

DESCRIPTION

BREADCRUMB MIX

Technical Field

[0001]

This invention relates to a breadcrumb mix and a breadcrumb modifier for use in the making of the breadcrumb mix.

Background Art

[0002]

Breaded and fried food may be typically prepared as follows; a food item, for example, raw meat of a domestic animal such as pork, beef, or chicken, raw seafood such as horse mackerel or salmon, or a vegetable(s) is first dredged with wheat flour, dipped in an egg wash or batter solution, attached with breadcrumbs, and then deep-fried in oil. This is, however, a very cumbersome operation, which has been raising the need for easier and simpler operations of making breaded and fried food.

[0003]

Certain breadcrumb mixes that can be directly attached to food items and deep-fried in oil to thereby make breaded and fried food have been suggested so far. Patent Literature 1 describes a batter mix for breaded and fried food in which breadcrumbs are blended with one or more

selected from paste adhesive, pregelatinized starch, dried egg white, and dried whole egg. Patent Literature 2 describes a breadcrumb mix in which dry breadcrumbs are blended with pregelatinized starch and/or powdered protein, and a polysaccharide thickener. Patent Literature 3 describes processed breadcrumbs prepared by spraying the surfaces of dry breadcrumbs with a solution containing at least one high-viscosity material and protein selected from the group consisting of saccharides and protein hydrolysates and drying the obtained breadcrumbs. Patent Literature 4 describes processed breadcrumbs attached with powdered starch and/or powdered protein, which is prepared by blending fresh breadcrumbs with powdered starch and/or powdered protein and drying the obtained breadcrumbs. Patent Literature 5 describes a breadcrumb mix for food, like fried cuttlefish, containing 1 to 20% of wheat gluten, 10 to 60% of starch, and 3 to 12% of powdered soy sauce, and having a ratio of contents between wheat gluten and starch ranging from 0.5 to 60 (weight ratio).

Citation List

Patent Literature

[0004]

Patent Literature 1: JP S55-150870 A

Patent Literature 2: JP 5417281 B2

Patent Literature 3: JP H08-228706 A

Patent Literature 4: JP 3035287 B2

Patent Literature 5: JP 2015-146770 A

Summary of Invention

Technical Problem

[0005]

There are issues to be addressed with the existing breadcrumb mixes described thus far, which are, for example, ingredients of the mixes may be separated during storage, or the mixes may result in poor attachment property to food items. The fried food made with such breadcrumb mixes was not really satisfactory in terms of appearance and texture. There is a demand to provide breadcrumb mixes that successfully make breaded and cooked food having better appearance and texture and high quality.

Solution to Problem

[0006]

As a result of intensive studies, the inventors of this invention found that a breadcrumb mix obtained by preparing a mixture that contains a protein material, a thickener, and an oil or fat respectively in certain amounts and mixing typical breadcrumbs with the mixture at a certain mixing ratio is attached to food items well. The inventors

also found that breaded and cooked food with good appearance and texture as well as high quality can be obtained by attaching food items such as seafood or meat directly with the breadcrumb mix and heat-cooking the mix-attached food items.

[0007]

Accordingly, this invention provides a breadcrumb modifier containing 20 to 90 mass% of a protein material, 1 to 60 mass% of a thickener, and 0.1 to 5 mass% of an oil or fat.

This invention further provides a breadcrumb mix containing 5 to 40 parts by mass of the breadcrumb modifier relative to 100 parts by mass of breadcrumbs.

This invention further provides breaded and cooked food to which the breadcrumb mix has been attached.

This invention further provides a method of making breaded food, the method including directly attaching the breadcrumb mix to the surface of a food item, and baking or deep-frying, using oil, the food item to which the breadcrumb mix has been attached.

This invention further provides a method of making a breadcrumb mix, the method including mixing 100 parts by mass of breadcrumbs with 5 to 40 parts by mass of the breadcrumb modifier.

This invention further provides a method of making a

breaded and cooked food, the method including directly attaching the breadcrumb mix made by the method described above to the surface of a food item, and baking or deep-frying, using oil, the food item to which the breadcrumb mix has been attached.

Advantageous Effects of Invention

[0008]

The breadcrumb mix made by using the breadcrumb modifier according to this invention can be attached to food items well. When the breadcrumb mix is simply attached to the food items directly, their surfaces may be coated with a substantial amount of the mix. When the food item attached with the breadcrumb mix is cooked, high-quality breaded and cooked food with good appearance and texture can be made, which shows a uniform and good color after being fried, has voluminous and good "*Kendachi*" (Japanese term signifying breadcrumbs standing upright like swords), provides crispy coating, and maintains original flavors of food item used. This breadcrumb mix may be available for various cooking such as deep-frying with abundant oil, or baking with a small amount of oil.

