithmetic standard deviation is more preferably regulated to 135 μm or less, more preferably regulated to 90 μm or less, more preferably regulated to 70 μm or less, even more preferably regulated to 60 μm or less, even more preferably regulated to 31 μm or less, particularly preferably regulated to 15 μm or less, and most

preferably regulated to 9.5 μm or less. Moreover, the particle size reduction processing is more preferably performed such that the arithmetic standard deviation of the composition is regulated to 220% or less based on the modal diameter in an ultrasonicated state because the initial taste of the composition is enhanced, more preferably 200% or less, more preferably 150% or less, more preferably 110% or less, and most preferably 70% or less.

[0057]

The particle size reduction processing is performed such that the arithmetic standard deviation of the composition is regulated to 1 μm or more for production efficiency, 1.8 μm or more for greater efficiency, and 5.0 μm or more for greater efficiency.

[0058]

In the second aspect, it is preferable for production that in the food-containing oil/fat on which a particle size reduction processing is performed, the fine food particle content is regulated to 2% by mass to 98% by mass by configuring the total content of the at least one food (food material) selected from the group consisting of a vegetable, a fruit and an alga to be 2% by mass or more and 90% by mass or less, the total oil/fat proportion is regulated to 10% by mass or more and 98% by mass or less by configuring the oil/fat content to be 10% by mass or more and 98% by mass or

less, and the water content is regulated to less than 20% by mass.

[0059]

The oil/fat used in the second aspect is the same as the oil/fat described in the first aspect. The total oil/fat proportion of the composition of the second aspect is usually 10% by mass or more, and, in particular, 10% by mass or more, furthermore 15% by mass or more, particularly 20% by mass or more, and especially 30% by mass or more are preferable. When it is below the lower limit, the amount of oil/fat is excessively small, and fine food particles may be not sufficiently dispersed in the oil/fat. Meanwhile, the total oil/fat proportion of the composition of the second aspect is usually 98% by mass or less, and, in particular, 98% by mass or less, furthermore 95% by mass or less, particularly 90% by mass or less, and especially 81% by mass or less are preferable. When the total oil/fat proportion exceeds the upper limit, the composition may become highly greasy, thus making it difficult to consume the composition.

[0060]

The food-containing oil/fat used in the second aspect may contain water, but since water causes lumps in the oil/fat and makes it difficult to perform a particle size reduction processing, the water content in the food-containing oil/fat is desirably less than 20% by mass, more desirably less than 15% by mass, more desirably 10%

by mass or less, and more desirably 6% by mass or less. The method for measuring water is the same as the method described in the first aspect.

[0061]

The water activity of the final composition is lowered by performing the particle size reduction processing of the second aspect in the food-containing oil/fat. With a water activity exceeding 0.97, the final composition is likely discolored during storage, and therefore the water activity of the final composition is preferably regulated to 0.97 or less, more preferably regulated to 0.9 or less, even more preferably regulated to 0.8 or less, even more preferably regulated to 0.65 or less, even more preferably regulated to 0.60 or less, and most preferably regulated to 0.50 or less. The water activity of the final composition is regulated to 0.20 or more for production efficiency, regulated to 0.25 or more for production efficiency, and regulated to 0.30 or more for greater production efficiency.

[0062]

The means for particle size reduction used in the present invention is not particularly limited, and the same means as what is described in the first aspect can be used. When particle size reduction is performed by any of such means to such an extent that particles having a maximum particle size before ultrasonication of 30 μm or more (i.e., the maximum particle size observable with the eyes under a microscope) are not contained, the

structure of a food material is destroyed, and an undesirable flavor is likely imparted, and when particle size reduction is performed to such an extent that particles having a maximum particle size after ultrasonication of 30 μm or more are not contained, the structure of a food material is destroyed, and an undesirable flavor is even more likely imparted. Therefore, a method involving particle size reduction performed such that fine food particles having a maximum particle size before ultrasonication of more than 30 μm are contained is preferable, and a method involving particle size reduction performed such that fine food particles having a maximum particle size after ultrasonication of more than 30 μm are contained is more preferable. In particular, in the case of using a means of performing particle size reduction in a medium, such as a medium stirring mill or a high-pressure homogenizer, the structure of a food material is destroyed when particle size reduction is performed to such an extent that particles having a maximum particle size before ultrasonication of 30 μm or more are not contained, and an undesirable flavor is even more likely imparted. Therefore, a method involving particle size reduction performed such that fine food particles having a maximum particle size before ultrasonication of more than 30 μm are contained is preferable, and a method involving particle size reduction performed such that fine food particles having a maximum particle size after

ultrasonication of more than 30 μm are contained is more preferable. The maximum particle size of the fine food particle-containing oil/fat composition before ultrasonication is preferably 30 μm or more, more preferably 40 μm or more, more preferably 50 μm or more, and most preferably 80 μm or more.

[0063]

In particular, a pulverizing method involving a wet bead mill is preferable because it provides a highly stable composition which more unlikely undergoes oil/fat separation when left to stand compared with any other processing method. Although the principle is not clear, this is considered to be because the particle form of fine food particles is favorably changed by the bead mill processing. As for the conditions during the wet bead mill processing, the size and the packing ratio of beads, the outlet mesh size, the feeding rate of an ingredient slurry, mill rotation strength, a method involving a single passage (one pass) or a method involving multiple circulations (circulation type), and the like are suitably selected and regulated according to the size and the properties of a food material and the properties of the intended fine food particle-containing oil/fat composition. In particular, although the principle is not clear, subjecting a powdered food material, the median diameter of which has been regulated to 1,000 μm or less and 100 μm or more in advance, to a particle size reduction processing further increases adhesion to a

target object, and is more preferable. In producing the composition of the present invention, although the principle is not clear, subjecting an oil/fat where a dried food is contained in the oil/fat in advance to a medium stirring mill processing and, in particular, a wet bead mill processing results in a remarkably increased ease of consumption of a utilized food when the food is eaten together with the fine food particle-containing oil/fat composition and thus is useful.

[0064]

The consistency (measurement temperature 20°C) of the food-containing oil/fat where a food is contained in an oil/fat before a particle size reduction processing is preferably regulated to 20 Pa·s or less, and regulating it to 8 Pa·s or less further increases the efficiency of a particle size reduction processing and is thus useful. The consistency (measurement temperature 20°C) of the final composition is preferably regulated to 100 mPa·s or more, and by the particle size reduction processing performed such that the consistency is regulated to 500 mPa·s or more, the retentivity in the mouth of the utilized food in the final composition is increased and is thus more preferable.

[0065]

The particle size reduction processing to be performed in the food-containing oil/fat is performed such that the total luminous transmittance of the treated fine food particle-containing oil/fat composition in a

state of being diluted with water so as to have a fine food particle content of 0.06% by mass is preferably regulated to 99% or less because, although the reason is not clear, the treated composition exerts properties such as a vivid external color of the composition, more preferably regulated to 97.7% or less, and most preferably regulated to 97.0% or less. The total luminous transmittance is preferably regulated to 90.0% or more because the external color of the composition appears vividly, and most preferably regulated to 93.0% or more. The total luminous transmittance is a luminous transmittance which takes reflection and scattering in consideration, and the measurement method therefor is the same as the method described in the first aspect.

[0066]

The particle size reduction processing to be performed in the food-containing oil/fat is performed such that the diffuse transmittance of the treated fine food particle-containing oil/fat composition in a state of being diluted with water so as to have a fine food particle content of 0.06% by mass is preferably regulated to 11% or more because, although the reason is not clear, the treated composition exerts properties such as a more vivid external color of the composition, more preferably regulated to 19% or more, more preferably regulated to 26% or more, more preferably regulated to 30% or more, more preferably regulated to 35% or more, and most preferably regulated to 40% or more. The upper limit of

the diffuse transmittance is preferably 60% or less in order for the color of the composition to be a natural color. The diffuse transmittance is the transmittance of diffused light which includes light beams traveling through a sample but does not include components existing in parallel with the incident light, and the measurement method therefor is the same as the method described in the first aspect.

[0067]

The particle size reduction processing to be performed in the food-containing oil/fat is performed such that the haze value of the treated fine food particle-containing oil/fat composition in a state of being diluted with water so as to have a fine food particle content of 0.06% by mass is preferably regulated to 11% or more because, although the reason is not clear, the external color of the composition appears more vividly, more preferably regulated to 20% or more, more preferably regulated to 26% or more, more preferably regulated to 30% or more, more preferably regulated to 34% or more, and most preferably regulated to 41% or more. The upper limit of the haze value is preferably 70% or less in order for the color of the composition to be a natural color, and is more preferably 60% or less.

Moreover, the particle size reduction processing is preferably a medium stirring mill processing because the color appears more vividly, and a wet bead mill processing is most preferable. Although the reason is

not clear, the composition which has undergone particle size reduction may have unmeasurable changes such as a conformational change.

The haze value can be determined by dividing the diffuse transmittance by the total luminous transmittance, and the measurement method therefor is the same as the method described in the first aspect.

[0068]

The water absorption index is increased by performing the particle size reduction processing in the food-containing oil/fat. The water absorption index of the final composition is preferably regulated to 0.5 or more because the property of exerting consistency when water is added is imparted to the final composition, more preferably regulated to 1.0 or more, more preferably regulated to 2.0 or more, more preferably regulated to 3.0 or more, even more preferably regulated to 3.5 or more, and most preferably regulated to 4.0 or more. From the viewpoint of maintaining a favorable flavor of the oil/fat composition, the water absorption index of the final composition is preferably regulated to 10.0 or less, more preferably regulated to 9.0 or less, and most preferably regulated to 8.0 or less.

The water absorption index is an index for evaluating the water retentivity of the composition. Commonly used oil/fat compositions do not mix with water and thus show a water absorption index of 0 or a very

small value. The measurement method therefor is the same as the method described in the first aspect.

Concerning the particle size reduction processing performed in the food-containing oil/fat, the Bostwick consistency (measurement temperature 20°C) of the treated fine food particle-containing oil/fat composition is more preferably 28.0 cm or less in one second, even more preferably 26.0 cm or less, even more preferably 20.0 cm or less, and most preferably 17.0 cm or less. From the viewpoint of taste, the Bostwick consistency (measurement temperature 20°C) is preferably 0.1 cm or more in one second, more preferably 1.0 cm or more, and preferably 2.0 cm or more. The Bostwick consistency can be measured by the same method as the method described in the first aspect.

[0069]

In the second aspect, as long as the compositional requirements thereof are satisfied, various foods and food additives used in conventional foods may be used as necessary, and examples thereof are the same as those described in the first aspect.