Description of Embodiments

[0009]

This invention provides a breadcrumb modifier for use in the making of a breadcrumb mix and a breadcrumb mix made by using the breadcrumb modifier. The breadcrumb modifier according to this invention contains a protein material, a thickener, and an oil or fat. The breadcrumb mix according to this invention can be obtained by mixing the breadcrumb modifier with breadcrumbs. The obtained breadcrumb mix is for use in the making of breaded and cooked food.

[0010]

The "modification" of breadcrumbs described herein may indicate improved property of breadcrumbs used as coating, for example, increased attachment property to food items and/or improved appearance and texture of a coating of breaded and cooked food obtained by cooking a breadcrumb-attached food item.

[0011]

The protein material contained in the breadcrumb modifier according to this invention may be selected from, for example, wheat protein including gluten, gliadin, and glutenin; egg protein including whole egg, egg white, and egg yolk; lactoprotein including non-fat dry milk and whey protein; soybean protein, and gelatin. Among these examples, wheat protein and egg protein may be preferable, and gluten and dried egg white may be particularly preferable. One of these protein materials may be singly

used, or two or more of them may be used in combination. The content of the protein material in the breadcrumb modifier according to this invention may be from 20 to 90 mass%, preferably from 55 to 80 mass%, relative to the total amount of the modifier. When the content of the protein material is less than 20 mass%, the breadcrumb mix obtained by using the breadcrumb modifier may be poorly attached to food items, and a breaded and cooked food obtained by using this breadcrumb mix may be easily burnt or likely to shrink. When the content of the protein material surpasses 90 mass%, on the other hand, the obtained breaded and cooked food may result in a hard texture.

[0012]

Examples of the thickener contained in the breadcrumb modifier according to this invention may include pregelatinized starch, glucomannan, agar, curdlan, sodium alginate, carrageenan, gellan gum, xanthan gum, pectin, and gelatin. Among these examples, pregelatinized starch and glucomannan may be preferable. One of these thickeners may be singly used, or two or more of them may be used in combination. The content of the thickener in the breadcrumb modifier according to this invention may be from 1 to 60 mass%, preferably from 10 to 40 mass%, relative to the total amount of the modifier. When the content of the

thickener is less than 1 mass%, the obtained breaded and cooked food may be easily burnt. When the content of the thickener surpasses 60 mass%, on the other hand, the obtained breaded and cooked food may result in a hard texture.

[0013]

The oil or fat included in the breadcrumb modifier according to this invention is not particularly limited and may be any edible oils or fats in a liquid or solid form. Preferable examples of the oil or fat may be vegetable oil or fat including soybean oil, rapeseed oil, corn oil, palm oil, and shortening, higher fatty acids, sucrose fatty acid esters, and monoglyceride. Among these examples, vegetable oil or fat may be particularly preferable, a specific example thereof may be shortening. The oil or fat may preferably have a melting point of, approximately, from -10°C to 40°C. The melting point of oil or fat in this description refers to an open-tube melting point pursuant to the Standard Methods for the Analysis of Fats, Oils and Related Materials (2.2.4.2-1996). One of the aforementioned oils or fats may be singly used, or two or more of them may be used in combination. The content of the oil or fat in the breadcrumb modifier according to this invention may be from 0.1 to 5 mass%, preferably be from 0.3 to 3 mass%, relative to the total amount of the

modifier. The oil or fat content less than 0.1 mass% may increase the likelihood of the breadcrumb modifier being separated from the breadcrumbs. The oil or fat content greater than 5 mass% may lead to forming lumps or a mass of the breadcrumb modifier, and inhomogeneity of the breadcrumb mix made by using the breadcrumb modifier.

[0014]

The average particle sizes of the protein material, thickener, and oil or fat contained in the breadcrumb modifier according to this invention may be from 20 μm to 500 μm , preferably from 30 μm to 300 μm . In a case where any one(s) of the protein material, thickener, and oil have an average particle size(s) beyond the before-mentioned numerical ranges, the breadcrumb modifier may be likely to separate from the breadcrumbs.