In addition, concerning the components, compositions, production methods, physical properties, characteristics, effects and the like of the composition of the second aspect, the description of the first aspect is entirely applicable unless specified otherwise.

[0070]

[Applications of Compositions of First and Second Aspects]

The fine food particle-containing oil/fat compositions of the first and second aspects described above (sometimes collectively referred to as the "composition of the present invention") can be preferably used as ingredients and materials of foods and drinks or of liquid condiments. That is, the present invention encompasses foods and drinks as well as liquid condiments containing the fine food particle-containing oil/fat composition of the present invention. By using the composition of the present invention as a part of the ingredients, condiments having high dispersion stability can be produced, such as sauce, dip, mayonnaise, dressing, butter, and jam. It is desirable that the amount of the composition added to a condiment is roughly about 0.001 to 50% by mass. During production, the composition may be added to the condiment at any time. Specifically, the composition may be added to the condiment, the particle size reduction processing may be performed after the ingredients (food materials) of the composition are added to the ingredients of the condiment, or such methods may be combined. The method involving adding the composition to the condiment is industrially convenient and is thus preferable.

[0071]

The composition of the present invention, as long as the compositional requirements thereof are satisfied, may

contain various foods and food additives used in conventional foods as necessary. Examples include water, soy sauce, miso, vinegar, table salt, alcohols, amino acids, sugars (such as glucose, sucrose, fructose, high-fructose corn syrup having a fructose content of less than 50%, and high-fructose corn syrup having a fructose content of 50% or more), sugar alcohols (such as xylitol, erythritol, and maltitol), artificial sweeteners (such as sucralose, aspartame, saccharin, and acesulfame K), minerals (such as calcium, potassium, sodium, iron, zinc, magnesium, and salts thereof), emulsifiers (such as glycerin fatty acid ester, acetic acid monoglyceride, lactic acid monoglyceride, citric acid monoglyceride, diacetyl tartaric acid monoglyceride, succinic acid monoglyceride, polyglycerin fatty acid ester, polyglycerin condensed ricinoleic acid ester, quillaja extracts, soy saponin, tea seed saponin, sucrose fatty acid ester, plant lecithin, and egg yolk lecithin), flavorings, pH adjusters (such as sodium hydroxide, potassium hydroxide, lactic acid, citric acid, tartaric acid, malic acid, and acetic acid), cyclodextrins, antioxidants (such as vitamin E, vitamin C, tea extracts, raw coffee bean extracts, chlorogenic acid, spice extracts, caffeic acid, rosemary extracts, vitamin C palmitate, rutin, quercetin, wax myrtle extracts, and sesame extracts), and all food additives listed in the Pocketbook of Food Additive Labelling (2016 edition).

[0072]

Moreover, due to recent increasing awareness of natural food orientation, it is desired not to add emulsifiers as so-called food additives and/or colorants as food additives and/or thickening stabilizers as food additives (such as those listed as "colorants", "thickening stabilizers", and "emulsifiers" in the "List of Food Additive Substance Names for Labelling" in the Pocketbook of Food Additive Labelling (2011 edition)), and it is particularly preferable not to add an emulsifier as a food additive because the taste of a material is more likely felt. Moreover, it is most preferable not to contain food additives (such as substances which are listed in the "List of Food Additive Substance Names for Labelling" in the Pocketbook of Food Additive Labelling (2016 edition) and used in food additive applications). Further, because the sweetness of a material itself becomes unlikely to be felt, sugars (such as glucose, sucrose, fructose, high-fructose corn syrup having a fructose content of less than 50%, and high-fructose corn syrup having a fructose content of 50% or more) other than those contained in the material are preferably not used.

[0073]

That is, the present invention includes the following embodiments:

[1] An embodiment where a food additive preparation is not contained, and

[2] An embodiment where an emulsifier as a food additive preparation is not contained

[0074]

[Embodiments Derived from First and Second Aspects]

The following embodiments can also be referred to as embodiments derived from the first and second aspects of the present invention described above.

[0075]

In the embodiments of the present invention including the following derivative embodiments, the oil/fat content in the food-containing oil/fat refers to the weight ratio of the total weight of the externally added oil/fat added to the food-containing oil/fat (i.e., indicating the weight of the oil/fat, which will be added during preparation of the food-containing oil/fat, before being introduced into the food-containing oil/fat) to the food-containing oil/fat. The oil/fat content in the food-containing oil/fat is 10% by mass or more and 98% by mass or less. When the content is less than 10% by mass, the amount of the oil/fat is excessively small, and fine food particles after the processing are not sufficiently dispersed in the oil/fat. Therefore, the oil/fat content in the food-containing oil/fat is preferably 10% by mass or more, more preferably 15% by mass or more, more preferably 20% by mass or more, and most preferably 30% by mass or more. When the oil/fat content in the food-containing oil/fat exceeds 98% by mass, the final composition exerts a strongly greasy taste, which makes

it difficult to consume the composition. Therefore, the oil/fat content in the food-containing oil/fat is preferably 98% by mass or less, more preferably 95% by mass or less, even more preferably 90% by mass or less, and most preferably 80% by mass or less.

[0076]

In the embodiments of the present invention including the following derivative embodiments, the total content of the foods (food materials) in the food-containing oil/fat refers to the weight ratio of the total mass of the foods used in the food-containing oil/fat (i.e., indicating the weight of the food materials, which will be used during preparation of the food-containing oil/fat, before being introduced into the food-containing oil/fat) to the food-containing oil/fat. The total content of the foods (food materials) in the food-containing oil/fat is 2% by mass or more and 90% by mass or less. A content of less than 2% by mass is not preferable because the final composition exerts a greasy taste. A total content of the foods (food materials) in the food-containing oil/fat exceeding 90% by mass is not preferable because the final composition exerts a "mealy" texture, which makes it difficult to consume the composition. In order for the final composition not to exert neither a "mealy" texture nor a greasy taste in the mouth and to facilitate consumption, the total content of the foods (food materials) in the food-containing oil/fat is preferably 2% by mass or more, more preferably 5% by

mass or more, even more preferably 10% by mass or more, particularly preferably 20% by mass or more, and most preferably 30% by mass or more. From the viewpoint of the "mealy" texture in particular, the total content of the foods (food materials) in the food-containing oil/fat is preferably 90% by mass or less, more preferably 85% by mass or less, more preferably 70% by mass or less, and most preferably 60% by mass or less. The "mealy" texture refers to the grainy, unmoistened, dry texture.

[0077]

Although the principle is not clear, the composition of the present invention shows the characteristics that the water activity of the composition is lowered by performing a particle size reduction processing, and this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat.

Accordingly, the present invention includes the following inventions as derivative embodiments focusing on a water activity lowering effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(1) A method for producing a fine food particle-containing oil/fat composition, the method comprising subjecting a food-containing oil/fat composition having a total content of at least one food selected from the group consisting of a vegetable, a fruit and an alga of 2% by mass or more and 90% by mass or less, an oil/fat

content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and water activity of the food-containing oil/fat composition after the processing is at least 0.01 lower than the water activity before the processing.

(2) A method for lowering water activity of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

(3) A fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and water activity of the food-containing oil/fat composition after the processing is at

least 0.01 lower than the water activity before the processing.

[0078]

Although the principle is not clear, the composition of the present invention shows the characteristics that the water absorption index of the composition is increased by performing the particle size reduction processing, and this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat. Due to this unknown attribute, the properties of not allowing the taste of a food to disappear and the properties of facilitating mixing with the food can be imparted to a food/drink on which the composition of the present invention is used. Due to the above properties, the composition of the present invention can be preferably used especially as a pasta sauce which does not allow the taste of the utilized pasta to disappear or a dip source which easily mixes with a food.

Accordingly, the present invention includes the following inventions as derivative embodiments focusing on a water absorption index increasing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(4) A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, the

method comprising subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a water absorption index of the food-containing oil/fat composition after the processing is at least 0.1 higher than the water absorption index before the processing.

(5) A method for increasing a water absorption index of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

(6) A fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a

modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a water absorption index of the food-containing oil/fat composition after the processing is at least 0.1 higher than the water absorption index before the processing.

[0079]

Although the principle is not clear, the composition of the present invention shows the characteristics that the haze value of the composition is increased by performing a particle size reduction processing, and this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat. Due to this unknown attribute, a vivid color can be imparted to a food/drink on which the composition of the present invention is used.

Accordingly, the present invention includes the following inventions as derivative embodiments focusing on a haze value increasing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(7) A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, the method comprising subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water

content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a haze value of the food-containing oil/fat composition after the processing is at least 1 higher than the haze value before the processing.

(8) A method for increasing a haze value of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

(9) A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a haze value of a food-containing oil/fat after the processing is at least 1 higher than the haze value before the processing.

[0080]

The fine food particle-containing oil/fat composition of the present invention has a characteristic that the consistency is increased when water in an amount of about 1% to 50% of the amount of water absorbed at the time of measuring the water absorption index is added to the composition. Accordingly, by adding water in any amount within the range of 1% to 50% of the amount of water absorbed at the time of measuring the water absorption index to the composition of the present invention, the consistency of the oil/fat composition can be regulated to the desired range.

[0081]

Although the principle is not clear, the composition of the present invention shows a characteristic that the taste extension of the composition is enhanced by performing the particle size reduction processing, this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat, and this tendency is most strongly recognized when a wet bead mill processing is performed. Due to this unknown attribute, the properties of favorable taste extension can be imparted to the composition itself and foods and drinks on which the composition is used. In particular, the composition of the present invention can be preferably used in subtly seasoned foods and drinks such as Japanese foods.

Accordingly, the present invention includes the following invention as a derivative embodiment focusing on the taste extension enhancing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(10) A method for enhancing taste extension of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[0082]

Although the principle is not clear, the composition of the present invention shows a characteristic that the swallowing sensation of the composition is enhanced by performing the particle size reduction processing, this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat, and this tendency is most strongly recognized when a wet bead mill processing is performed. Due to this unknown attribute, the properties of a good swallowing sensation can be imparted to the composition itself and foods and drinks on which the composition is used. In particular, the composition can be suitably used in foods and drinks intended for elderly people and infants who have low swallowing ability.

Accordingly, the present invention includes the following invention as a derivative embodiment focusing on a swallowing sensation enhancing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(11) A method for enhancing a swallowing sensation of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[0083]

Although the principle is not clear, the composition of the present invention shows the characteristics that the stability such as light resistance and storability of the composition is increased by performing the particle size reduction processing, this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat, and this tendency is most strongly recognized when a wet bead mill processing is performed. Due to this unknown attribute, the properties of high stability can be imparted to the composition itself and foods and drinks on which the composition is used. In particular, the composition of the present invention can be suitably used in products distributed at normal temperature, such as dry groceries which deteriorate severely.

Accordingly, the present invention includes the following invention as a derivative embodiment focusing on a stability enhancing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(12) A method for enhancing stability of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[0084]

Although the principle is not clear, the composition of the present invention shows the characteristics that the smoothness of the composition is increased by performing the particle size reduction processing, this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat, and this tendency is most strongly recognized when a wet bead mill processing is performed. Due to this unknown attribute, the properties of a smooth feel on the tongue can be imparted to the composition itself and foods and drinks on which the composition is used. In particular, the composition of the present invention can be suitably used in emulsified liquid condiments such as mayonnaise.

Accordingly, the present invention includes the following invention as a derivative embodiment focusing on a smoothness enhancing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(13) A method for increasing smoothness of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising performing a particle size reduction processing on the dried food-containing oil/fat composition.

[0085]

Although the principle is not clear, the composition of the present invention shows the characteristics that the initial taste of the composition is increased by performing the particle size reduction processing, this tendency is markedly recognized especially when the particle size reduction processing of a food material is performed in the oil/fat, and this tendency is most strongly recognized when a wet bead mill processing is performed. Due to this unknown attribute, the properties of a good initial taste can be imparted to the composition itself and foods and drinks on which the composition is used. In particular, the composition of the present invention can be suitably used to improve the taste quality of acetic acid-containing foods and drinks such as sushi which likely lose their taste over time.

Accordingly, the present invention includes the following invention as a derivative embodiment focusing on an initial taste enhancing effect provided by the particle size reduction processing in the method for producing the composition of the present invention.

(14) A method for increasing an initial taste of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising performing a particle size reduction processing on the dried food-containing oil/fat composition.

Various embodiments derived from the first and second aspects have been described above in reference to examples. Concerning the details of their components, compositions, production methods, physical properties, characteristics, effects and the like, the description of the first and second aspects can be entirely applicable.

Examples

[0086]

The present invention will now be described in more detail below by way of Examples, but the Examples are merely descriptive for the sake of convenience, and the present invention is not limited to the Examples in any sense.

[0087]

[Method for Preparing Fine Food Particle-Containing
Oil/fat Composition Samples]

Fine food particle-containing oil/fat compositions
were prepared as follows.

[0088]

1. Embodiment where "a food material subjected to a
specific particle size reduction processing is mixed with
an oil/fat"

A particle size reduction processing was performed
on 2,000 g of an air-dried product of tomato and 2,000 g
of an air-dried product of carrot, which are among
vegetables, by an industrial mixer pulverizer (marketed
by Osaka Chemical Co., Ltd., trade name "Wonder Crusher
WC-3") capable of highly precise pulverization until the
modal diameter in an ultrasonicated state was about 100
to 200 μm . Next, the treated products were subjected to
a particle size reduction processing by using a dry
pulverizer (manufactured by Nisshin Engineering Inc.,
trade name "Super Jet Mill SJ-500 (denoted as SJ-500 in
the tables)"). As a result, fine powders of a tomato and
a carrot were obtained.

Details of the processing conditions of jet mill
pulverization are as follows.

[0089]

(Number of pulverization nozzles)

2 for pulverizing carrot

6 for pulverizing tomato

(Amount fed kg/h)

2 kg/h for pulverizing carrot

1 kg/h for pulverizing tomato

(Pressure during jet mill pulverization)

0.75 MPa

[0090]

Then, 250 g of the fine powders were mixed with 250 g of commercially available olive oil (14% saturated fatty acid, 80% unsaturated fatty acid). The mixture was sufficiently stirred by a spatula until the mixtures appeared substantially uniform, and thus a fine carrot particle-containing oil/fat composition (Example 26) and a fine tomato particle-containing oil/fat composition (Example 40) in a paste form were obtained.

[0091]

2. Embodiment where "a specific particle size reduction processing is performed on an oil/fat-containing food material"

A particle size reduction processing was performed on 1,000 g of a freeze-dried product of the pulp of avocado, which is one of fruits, by an industrial mixer pulverizer (marketed by Osaka Chemical Co., Ltd., trade name "Wonder Crusher WC-3" (denoted as WC-3 in the tables)) capable of highly precise pulverization until d₉₀ in an ultrasonicated state was about 300 μm or less. As a result, an avocado slurry (food-containing oil/fat) in a paste form was obtained due to the avocado-derived oil/fat (Example 44).

Next, a particle size reduction processing was performed by using a wet bead mill pulverizer (manufactured by Ashizawa Finetech Ltd., trade name "Starmill Labstar Mini LMZ015 (denoted as LMZ015 in the tables)") by introducing 500 g of the avocado slurry at a feeding rate of 45 rpm into a particle size reduction processing chamber which had been filled with zirconia beads having a diameter of 1.0 mm to 80% of the capacity of the processing chamber. As for the conditions of the particle size reduction processing, the mill rotation strength was 2,590 rpm (8 m/sec), and the beads and the particle size reduction-treated slurry were separated, with the mesh size at the treated product outlet being 0.3 μ m. The liquid temperature was maintained at 35°C or less by cooling water throughout the processing. After the slurry was introduced, the particle size reduction processing was performed by causing it to pass only once through the particle size reduction processing chamber (one pass), and the particle size reduction processing product was recovered from the outlet port.

[0092]

A fine avocado particle-containing oil/fat composition in a paste form was obtained by the above particle size reduction processing (avocado: Example 43).

[0093]

3. Embodiment where "a specific particle size reduction processing is performed on a food-containing oil/fat containing a specific food material in an oil/fat"

A particle size reduction processing was performed on 6,000 g of an air-dried product of carrot, which is one of vegetables, by an industrial mixer pulverizer (marketed by Osaka Chemical Co., Ltd., trade name "Wonder Crusher WC-3" (denoted as WC-3 in the tables)) capable of highly precise pulverization until d₉₀ was about 300 μ m or less. Next, 5,000 g of the particle size reduction processing product was mixed with 5,000 g of commercially available olive oil, the mixture was sufficiently stirred by a spatula until the mixture appeared uniform, and thus a slurry mixture of the particle size reduction processing product and an oil (a food-containing oil/fat having a food (food material) content of 50.0% and an oil/fat content of 50.0%) was prepared (Example 25).

Next, a particle size reduction processing was further performed by using a wet bead mill pulverizer (manufactured by Hiroshima Metal & Machinery Co., Ltd., trade name "Ultra Apex Mill AM-1 (denoted as AM-1 in the tables)") by introducing 5,000 g of the slurry at a slurry feeding rate of 5 L/h into a particle size reduction processing chamber which had been filled with zirconia beads having a diameter of 2.0 mm to 80% of the capacity of the processing chamber. As for the conditions of the particle size reduction processing, the mill rotational strength was 1,900 rpm (6 m/sec), and the beads and the particle size reduction-treated paste were separated, with the cone separator at the treated product outlet being 0.7 mm. The liquid temperature was

maintained at 50°C or less by cooling water throughout the processing. After the slurry was introduced, the particle size reduction processing was performed by causing it to pass only once through the particle size reduction processing chamber (one pass), and the particle size reduction processing product was recovered from the outlet port.

[0094]

Details of particle size reduction processing conditions are as follows.

(Flow rate) 5 L/h

(Circumferential speed) 1,911 rpm (= 6 m/s)

(Media material) Zirconia

(Media amount) 2.96 kg *80% of the capacity of pulverization chamber

(Media diameter) ϕ 2.0 mm

(Cone separator) 0.7 mm

[0095]

A fine carrot particle-containing oil/fat composition in a paste form was obtained by the above particle size reduction processing (Example 24).

[0096]

Concerning an air-dried product of broccoli, an air-dried product of pumpkin, an air-dried product of tomato, and an air-dried product of paprika, which are among vegetables; an air-dried product of shiitake, which is one of vegetables (mushroom); an air-dried product of yuzu citron, which is one of fruits; and an air-dried

product of makonbu, which is one of algae, the processing was performed in the same manner as in Examples 24 and 25 except that the food materials were changed, and thus the following samples were obtained.

(Samples treated in the same manner as in Example 24 except that the food materials were changed)

Broccoli: Example 19

Pumpkin: Example 33

Tomato: Example 38

Paprika: Example 41

Yuzu Citron: Example 45

Shiitake: Example 47

Makonbu: Example 49

(Samples treated in the same manner as in Example 25 except that the food materials were changed)

Broccoli: Example 20

Pumpkin: Example 34

Tomato: Example 39

Paprika: Example 42

Yuzu Citron: Example 46

Shiitake: Example 48

Makonbu: Example 50

As for air-dried products of potato, purple sweet potato, garlic, Chinese cabbage, onion, beetroot, zucchini, basil, cabbage, asparagus, and sweet potato as well, the processing was performed in the same manner, and the resulting samples were also evaluated in the same

manner. As a result, the same tendency as the aforementioned materials was recognized.

As Comparative Examples, undried raw yuzu citron, raw shiitake, and raw makonbu were subjected to a processing the same as described in Example 25 except that the food materials were changed, and thus Comparative Examples 10 to 12 were obtained.

[0097]

100 g of an air-dried product of carrot, which is one of vegetables, and 100 g of commercially available olive oil were mixed, and the mixture was subjected to a crush processing by a pulverizer (manufactured by TESCOM Co., Ltd., trade name "Vacuum Mixer TMV1100 (denoted as TMV1100 in the tables)"). The crush processing was performed five consecutive times in a "vacuum mixer" mode, and thus Comparative Example 6 was obtained.

As Comparative Examples, 100 g of undried raw broccoli, 100 g of raw carrot, 100 g of raw tomato, and 100 g of raw paprika were each mixed with 100 g of commercially available olive oil, and the mixture was subjected to a particle size reduction processing by a commonly used household mixer pulverizer (manufactured by TESCOM Co., Ltd., trade name "Vacuum Mixer TMV1100). The particle size reduction processing was performed five consecutive times in a "vacuum mixer" mode, and thus Comparative Example 5 and Comparative Examples 7 to 9 were obtained.

[0098]

(Preparation of compositions in which fats and oils were changed)

Production was performed under the same conditions as the production methods of Example 24, Example 25, Example 33, and Example 34 of 3. Embodiment where "a specific particle size reduction processing is performed on a food-containing oil/fat containing a specific food material in an oil/fat" except that salad oil (7% saturated fatty acid, 88% unsaturated fatty acid) as an edible oil/fat having a higher proportion of unsaturated fatty acid than saturated fatty acid in the composition as in olive oil was used in place of olive oil as an oil/fat, and thus Example 27, Example 28, Example 35, and Example 36 were obtained, respectively.