[0015]

If necessary, an additional material(s) may be further added to the breadcrumb modifier according to this invention to an extent that does not compromise a desirable appearance and texture expected of a breaded food prepared with the breadcrumb mix made by using the breadcrumb modifier. Examples of the additional material may include grain flour, starch, seasoning, emulsifier, sweetener, acidulant, common salt, spice, pigment, enzyme, and perfumery. The content of the additional material(s) in

the breadcrumb modifier according to this invention may be less than or equal to 50 mass%, preferably be less than or equal to 20 mass%, relative to the total amount of this modifier. In other words, the total content of the protein material, thickener, and oil or fat added to the breadcrumb modifier according to this invention may preferably be from 50 to 100 mass%, more preferably be from 80 to 100 mass%.

[0016]

The breadcrumb modifier according to this invention is prepared by mixing the protein material, thickener, and oil or fat, and if necessary, the additional material(s). The breadcrumb modifier may preferably be in the form of powder. A means for preparing the powdered breadcrumb modifier may include blending the powdered protein material, thickener, and oil or fat, stirring the powdered protein material and thickener while adding a liquid oil thereto to form powder, or powdering a mixture of the protein material, thickener, and oil or fat. The average particle size of the obtained powder may be from 20 μm to 500 μm , preferably from 30 μm to 300 μm .

[0017]

The breadcrumb modifier according to this invention is used to make the breadcrumb mix. The breadcrumb mix according to this invention thus contains breadcrumbs and the breadcrumb modifier according to this invention. The

breadcrumb mix according to this invention is obtainable by blending breadcrumbs with the breadcrumb modifier according to this invention. This blending action allows the breadcrumb modifier according to this invention to attach to the surfaces of the breadcrumbs. Thus, the breadcrumb mix according to this invention may be processed breadcrumbs to which the breadcrumb modifier according to this invention has been attached.

[0018]

In the making of the breadcrumb mix according to this invention, the protein material, thickener, and oil or fat, and if necessary, any additional material(s) are blended to prepare the breadcrumb modifier according to this invention beforehand, and the prepared breadcrumb modifier is then blended with the breadcrumbs. The breadcrumb modifier according to this invention thus prepared beforehand may preferably be powder. The breadcrumb modifier according to this invention thus prepared beforehand may preferably be a homogenous mixture prepared by mixing the protein material, thickener, and oil or fat to evenly disperse in the mixture.

[0019]

The breadcrumbs used to make the breadcrumb mix according to this invention may be selected from various types of breadcrumbs typically used. The breadcrumbs may be made by using materials typically used to make

breadcrumbs, such as wheat flour, yeast, sugar, common salt, and oil or fat, through a roasting method, or a electrode method. The materials and the method employed, however, are not particularly limited. The breadcrumbs used to make the breadcrumb mix according to this invention may be either dry breadcrumbs or fresh breadcrumbs, however, dry breadcrumbs may preferably be used. The content of the breadcrumbs in the breadcrumb mix according to this invention (in terms of dry breadcrumbs) may preferably be from 71 to 95 mass%, preferably be from 80 to 93 mass%, relative to the total amount of the mix.

[0020]

The content of the breadcrumb modifier according to this invention in the breadcrumb mix according to this invention may be from 5 to 40 parts by mass, preferably from 7.5 to 25 parts by mass, more preferably from 10 to 25 parts by mass, relative to 100 parts by mass of the breadcrumbs (in terms of dry breadcrumbs, the same applies to the description hereinafter). In a case where the content of the breadcrumb modifier is less than 5 parts by mass or greater than 40 parts by mass relative to 100 parts by mass of the breadcrumbs, breaded and cooked food prepared with the obtained breadcrumb mix may fail to improve in appearance and texture sufficiently.

[0021]

In the total amount of the breadcrumb mix according to this invention, the contents of the protein material relative to 100 parts by mass of the breadcrumbs may be, for example, from 1 to 36 parts by mass, preferably from 2 to 32 parts by mass, more preferably from 2.75 to 22.5 parts by mass, even more preferably from 5.0 to 20 parts by mass. The content of the thickener relative to 100 parts by mass of the breadcrumbs may be, for example, from 0.05 to 24 parts by mass, preferably from 0.1 to 16 parts by mass, more preferably from 0.5 to 15 parts by mass, even more preferably from 1 to 10 parts by mass. The content of the oil or fat relative to 100 parts by mass of the breadcrumbs may be, for example, from 0.005 to 2 parts by mass, preferably from 0.01 to 1.25 parts by mass, more preferably from 0.015 to 1.2 parts by mass, even more preferably from 0.03 to 0.75 parts by mass. When the breadcrumb modifier according to this invention includes no additional ingredient other than the protein material, thickener, or oil or fat, the total content of the protein material, thickener, and oil or fat in the breadcrumb mix according to this invention may be from 5 to 40 parts by mass, preferably from 7.5 to 25 parts by mass, more preferably from 10 to 25 parts by mass, relative to 100 parts by mass of the breadcrumbs. Supposing that the contents of the protein material, thickener, and powdered