[0099]

(Preparation of compositions on which a particle size reduction processing was performed where the proportions of blended components in a food-containing oil/fat were changed)

Production was performed under the same conditions as the production methods of "Example 24" and "Example 33" of 3. Embodiment where "a specific particle size reduction processing is performed on a food-containing oil/fat containing a specific food material in an oil/fat" except that the food (food material) content and the oil/fat content in a food-containing oil/fat were changed as shown in Table 2, and thus particle size reduced food-containing oil/fat compositions having

different fine food particle contents and total oil/fat proportions were obtained (carrot: Comparative Examples 1 and 2 and Examples 1 to 9, pumpkin: Comparative Examples 3 and 4 and Examples 10 to 18).

In addition, production was performed under the same conditions as the production methods of "Example 24" and "Example 33" except that the oil/fat in the food-containing oil/fat was changed to commercially available salad oil, and the food (food material) content and the oil/fat content were changed as shown in Table 7, and thus compositions having different fine food particle contents and total oil/fat proportions were obtained. (carrot: Example 29, pumpkin: Example 37)

[0100]

(Preparation of compositions for which the particle size reduction method was changed)

Production was performed under the same conditions as the production methods of "Example 24" and "Example 33" of 3. Embodiment where "a specific particle size reduction processing is performed on a food-containing oil/fat containing a specific food material in an oil/fat" except that the particle size reduction processing method performed on the food-containing oil/fat was changed as in (1) to (3), and thus Examples 21 to 23 and Examples 30 to 32 were obtained. In performing a high-pressure homogenizer processing, a high-pressure homogenization processing at 100 MPa was

performed once by using a "PANDA 2K homogenizer (denoted as PANDA 2K in the tables) manufactured by Niro Soavi".

(1) High-pressure homogenizer processing performed on food-containing oil/fat after bead mill processing:

Example 21, Example 30

(2) Bead mill processing performed on food-containing oil/fat after high-pressure homogenizer processing:

Example 22, Example 31

(3) Only high-pressure homogenizer processing performed on food-containing oil/fat: Example 23, Example 32

[0101]

4. Measurement of various property values and sensory evaluation

(1) Haze value, diffuse transmittance, total luminous transmittance

The haze value was measured by a conventional method using a turbidity analyzer WA6000T (manufactured by Nippon Denshoku Industries Co., Ltd.) which is based on integrating sphere photoelectric photometry. That is, the dilution ratio was adjusted according to the fine food particle content of an oil/fat composition to prepare a 0.06% by mass diluted solution, and measurement was performed. For example, in the case of a fine food particle-containing oil/fat composition having a fine food particle content of 75%, the weight of a composition corresponding to the fine food particle content of 0.06 g is 0.08 g, and therefore a 0.06% by mass diluted solution was prepared by adding water to 0.08 g of the composition

so as to be 100 g in total and sufficiently stirring the mixture. The diffuse transmittance and the total luminous transmittance were measured by placing the prepared 0.06% by weight diluted solution in a quartz cell having an optical path length of 5 mm and using water as a control, and the haze value was calculated by dividing the diffuse transmittance by the total luminous transmittance.

[0102]

(2) Particle size distribution (maximum particle size (before ultrasonication), modal diameter in ultrasonicated state, 90% cumulative diameter, median diameter, arithmetic standard deviation)

The Microtrac MT3300 EX2 system of MicrotracBEL Corp. was used as a laser diffraction particle size distribution analyzer to measure the particle size distribution of an oil/fat composition. As a solvent during measurement, 95% ethanol (such as Japan Alcohol Trading Co., Ltd., special type of alcohol, traceable 95, 95 degrees, first grade) was used, and as measurement application software, Data Management System version 2 (DMS2, MicrotracBEL Corp.) was used. In the measurement, washing was performed by pressing the washing button on the measurement application software, then the Set Zero button on the software was pressed to set zero, and a sample was directly introduced until falling within an appropriate concentration range in sample loading. As for the maximum particle size, the measurement result of

laser diffraction at a flow rate of 60% for a measurement time of 10 seconds after entering an appropriate concentration range was regarded as a measured value (maximum particle size before ultrasonication), and as for the modal diameter, 90% cumulative diameter (d90), median diameter (d50), and arithmetic standard deviation in an ultrasonicated state, after entering an appropriate concentration range, the ultrasonication button on the aforementioned software was pressed to perform ultrasonication at a frequency of 40 kHz at an output of 40 W for 180 seconds, degassing was preformed 3 times, and the measurement results of laser diffraction at a flow rate of 60% for a measurement time of 10 seconds were regarded as measured values (modal diameter, 90% cumulative diameter, median diameter, and arithmetic standard deviation).

As for the measurement conditions, measurement was performed under conditions having distribution indicator: volume, particle refractive index: 1.60, solvent refractive index: 1.36, upper measurement limit (μm) = 2,000.00 μm , lower measurement limit (μm) = 0.021 μm .

When the particle size distribution was measured for each channel in the present invention, the particle size for each measurement channel provided in Table 1 was used as a standard. The particle frequency % of each channel was determined by measuring for each channel the frequency of particles having a particle size which is equal to or smaller than the particle size specified for

each channel and which is larger than the particle size specified for a channel having one larger number (in the largest channel in the measurement range, the particle size at the lower measurement limit) and using the total frequency of all channels within the measurement range as a denominator. Specifically, the particle frequency % in each of the following 132 channels was measured.

Concerning the results obtained from the measurement, the particle size of the channel having the largest particle frequency % was regarded as the modal diameter. When a plurality of channels having the same particle frequency % exists, the particle size of the channel having the smallest particle size among them was employed as the modal diameter.

[0103]

[Table 1]

Channel	Particle size (μm)	Channel	Particle size (μm)	Channel	Particle size (μm)	Channel	Particle size (μm)
1	2000.000	37	88.000	73	3.889	109	0.172
2	1826.000	38	80.700	74	3.566	110	0.158
3	1674.000	39	74.000	75	3.270	111	0.145
4	1535.000	40	67.860	76	2.999	112	0.133
5	1408.000	41	62.230	77	2.750	113	0.122
6	1291.000	42	57.060	78	2.522	114	0.111
7	1184.000	43	52.330	79	2.312	115	0.102
8	1086.000	44	47.980	80	2.121	116	0.094
9	995.600	45	44.000	81	1.945	117	0.086
10	913.000	46	40.350	82	1.783	118	0.079
11	837.200	47	37.000	83	1.635	119	0.072
12	767.700	48	33.930	84	1.499	120	0.066
13	704.000	49	31.110	85	1.375	121	0.061
14	645.600	50	28.530	86	1.261	122	0.056
15	592.000	51	26.160	87	1.156	123	0.051
16	542.900	52	23.990	88	1.060	124	0.047
17	497.800	53	22.000	89	0.972	125	0.043
18	456.500	54	20.170	90	0.892	126	0.039
19	418.600	55	18.500	91	0.818	127	0.036
20	383.900	56	16.960	92	0.750	128	0.033
21	352.000	57	15.560	93	0.688	129	0.030
22	322.800	58	14.270	94	0.630	130	0.028
23	296.000	59	13.080	95	0.578	131	0.026
24	271.400	60	12.000	96	0.530	132	0.023
25	248.900	61	11.000	97	0.486		
26	228.200	62	10.090	98	0.446		
27	209.300	63	9.250	99	0.409		
28	191.900	64	8.482	100	0.375		
29	176.000	65	7.778	101	0.344		
30	161.400	66	7.133	102	0.315		
31	148.000	67	6.541	103	0.289		
32	135.700	68	5.998	104	0.265		
33	124.500	69	5.500	105	0.243		
34	114.100	70	5.044	106	0.223		
35	104.700	71	4.625	107	0.204		
36	95.960	72	4.241	108	0.187		

[0104]

(3) Water activity

As for water activity measurement, about 6 mL of a sample was measured by a conventional method under measurement conditions having 20 degrees $\pm 0.5^{\circ}\text{C}$ using a water activity analyzer (manufactured by Novasina AG, TH-500 AW SPRINT).

[0105]

(4) Water absorption index

A given weight of a sample was placed in a stirring vessel, pure water at about 25°C was added dropwise at a rate of about 20 mL/min while the sample was stirred (about 120 rpm), and while the state of the stirred sample was observed, and water was added until water was no longer miscible (oil-water separation occurred, and oil droplets formed on the liquid surface). The state where water and the oil/fat were no longer miscible was regarded as an end point, and the water absorption index was determined by the following formula where the total amount of added water was the amount of absorbed water. Measurement was performed at room temperature of about 25°C .

[0106]

(Expression 3)

Water absorption index = Amount (mL) of absorbed water / Weight (g) of oil/fat composition

[0107]

(5) Bostwick consistency

The Bostwick consistency was measured by using a KO Bostwick consistometer (manufactured by Fukayatekkousyo). At the time of measurement, the apparatus was placed horizontally by using a level, the gate was closed, then the reservoir was filled with a sample having a temperature regulated to 20°C, the trigger was pressed down to open the gate, simultaneously the time was measured, the flow-down distance of the material in the trough after a lapse of 1 second was measured.

[0108]

(6) Taste extension, (7) Swallowing sensation, (8) Palatability, (9) External color, (10) Ease of consumption, (11) Initial taste, (12) Mealy texture, (13) Greasiness

Each sample of the compositions obtained in the Examples and Comparative Examples in an amount of one tablespoon was placed on a cracker ("Levain(R)"), manufactured by Yamazaki Biscuits Co., Ltd.) and tasted by a total of 10 trained sensory test examiners to conduct a sensory test for evaluating the external color before eating and the taste during eating. In this sensory test, evaluations were made on 8 items including "taste extension", "swallowing sensation", "palatability", "external color", "ease of consumption", "initial taste", "mealy texture", and "greasiness" on a 5-point scale, with 5 being best. The "taste extension" was evaluated on a 5-point scale of 5: Good taste extension, 4: Slightly good taste extension, 3: Neutral,

2: Slightly poor taste extension, and 1: Poor taste extension. The "swallowing sensation" was evaluated on a 5-point scale of 5: Good taste swallowing sensation, 4: Slightly good swallowing sensation, 3: Neutral, 2: Slightly poor swallowing sensation, and 1: Poor swallowing sensation. The "palatability" was evaluated on a 5-point scale of 5: Good taste, 4: Slightly good taste, 3: Neutral, 2: Slightly poor taste, and 1: Poor taste. The "external color" was evaluated on a 5-point scale of 5: Vivid external color, 4: Slightly vivid external color, 3: Neutral, 2: Slightly unvivid external color, and 1: Unvivid external color. The "ease of consumption" was evaluated on a 5-point scale of 5: Easy to consume, 4: Slightly easy to consume, 3: Neutral, 2: Slightly difficult to consume, and 1: Difficult to consume. The "initial taste" was evaluated on a 5-point scale of 5: Good initial taste, 4: Slightly good initial taste, 3: Neutral, 2: Slightly poor initial taste, and 1: Poor initial taste. The "mealy texture" was evaluated on a 5-point scale of 5: Weak mealy texture, 4: Slightly weak mealy texture, 3: Neutral, 2: Slightly strong mealy texture, and 1: Strong mealy texture. The "greasiness" was evaluated on a 5-point scale of 5: Weak greasiness, 4: Slightly weak greasiness, 3: Neutral, 2: Slightly strong greasiness, and 1: Strong greasiness. Concerning each evaluated item, each examiner made evaluations by selecting a number that most closely represents his evaluation. The summary of the evaluation results was

obtained from the arithmetic mean value of the scores provided by a total of 10 persons.

Regarding the training of sensory test examiners, identification training including A) to C) below was performed, and examiners were selected who had particularly superior results, had a product development experience, were knowledgeable about qualities of food such as taste and appearance, and was capable of making absolute evaluations on each sensory test item, and objective sensory tests were performed by a total of 10 examiners.

A) Taste identification test where, concerning 5 tastes (sweetness: taste of sugar, sourness: taste of tartaric acid, savoriness: taste of sodium glutamate, saltiness: taste of sodium chloride, bitterness: taste of caffeine), one aqueous solution having a concentration close to the threshold of each component was prepared, and from a total of 7 samples including two samples of distilled water added, the taste of each sample was precisely identified;

B) Concentration difference identification test where the concentration differences of 5 aqueous table salt solutions and 5 aqueous acetic acid solutions having slightly different concentrations were precisely identified; and

C) 3-Point identification test where the soy sauce of manufacturer B was precisely identified from a total of

three samples: two soy sources of manufacturer A and one soy source of manufacturer B.

[0109]

(14) Light resistance, (15) Color after storage at 40°C for 1 month, (16) Oil/fat separation after being left to stand overnight

The quality of a 50 g sample of each composition obtained in the Examples and placed in a transparent glass bottle was evaluated.

Concerning the "light resistance", the appearance of a sample stored for 14 days at an illuminance of 25,000 lux was evaluated in comparison to a refrigerated sample.

Concerning the "color after storage at 40°C for 1 month", the appearance of a sample stored at 40°C for 30 days was evaluated in comparison to a refrigerated sample. Concerning the "oil/fat separation after being left to stand overnight", a sample was left to stand at normal temperature for about 12 hours, and the state of oil/fat separation of the sample after being left to stand was evaluated in comparison to the state of the sample immediately after production.

In this sensory test, evaluations were made on 3 items including "light resistance", "color after storage at 40°C for 1 month", and "oil/fat separation after being left to stand overnight" by a total of 10 trained sensory test examiners. Concerning the "light resistance" and "color after storage at 40°C for 1 month", each examiner made evaluations by selecting a number that most closely

represents his evaluation on a 5-point scale of 5: Little color change, 4: Slightly little color change, 3: Changed but acceptable, 2: Slightly large color change, and 1: Large color change. Concerning the "oil/fat separation after being left to stand overnight", each examiner made evaluations by selecting a number that most closely represents his evaluation on a 5-point scale of 5: Little oil/fat separation after being left to stand overnight, 4: Slightly little oil/fat separation after being left to stand overnight, 3: Separated but acceptable, 2: Slightly large oil/fat separation after being left to stand overnight, and 1: Large oil/fat separation after being left to stand overnight. The summary of the evaluation results was obtained from the arithmetic mean value of the scores provided by a total of 10 persons.

[0110]

(17) Water content (%), (18) Fine food particle content (%), (19) Total oil/fat proportion (%)

Concerning the "water content (%)", a composition was measured by the method for measuring "water" prescribed in the "Japan Agricultural Standards for Dressings (Semi-Solid Dressings and Emulsified Liquid Dressings)".

Concerning the "fine food particle content (%)" of a composition, the fine food particle content in a composition was measured by causing 100 g of the composition to pass through a 9 mesh (a Tyler mesh), centrifuging the passed fraction at 15,000 rpm for 1

minute to sufficiently remove the separated supernatant, and measuring the weight of foods (vegetables, fruits, and algae) of the present invention in the precipitated fraction. The residues on the mesh when particles were passed through a 9 mesh were sufficiently left to stand, then fine food particles smaller than the 9-mesh openings were caused to sufficiently pass through with a spatula or the like so as not to change the particle size of the composition, and then the passed fraction was obtained.

Concerning the "total oil/fat proportion (%)", a composition was measured by the method for measuring a "oil/fat content" prescribed in the "Japan Agricultural Standards for Dressings".

"%" in the Examples denotes "% by mass" unless specified otherwise. The unit of the numerical values obtained as a result of measurement (total luminous transmittance, haze value, parallel luminous transmittance, diffused transmitted light) by integrating sphere photoelectric photometry in the Examples is "%", and the unit of the numerical values obtained as a result of measurement of the particle size distribution (maximum particle size, modal diameter, 90% cumulative diameter (d90), median diameter (d50), arithmetic standard deviation) is " μm ". Concerning the particle size distribution, the maximum particle size is expressed as a value measured before ultrasonication. The modal diameter, 90% cumulative diameter (d90), median diameter (d50), and arithmetic standard deviation are expressed as

values measured after ultrasonication (frequency of 40 kHz, output 40 W, 180 seconds).

[0111]

The obtained results are shown in Table 2 to Table 13.

[0112]

[Table 2]

Sample name	Food material processing		Food-containing oil/fat			
	Food material	Food material drying method	Particle size reduction processing	Externally added oil/fat	Food (food material) content (%)	Oil/fat content (%)
Comparative Example 1	Carrot	Air dry	WC-3→AM-1	Olive oil	1.0	99.0
Example 1	Carrot	Air dry	WC-3→AM-1	Olive oil	2.0	98.0
Example 2	Carrot	Air dry	WC-3→AM-1	Olive oil	5.0	95.0
Example 3	Carrot	Air dry	WC-3→AM-1	Olive oil	10.0	90.0
Example 4	Carrot	Air dry	WC-3→AM-1	Olive oil	20.0	80.0
Example 5	Carrot	Air dry	WC-3→AM-1	Olive oil	30.0	70.0
Example 6	Carrot	Air dry	WC-3→AM-1	Olive oil	40.0	60.0
Example 7	Carrot	Air dry	WC-3→AM-1	Olive oil	60.0	40.0
Example 8	Carrot	Air dry	WC-3→AM-1	Olive oil	70.0	30.0
Example 9	Carrot	Air dry	WC-3→AM-1	Olive oil	85.0	15.0
Comparative Example 2	Carrot	Air dry	WC-3→AM-1	Olive oil	91.0	9.0
Comparative Example 3	Pumpkin	Air dry	WC-3→AM-1	Olive oil	1.0	99.0
Example 10	Pumpkin	Air dry	WC-3→AM-1	Olive oil	2.0	98.0
Example 11	Pumpkin	Air dry	WC-3→AM-1	Olive oil	5.0	95.0
Example 12	Pumpkin	Air dry	WC-3→AM-1	Olive oil	10.0	90.0
Example 13	Pumpkin	Air dry	WC-3→AM-1	Olive oil	20.0	80.0
Example 14	Pumpkin	Air dry	WC-3→AM-1	Olive oil	30.0	70.0
Example 15	Pumpkin	Air dry	WC-3→AM-1	Olive oil	40.0	60.0
Example 16	Pumpkin	Air dry	WC-3→AM-1	Olive oil	60.0	40.0
Example 17	Pumpkin	Air dry	WC-3→AM-1	Olive oil	70.0	30.0
Example 18	Pumpkin	Air dry	WC-3→AM-1	Olive oil	85.0	15.0
Comparative Example 4	Pumpkin	Air dry	WC-3→AM-1	Olive oil	91.0	9.0

[0113]

[Table 3]

Sample name	Oil/fat composition			Measurement by integrating sphere photoelectric photometry			
	Water content (%)	Fine food particle content (%)	Total oil/fat proportion (%)	Total luminous transmittance(T.T)	Haze value (Haze)	Parallel luminous transmittance (P.T)	Diffused transmitted light (Dif)
Comparative Example 1	0.1	1.0	99.0	96.0	48.1	44.6	46.2
Example 1	0.2	2.0	98.0	96.0	47.9	44.9	46.0
Example 2	0.5	8.0	95.0	96.1	47.3	45.8	45.5
Example 3	1.1	15.0	90.0	96.2	46.4	47.3	44.7
Example 4	1.8	30.0	80.0	96.4	44.6	50.2	43.0
Example 5	2.4	40.0	70.1	96.6	42.8	53.1	41.3
Example 6	3.0	60.0	60.1	96.8	41.0	56.1	39.7
Example 7	4.4	80.0	40.1	97.1	38.3	59.9	37.2
Example 8	4.7	85.0	30.1	97.2	37.4	60.8	36.3
Example 9	4.9	95.0	15.2	97.3	36.0	62.2	35.0
Comparative Example 2	5.3	99.0	9.2	97.3	35.5	62.7	34.5
Comparative Example 3	0.1	1.0	99.0	95.5	55.1	42.3	52.6
Example 10	0.2	2.0	98.0	95.5	55.0	42.4	52.5
Example 11	0.4	8.0	95.0	95.6	54.8	42.6	52.4
Example 12	1.0	15.0	90.0	95.7	54.4	43.1	52.1
Example 13	1.5	30.0	80.1	95.9	53.7	44.0	51.5
Example 14	2.1	40.0	70.1	96.1	53.0	44.9	50.9
Example 15	2.9	60.0	60.1	96.3	52.3	45.8	50.4
Example 16	4.1	80.0	40.2	96.6	49.9	48.4	48.2
Example 17	4.3	85.0	30.2	96.7	48.3	50.0	46.7
Example 18	4.6	95.0	15.3	96.8	45.8	52.5	44.3
Comparative Example 4	4.7	99.0	9.3	96.8	44.8	53.5	43.4

[0114]

[Table 4]

Sample name	Particle size distribution					Water activity	Water absorption index	Bostwick consistency (cm/ 1 second)	Physical property
	Modal diameter	90% Cumulative diameter (d90)	Median diameter (d50)	Arithmetic standard deviation	Arithmetic standard deviation/Modal diameter				
Comparative Example 1	6.5	21.5	8.4	4.7	72%	0.27	0.0	Greater than 28.0	Liquid
Example 1	7.1	21.6	8.5	4.9	69%	0.30	0.0	Greater than 28.0	Liquid
Example 2	7.8	22.0	8.7	5.4	69%	0.34	0.7	Greater than 28.0	Liquid
Example 3	8.5	22.5	9.2	6.2	73%	0.39	0.9	27.0	Paste
Example 4	9.3	23.7	10.0	7.8	84%	0.40	2.7	19.0	Paste
Example 5	10.1	24.9	10.8	9.4	93%	0.41	3.7	17.0	Paste
Example 6	11.0	26.0	11.7	11.0	100%	0.41	4.8	15.0	Paste
Example 7	12.0	36.0	13.5	15.9	133%	0.46	6.8	2.0	Paste
Example 8	12.0	44.7	14.4	19.3	160%	0.50	7.9	0.0	Paste
Example 9	13.1	57.9	15.8	24.2	185%	0.56	9.5	0.0	Paste
Comparative Example 2	13.1	63.2	16.4	26.2	200%	0.59	10.1	0.0	Paste
Comparative Example 3	8.5	20.9	9.1	5.5	65%	0.28	0.0	Greater than 28.0	Liquid
Example 10	8.5	21.1	9.2	5.6	66%	0.30	0.0	Greater than 28.0	Liquid
Example 11	9.3	21.6	9.3	5.8	63%	0.31	0.6	Greater than 28.0	Liquid
Example 12	10.1	22.4	9.5	6.2	62%	0.33	0.8	28.0	Paste
Example 13	11.0	24.1	10.0	7.0	64%	0.35	1.5	20.0	Paste
Example 14	12.0	25.8	10.5	7.8	65%	0.37	2.6	18.0	Paste
Example 15	13.1	27.5	10.9	8.6	66%	0.40	3.8	16.0	Paste
Example 16	17.0	33.0	13.2	10.9	64%	0.43	5.7	2.0	Paste
Example 17	18.5	36.9	15.1	12.4	67%	0.44	6.4	0.0	Paste
Example 18	22.0	42.7	17.9	14.6	66%	0.45	7.5	0.0	Paste
Comparative Example 4	26.2	45.0	19.0	15.5	59%	0.46	8.0	0.0	Paste

[0115]

[Table 5]

Sample name	Taste extension	Swallowing sensation	Light resistance	Palatability	External color	Color after storage at 40°C for 1 month
Comparative Example 1	4.9	4.9	4.9	4.9	4.9	5.0
Example 1	5.0	4.9	4.8	5.0	4.8	5.0
Example 2	4.8	4.9	5.0	4.8	5.0	4.8
Example 3	4.9	4.9	4.9	4.9	4.9	4.9
Example 4	5.0	4.9	4.8	5.0	4.8	5.0
Example 5	4.8	4.9	5.0	4.8	5.0	4.8
Example 6	4.9	4.9	4.9	4.9	4.9	4.9
Example 7	4.8	4.9	4.5	4.3	5.0	4.8
Example 8	4.9	4.9	4.4	4.4	4.9	4.9
Example 9	5.0	4.9	3.8	4.5	4.8	5.0
Comparative Example 2	5.0	4.4	4.0	4.3	5.0	4.3
Comparative Example 3	4.8	4.8	4.9	4.9	4.9	4.9
Example 10	4.9	4.8	5.0	5.0	4.8	5.0
Example 11	5.0	4.8	4.9	5.0	5.0	4.8
Example 12	4.8	4.8	4.8	4.8	4.9	4.9
Example 13	4.9	4.8	5.0	4.9	5.0	5.0
Example 14	5.0	4.8	4.9	5.0	4.9	4.8
Example 15	4.8	4.8	4.8	4.8	4.8	4.9
Example 16	5.0	4.8	4.9	5.0	4.9	5.0
Example 17	4.8	4.8	4.3	4.8	4.8	4.8
Example 18	4.4	4.3	4.5	4.9	5.0	4.9
Comparative Example 4	4.5	4.3	3.9	4.5	4.9	5.0

[Table 6]

Sample name	Oil/fat separation after being left to stand overnight	Ease of consumption	Initial taste	"Mealy" texture	Greasiness
Comparative Example 1	1.0	3.0	4.5	5.0	1.0
Example 1	2.1	3.6	4.3	5.0	2.1
Example 2	5.0	5.0	4.4	5.0	5.0
Example 3	4.9	4.9	4.5	5.0	5.0
Example 4	4.8	4.9	4.5	5.0	5.0
Example 5	5.0	4.9	4.3	5.0	5.0
Example 6	4.9	4.9	3.9	5.0	5.0
Example 7	5.0	3.8	3.8	3.6	5.0
Example 8	4.9	3.6	3.4	3.1	5.0
Example 9	4.8	2.8	3.5	2.1	5.0
Comparative Example 2	5.0	2.6	2.8	1.7	5.0
Comparative Example 3	1.1	3.0	4.4	5.0	1.1
Example 10	2.1	3.5	4.5	5.0	2.2
Example 11	5.0	4.9	4.3	5.0	5.0
Example 12	4.9	4.9	4.4	5.0	5.0
Example 13	4.8	4.9	4.5	5.0	5.0
Example 14	5.0	4.9	4.3	5.0	5.0
Example 15	4.9	4.9	4.4	5.0	5.0
Example 16	5.0	4.2	4.3	3.6	5.0
Example 17	4.9	3.6	4.4	3.1	5.0
Example 18	5.0	3.1	4.5	2.1	5.0
Comparative Example 4	4.9	2.6	4.3	1.7	5.0

[0117]

[Table 7]

Sample name	Food material processing		Food-containing oil/fat					Oil/fat composition			
	Food material	Food material drying method	Particle size reduction processing	Externally added oil/fat	Food (food material) content (%)	Oil/fat content (%)	Water content (%)	Fine food particle content (%)	Total oil/fat proportion (%)		
Example 19	Broccoli	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	4.5	70.0	50.3		
Example 20	Broccoli	Air dry	WC-3	Olive oil	50.0	50.0	4.2	70.0	50.3		
Comparative Example 5	Broccoli	-	TMV1100	Olive oil	50.0	50.0	41.0	50.5	50.3		
Example 21	Carrot	Air dry	WC-3→AM-1→PANDA2K	Olive oil	50.0	50.0	4.2	73.7	50.1		
Example 22	Carrot	Air dry	WC-3→PANDA2K→AM-1	Olive oil	50.0	50.0	4.4	72.0	50.1		
Example 23	Carrot	Air dry	WC-3→PANDA2K	Olive oil	50.0	50.0	5.0	72.6	50.1		
Example 24	Carrot	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	3.9	74.7	50.1		
Example 25	Carrot	Air dry	WC-3	Olive oil	50.0	50.0	4.8	74.0	50.1		
Comparative Example 6	Carrot	Air dry	TMV1100	Olive oil	50.0	50.0	3.5	73.4	50.1		
Example 26	Carrot	Air dry	WC-3→SJ-500	Olive oil	50.0	50.0	4.8	73.7	50.1		
Comparative Example 7	Carrot	-	TMV1100	Olive oil	50.0	50.0	39.9	47.1	50.1		
Example 27	Carrot	Air dry	WC-3→AM-1	Salad oil	50.0	50.0	5.6	74.5	50.1		
Example 28	Carrot	Air dry	WC-3	Salad oil	50.0	50.0	4.5	74.5	50.1		
Example 29	Carrot	Air dry	WC-3→AM-1	Salad oil	25.0	75.0	4.3	38.5	75.1		
Example 30	Pumpkin	Air dry	WC-3→AM-1→PANDA2K	Olive oil	50.0	50.0	4.5	76.5	50.2		
Example 31	Pumpkin	Air dry	WC-3→PANDA2K→AM-1	Olive oil	50.0	50.0	4.5	74.9	50.2		
Example 32	Pumpkin	Air dry	WC-3→PANDA2K	Olive oil	50.0	50.0	4.8	77.1	50.2		
Example 33	Pumpkin	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	4.5	77.5	50.2		
Example 34	Pumpkin	Air dry	WC-3	Olive oil	50.0	50.0	5.0	77.0	50.2		
Example 35	Pumpkin	Air dry	WC-3→AM-1	Salad oil	50.0	50.0	5.3	77.5	50.2		
Example 36	Pumpkin	Air dry	WC-3	Salad oil	50.0	50.0	5.5	77.0	50.2		
Example 37	Pumpkin	Air dry	WC-3→AM-1	Salad oil	25.0	75.0	3.5	38.2	75.1		

[0118]

[Table 8]

Sample name	Measurement by integrating sphere photoelectric photometry				Particle size distribution					Water activity	Water absorption index	Bostwick consistency		Physical property
	Total luminous transmittance (T.T)	Haze value (HAZE)	Parallel luminous transmittance (P.T)	Diffused transmitted light (Dif)	Modal diameter	90% Cumulative diameter (d90)	Median diameter (d50)	Arithmetic standard deviation	Arithmetic standard deviation/Modal diameter			(cm/1 second)		
Example 19	96.9	46.3	52.0	44.9	12.0	31.0	12.4	11.8	99%	0.39	5.1	7.4	Paste	
Example 20	97.5	36.0	62.4	35.1	74.0	84.4	29.9	30.5	42%	0.57	3.9	8.4	Paste	
Comparative Example 5	99.3	7.9	91.4	7.9	80.7	506.6	120.5	179.5	223%	0.99	0.0	18.0	Paste	
Example 21	96.4	42.0	55.9	40.5	9.3	34.6	10.9	10.9	118%	0.39	6.7	4.5	Paste	
Example 22	96.4	43.2	54.7	41.6	10.1	27.3	10.1	8.3	83%	0.39	6.9	6.8	Paste	
Example 23	96.8	37.7	60.4	36.5	28.5	45.7	15.1	15.8	56%	0.51	5.0	6.5	Paste	
Example 24	97.1	39.2	59.0	38.0	12.0	27.2	12.5	12.6	106%	0.42	5.8	8.0	Paste	
Example 25	97.3	34.4	63.8	33.5	13.1	63.8	16.9	26.3	202%	0.48	4.8	9.0	Paste	
Comparative Example 6	98.4	17.9	80.8	17.6	322.8	348.9	112.7	146.1	46%	0.37	2.1	9.3	Paste	
Example 26	96.2	50.8	47.4	48.8	7.1	11.1	6.6	2.7	39%	0.31	5.0	7.7	Paste	
Comparative Example 7	99.5	7.0	92.5	7.0	383.9	490.7	296.2	149.8	40%	0.99	0.0	17.5	Paste	
Example 27	96.9	32.7	65.2	31.7	10.1	37.2	10.9	11.0	109%	0.40	6.2	7.8	Paste	
Example 28	97.7	25.7	72.6	25.1	44.0	64.9	24.0	23.2	53%	0.50	5.1	8.6	Paste	
Example 29	96.3	41.2	56.6	39.7	9.3	21.1	8.5	6.0	65%	0.40	3.7	18.0	Paste	
Example 30	96.9	47.2	51.2	45.8	4.6	25.9	9.9	8.3	180%	0.36	5.8	4.0	Paste	
Example 31	96.1	56.2	42.1	54.0	12.0	23.1	9.7	7.5	63%	0.38	5.5	7.4	Paste	
Example 32	96.1	46.7	51.2	44.9	24.0	36.5	14.4	12.8	54%	0.52	4.0	6.9	Paste	
Example 33	96.5	51.6	46.7	49.8	14.3	29.2	11.4	9.4	66%	0.42	4.9	8.0	Paste	
Example 34	96.9	44.3	54.0	42.9	28.5	45.7	19.4	16.1	57%	0.49	3.6	8.5	Paste	
Example 35	96.9	47.5	50.9	46.0	14.3	31.3	11.8	10.2	72%	0.39	4.8	8.2	Paste	
Example 36	97.2	39.9	58.5	38.8	31.1	47.8	20.5	17.0	55%	0.52	3.3	8.7	Paste	
Example 37	96.4	50.0	48.2	48.2	11.0	25.0	10.1	7.7	71%	0.42	2.6	18.0	Paste	

[0119]

[Table 9]

Sample name	Taste extension	Swallowing sensation	Light resistance	Palatability	External color	Color after storage at 40°C for 1 month	Oilfat separation after being left to stand overnight	Ease of consumption	Initial taste	"Mealy" texture	Greasiness
Example 19	4.8	4.9	5.0	4.8	5.0	4.8	5.0	4.9	4.3	5.0	5.0
Example 20	3.9	3.9	3.9	4.4	4.4	4.9	2.9	3.9	4.9	5.0	5.0
Comparative Example 5	3.5	1.9	1.0	1.0	1.0	1.0	1.0	1.2	2.5	5.0	5.0
Example 21	5.0	4.9	5.0	4.8	5.0	4.8	5.0	4.9	3.8	5.0	5.0
Example 22	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.4	5.0	5.0
Example 23	4.4	4.8	4.0	4.5	4.3	5.0	3.8	3.9	4.5	5.0	5.0
Example 24	5.0	4.8	4.9	5.0	5.0	4.8	5.0	4.9	3.8	5.0	5.0
Example 25	4.8	4.3	3.8	4.3	4.4	4.9	2.9	3.9	2.9	5.0	5.0
Comparative Example 6	1.0	1.8	1.5	1.2	2.5	5.0	1.8	1.2	5.0	5.0	5.0
Example 26	5.0	4.8	4.9	5.0	4.4	4.8	4.0	4.4	4.8	5.0	5.0
Comparative Example 7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.2	4.9	5.0	5.0
Example 27	4.9	4.8	4.5	4.9	5.0	5.0	4.8	4.4	4.0	5.0	5.0
Example 28	4.0	4.3	3.9	4.5	3.4	5.0	3.0	3.4	4.3	5.0	5.0
Example 29	4.8	4.8	4.8	4.8	4.8	4.8	4.9	4.9	4.4	5.0	5.0
Example 30	4.9	4.8	5.0	4.9	5.0	4.9	5.0	4.9	3.5	4.1	5.0
Example 31	5.0	4.8	4.9	5.0	4.9	5.0	4.9	4.9	4.3	5.0	5.0
Example 32	4.3	4.8	4.3	4.8	4.3	4.8	3.8	4.3	4.4	3.9	5.0
Example 33	4.9	4.8	5.0	4.9	5.0	4.9	5.0	4.8	4.5	4.0	5.0
Example 34	4.5	4.3	3.9	4.5	4.4	5.0	2.9	3.8	4.5	3.8	5.0
Example 35	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.3	3.9	5.0
Example 36	3.9	4.3	4.0	4.4	4.5	4.9	3.0	3.8	4.4	3.8	5.0
Example 37	5.0	4.8	4.9	5.0	4.9	5.0	4.9	4.8	4.5	5.0	5.0

[0120]

[Table 10]

Sample name	Food material processing		Food-containing oil/fat				Oil/fat composition		
	Food material	Food material drying method	Particle size reduction processing	Externally added oil/fat	Food (food material) content (%)	Oil/fat content (%)	Water content (%)	Fine food particle content (%)	Total oil/fat proportion (%)
Example 38	Tomato	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	5.5	65.0	50.1
Example 39	Tomato	Air dry	WC-3	Olive oil	50.0	50.0	5.9	65.0	50.1
Example 40	Tomato	Air dry	WC-3→SJ-500	Olive oil	50.0	50.0	4.7	65.0	50.1
Comparative Example 8	Tomato	-	TMV1100	Olive oil	50.0	50.0	43.2	50.5	50.1
Example 41	Paprika	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	4.4	70.0	50.1
Example 42	Paprika	Air dry	WC-3	Olive oil	50.0	50.0	4.3	70.0	50.1
Comparative Example 9	Paprika	-	TMV1100	Olive oil	50.0	50.0	45.3	49.3	50.1
Example 43	Avocado	Freeze dry	WC-3→LMZ015	None	100.0	0.0	4.9	80.0	52.5
Example 44	Avocado	Freeze dry	WC-3	None	100.0	0.0	4.7	80.0	52.5
Example 45	Yuzu Citron	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	4.2	75.0	52.5
Example 46	Yuzu Citron	Air dry	WC-3	Olive oil	50.0	50.0	4.2	75.0	52.5
Comparative Example 10	Yuzu Citron	-	WC-3	Olive oil	50.0	50.0	46.9	49.4	52.5
Example 47	Shitake	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	5.4	75.0	52.5
Example 48	Shitake	Air dry	WC-3	Olive oil	50.0	50.0	5.7	75.0	52.5
Comparative Example 11	Shitake	-	WC-3	Olive oil	50.0	50.0	38.3	52.3	52.5
Example 49	Makonbu	Air dry	WC-3→AM-1	Olive oil	50.0	50.0	4.7	75.0	52.5
Example 50	Makonbu	Air dry	WC-3	Olive oil	50.0	50.0	4.3	75.0	52.5
Comparative Example 12	Makonbu	-	WC-3	Olive oil	50.0	50.0	37.8	51.0	52.5

[0121]

[Table 11]

Sample name	Measurement by integrating sphere photoelectric photometry				Particle size distribution						Water activity	Water absorption index	Bostwick consistency	Physical property
	Total luminous transmittance (T.T)	Haze value (HAZE)	Parallel luminous transmittance (P.T)	Diffused transmitted light (Dif)	Modal diameter	90% Cumulative diameter (d90)	Median diameter (d50)	Arithmetic standard deviation	Arithmetic standard deviation/Mo dal diameter					
Example 38	96.8	34.3	69.9	33.2	12.0	21.9	12.5	6.6	55%	0.42	7.5	7.0	Paste	
Example 39	97.5	20.2	77.8	19.7	74.0	151.5	71.1	52.3	71%	0.48	6.5	8.0	Paste	
Example 40	96.6	31.8	65.9	30.7	2.8	5.9	2.5	1.8	64%	0.43	7.2	7.0	Paste	
Comparative Example 8	98.9	12.0	87.0	11.9	456.5	576.6	102.5	222.7	49%	0.98	0	17.3	Paste	
Example 41	93.0	44.5	51.6	41.4	12.0	138.8	22.3	56.4	470%	0.50	6.9	7.5	Paste	
Example 42	93.6	37.6	58.4	35.2	191.9	344.2	132.5	133.5	70%	0.55	6.0	8.1	Paste	
Comparative Example 9	99.0	11.6	87.5	11.5	418.6	1469.0	517.0	366.0	88%	0.98	0	17.0	Paste	
Example 43	95.7	55.3	42.8	52.9	10.1	17.7	10.3	5.1	51%	0.33	7.9	6.2	Paste	
Example 44	96.0	48.1	49.8	46.2	13.1	208.6	29.3	86.1	659%	0.49	6.5	6.9	Paste	
Example 45	96.5	41.9	56.1	40.4	10.1	18.9	10.8	5.5	55%	0.37	7.2	6.8	Paste	
Example 46	96.7	38.8	59.1	37.6	13.1	23.6	12.1	7.3	57%	0.46	6.1	7.3	Paste	
Comparative Example 10	98.2	21.4	77.2	21.0	37.0	58.8	29.9	18.1	49%	0.98	0.0	17.2	Paste	
Example 47	95.7	56.0	42.1	53.6	11.0	27.1	10.2	8.5	77%	0.33	7.2	6.7	Paste	
Example 48	96.4	37.6	60.1	36.2	44.0	102.1	30.2	35.5	81%	0.45	5.9	7.3	Paste	
Comparative Example 11	97.8	24.9	73.4	24.4	48.0	108.0	37.6	36.6	77%	0.99	0.0	17.2	Paste	
Example 49	97.4	34.7	63.7	33.8	26.2	48.1	21.0	15.2	58%	0.39	8.0	6.5	Paste	
Example 50	97.6	28.8	69.5	28.1	33.9	56.0	27.9	17.4	52%	0.47	7.0	7.4	Paste	
Comparative Example 12	98.0	21.0	77.4	20.6	37.0	54.2	26.6	17.2	47%	0.98	0.0	16.9	Paste	

[0122]

[Table 12]

Sample name	Taste extension	Swallowing sensation	Light resistance	Palatability	External color	Color after storage at 40°C for 1 month	Oil/fat separation after being left to stand overnight	Ease of consumption	Initial taste	"Mealy" texture	Greasiness
Example 38	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.3	5.0	5.0
Example 39	3.9	2.8	3.0	3.9	3.5	4.9	3.0	2.8	4.4	5.0	5.0
Example 40	5.0	4.8	4.9	5.0	4.4	5.0	3.9	4.3	4.5	5.0	5.0
Comparative Example 8	1.0	1.8	1.0	1.0	2.3	1.0	1.0	1.1	4.8	5.0	5.0
Example 41	4.9	4.3	3.0	3.9	5.0	4.9	5.0	2.8	1.0	5.0	5.0
Example 42	1.5	1.8	1.4	2.0	4.4	5.0	2.9	1.3	4.5	5.0	5.0
Comparative Example 9	1.0	1.0	1.0	1.0	2.3	1.0	1.0	1.1	4.3	5.0	5.0
Example 43	5.0	4.8	4.9	5.0	4.9	5.0	4.9	4.8	4.5	3.6	5.0
Example 44	4.8	3.8	1.8	2.8	4.3	4.8	2.8	1.8	1.0	3.7	5.0
Example 45	4.9	4.8	5.0	4.9	5.0	4.9	5.0	4.8	4.4	4.0	5.0
Example 46	5.0	4.8	4.9	5.0	4.4	5.0	2.9	4.3	4.5	4.1	5.0
Comparative Example 10	3.8	3.8	3.8	4.3	3.3	1.0	1.0	1.1	4.8	5.0	5.0
Example 47	4.9	4.8	5.0	4.9	5.0	4.9	5.0	4.8	4.4	4.0	5.0
Example 48	4.0	3.3	2.9	4.0	4.4	5.0	2.9	2.8	4.5	4.1	5.0
Comparative Example 11	3.8	3.3	2.8	3.8	3.3	1.0	1.0	1.1	4.3	5.0	5.0
Example 49	4.4	4.3	4.0	4.4	5.0	4.9	5.0	3.8	4.4	4.0	5.0
Example 50	4.0	3.8	3.9	4.5	3.4	5.0	2.9	3.3	4.5	4.1	5.0
Comparative Example 12	3.8	3.8	3.8	4.3	3.3	1.0	1.0	1.1	4.8	5.0	5.0

[0123]

[Table 13]

	Maximum particle size before ultrasonication (μm)		Maximum particle size before ultrasonication (μm)
Comparative Example 1	26.2	Example 26	88.0
Example 1	28.5	Comparative Example 7	1184.0
Example 2	28.5	Example 27	296.0
Example 3	31.1	Example 28	322.8
Example 4	114.1	Example 29	271.4
Example 5	191.9	Example 30	248.9
Example 6	228.2	Example 31	209.3
Example 7	322.8	Example 32	209.3
Example 8	418.6	Example 33	209.3
Example 9	592.0	Example 34	352.0
Comparative Example 2	837.2	Example 35	209.3
Comparative Example 3	26.2	Example 36	296.0
Example 10	28.5	Example 37	271.4
Example 11	28.5	Example 38	228.2
Example 12	33.9	Example 39	322.8
Example 13	114.1	Example 40	44.0
Example 14	176.0	Comparative Example 8	704.0
Example 15	191.9	Example 41	456.5
Example 16	249.3	Example 42	913.0
Example 17	296	Comparative Example 9	2000.0
Example 18	352.0	Example 43	148.0
Comparative Example 4	114.1497.8	Example 44	248.9
Example 19	248.9	Example 45	135.7
Example 20	296.0	Example 46	161.4
Comparative Example 5	1408.0	Comparative Example 10	352.0
Example 21	248.9	Example 47	209.3
Example 22	209.3	Example 48	418.6
Example 23	296.0	Comparative Example 11	456.5
Example 24	271.4	Example 49	352.0
Example 25	1184.0	Example 50	352.0
Comparative Example 6	2000.0	Comparative Example 12	296.0

Claims

[Claim 1]

A fine food particle-containing oil/fat composition comprising:

fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga; and

an oil/fat,

and having:

- (1) a fine food particle content of 2% by mass or more and 98% by mass or less,
- (2) a total oil/fat proportion of 10% by mass or more and 98% by mass or less,
- (3) a modal diameter in an ultrasonicated state of 0.3 μm or more and 200 μm or less, and
- (4) a water content of less than 20% by mass.

[Claim 2]

The fine food particle-containing oil/fat composition according to claim 1, having a maximum particle size of 30 μm or more before ultrasonication.

[Claim 3]

The fine food particle-containing oil/fat composition according to claim 1 or 2, having a consistency of 0.1 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[Claim 4]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 3, having a fine food particle content of 15% by mass or more.

[Claim 5]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 4, wherein an oil/fat portion of the composition has a Bostwick consistency of 10 cm or more as measured at 20°C for 10 seconds by using a Bostwick consistometer.

[Claim 6]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 5, wherein two or more fats and oils including a liquid oil/fat are used, and 90% by mass or more of an entirety of the fats and oils is a liquid edible oil/fat.

[Claim 7]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 6, wherein a total mass of the vegetables, the fruits, and the algae accounts for 30% by mass or more of a total mass of insoluble components in the composition.

[Claim 8]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 7, wherein the fine food particles are fine particles of a food having an oil/fat content of 50% by mass or less.

[Claim 9]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 8, having a total luminous transmittance of 99% or less when diluted to a fine food particle content of 0.06% by mass.
[Claim 10]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 9, having a haze value of 11% to 70% when diluted to a fine food particle content of 0.06% by mass.
[Claim 11]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 10, having a diffuse transmittance of 11% or more when diluted to a fine food particle content of 0.06% by mass.
[Claim 12]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 11, having a water activity of 0.97 or less.
[Claim 13]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 12, having a water absorption index of 0.5 or more and 10 or less.
[Claim 14]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 13, having a 50% cumulative diameter (median diameter) in an

ultrasonicated state of 0.3 μm or more and 150 μm or less.

[Claim 15]

The fine food particle-containing oil/fat composition according to any one of claims 1 to 14, having a consistency of 1.0 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[Claim 16]

A food/drink comprising the fine food particle-containing oil/fat composition according to any one of claims 1 to 15.

[Claim 17]

A liquid condiment comprising the fine food particle-containing oil/fat composition according to any one of claims 1 to 15.

[Claim 18]

A method for producing the fine food particle-containing oil/fat composition according to any one of claims 1 to 15, the method comprising blending an oil/fat with dried fine food particles of at least one selected from the group consisting of a dried vegetable, a dried fruit and a dried alga.

[Claim 19]

A method for producing the fine food particle-containing oil/fat composition according to any one of claims 1 to 15, the method comprising subjecting a dried food of at least one selected from the group consisting

of a dried vegetable, a dried fruit and a dried alga to a pulverization processing in the presence of an oil/fat.

[Claim 20]

The method according to claim 19, wherein the pulverization processing is a medium stirring mill pulverization processing.

[Claim 21]

A fine food particle-containing oil/fat composition, wherein at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga is subjected to a particle size reduction processing in the presence of an oil/fat, and the fine food particle-containing oil/fat composition has:

- (1) a fine food particle content of 2% by mass or more and 98% by mass or less,
- (2) a total oil/fat proportion of 10% by mass or more and 98% by mass or less,
- (3) a modal diameter in an ultrasonicated state of 0.3 μm or more and 200 μm or less, and
- (4) a water content of less than 20% by mass.

[Claim 22]

The fine food particle-containing oil/fat composition according to claim 21, having a maximum particle size of 30 μm or more before ultrasonication.

[Claim 23]

The fine food particle-containing oil/fat composition according to claim 21 or 22, having a consistency of 0.1 cm or more and 28 cm or less as

measured at 20°C for 1 second by using a Bostwick consistometer.

[Claim 24]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 23, having a fine food particle content of 15% by mass or more.

[Claim 25]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 24, wherein an oil/fat portion of the composition has a Bostwick consistency of 10 cm or more as measured at 20°C for 10 seconds by using a Bostwick consistometer.

[Claim 26]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 25, wherein two or more fats and oils including a liquid oil/fat are used, and 90% by mass or more of an entirety of the fats and oils is a liquid edible oil/fat.

[Claim 27]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 26, wherein a total weight of the vegetables, the fruits, and the algae accounts for 30% by mass or more of a total weight of insoluble components in the composition.

[Claim 28]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 27,

wherein the fine food particles are fine particles of a food having an oil/fat content of 50% by mass or less.

[Claim 29]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 28, having a total luminous transmittance of 99% or less when diluted to a fine food particle content of 0.06% by mass.

[Claim 30]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 29, having a haze value of 11% to 70% when diluted to a fine food particle content of 0.06% by mass.

[Claim 31]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 30, having a diffuse transmittance of 11% or more when diluted to a fine food particle content of 0.06% by mass.

[Claim 32]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 31, having a water activity of 0.97 or less.

[Claim 33]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 32, having a water absorption index of 0.5 or more and 10 or less.

[Claim 34]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 33, having a 50% cumulative diameter (median diameter) in an ultrasonicated state of 0.3 μm or more and 150 μm or less.

[Claim 35]

The fine food particle-containing oil/fat composition according to any one of claims 21 to 34, having a consistency of 1.0 cm or more and 28 cm or less as measured at 20°C for 1 second by using a Bostwick consistometer.

[Claim 36]

A food/drink comprising the fine food particle-containing oil/fat composition according to any one of claims 21 to 34.

[Claim 37]

A liquid condiment comprising the fine food particle-containing oil/fat composition according to any one of claims 21 to 34.

[Claim 38]

A method for producing a fine food particle-containing oil/fat composition, the method comprising subjecting a food-containing oil/fat composition having a total content of at least one food selected from the group consisting of a vegetable, a fruit and an alga of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a

particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and water activity of the food-containing oil/fat composition after the processing is at least 0.01 lower than the water activity before the processing.

[Claim 39]

A method for lowering water activity of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 40]

A fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and water activity of the food-containing oil/fat composition after the processing is at least 0.01 lower than the water activity before the processing.

[Claim 41]

A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, the method comprising subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a water absorption index of the food-containing oil/fat composition after the processing is at least 0.1 higher than the water absorption index before the processing.

[Claim 42]

A method for increasing a water absorption index of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 43]

A fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a

fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a water absorption index of the food-containing oil/fat composition after the processing is at least 0.1 higher than the water absorption index before the processing.

[Claim 44]

A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, the method comprising subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a haze value of the food-containing oil/fat composition after the processing is at least 1 higher than the haze value before the processing.

[Claim 45]

A method for increasing a haze value of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 46]

A method for producing a fine food particle-containing oil/fat composition comprising an oil/fat and fine particles of at least one food selected from the group consisting of a vegetable, a fruit and an alga, wherein the fine food particle-containing oil/fat composition is obtained by subjecting a food-containing oil/fat composition having a total food content of 2% by mass or more and 90% by mass or less, an oil/fat content of 10% by mass or more and 98% by mass or less, and a water content of less than 20% by mass to a particle size reduction processing until a modal diameter in an ultrasonicated state is 0.3 μm or more and 200 μm or less, and a haze value of a food-containing oil/fat composition after the processing is at least 1 higher than the haze value before the processing.

[Claim 47]

A method for enhancing taste extension of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a

dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 48]

A method for enhancing a swallowing sensation of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 49]

A method for enhancing stability of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 50]

A method for improving smoothness of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.

[Claim 51]

A method for improving an initial taste of a dried food-containing oil/fat composition comprising an oil/fat and at least one dried food selected from the group consisting of a dried vegetable, a dried fruit and a dried alga, the method comprising subjecting the dried food-containing oil/fat composition to a particle size reduction processing.