oil or fat in the breadcrumb mix are each within these numerical ranges, the contents of these three ingredients in the breadcrumb modifier added to the breadcrumbs may not necessarily stay within the numerical ranges described earlier. In that case, the obtained breadcrumb mix may fail to meet a sufficient quality.

[0022]

If necessary, an additional material(s) may be further added to the breadcrumb mix according to this invention to an extent that does not compromise a desirable appearance and texture expected of a breaded food prepared with the breadcrumb mix according to this invention. Examples of the additional material may include grain flour, starch, seasoning, emulsifier, sweetener, acidulant, common salt, spice, pigment, enzyme, and perfumery. The additional material(s) may be added beforehand to the breadcrumb modifier according to this invention or may be added when the breadcrumbs are blended with the breadcrumb modifier. In view of homogeneity of the breadcrumb mix and easiness to make the breadcrumb mix, the additional material(s) may preferably be added beforehand to the breadcrumb modifier according to this invention. The content of the additional material(s) in the breadcrumb mix according to this invention may be less than or equal to 20 parts by mass, preferably be less than or equal to 12.5 parts by mass,

relative to 100 parts by mass of the breadcrumbs.

[0023]

In the making of the breadcrumb mix according to this invention, the breadcrumbs are mixed with the breadcrumb modifier and then the mixture may be dried or granulated, if necessary. When the breadcrumb material of the breadcrumb mix is fresh breadcrumbs, the obtained mixture may preferably be dried. The water content of the breadcrumb mix according to this invention may be from 2 to 20 mass%. In view of preservability and texture, however, the water content may preferably be from 3 to 15 mass%. While the particle size of the breadcrumb mix according to this invention is not particularly limited, the breadcrumb mix may preferably have an average particle size of from 100 μm to 7 mm, more preferably have an average particle size of from 200 μm to 5 mm.

[0024]

The average particle size in this description refers to a mean volume diameter (MV) in the laser diffraction and scattering method.

[0025]

The breadcrumb mix according to this invention is used to make breaded and cooked food. This invention further provides breaded and cooked food to which the breadcrumb mix according to this invention has been attached. The

breaded and cooked food may be either fried food or a non-fried food.

[0026]

The breadcrumb mix according to this invention may be available for various cooking such as deep-frying with abundant oil, or baking with a small amount of oil. In case of baking with a small amount of oil, the breadcrumb mix according to this invention is attached to the surface of a food item, for example, meat of a domestic animal or seafood directly (without flouring or dipping in an egg wash or batter), then the food item is baked by using a pot, frypan, steel plate, or oven with a small amount of oil, for example, with oil spread thereon, to thereby make a non-fried breaded food. In view of reducing the intake of oil, the amount of oil used for baking may be 50 mL or less, preferably 30 mL or less, relative to 100 g of a food item, such as seafood or meat. When the food item is deep-fried with abundant oil, the breadcrumb mix according to this invention is directly attached to the food item (without flouring or dipping in an egg wash or batter), and the mix-attached food item is then put in a frying pot adequately filled with oil to deep-fry through a method typically used, to thereby make a fried breaded food. The oil used for baking or deep-frying is not particularly limited and may be any edible oils typically used, for example, vegetable

oils including rapeseed oil, soybean refined oil, rice-bran oil, and sesame oil, and animal oils including lard.

[0027]

The breadcrumb mix according to this invention can be attached to food items well, and a substantial amount of the breadcrumb mix may remain attached to the food items even after they are deep-fried with abundant oil. The breadcrumb mix according to this invention may successfully provide high-quality breaded and cooked food with good appearance and texture, which shows a uniform and good color after being fried, has voluminous and good "*Kendachi*" (Japanese term signifying breadcrumbs standing upright like swords), provides crispy coating, and maintains original flavors of food item used.

[0028]

This invention is hereinafter described in further detail using examples. This invention includes but is not limited to these examples.

Examples

[0029]

Below are listed the materials used to make breadcrumb mixes according to the examples.

Wheat gluten ("A-Glu G" supplied by GLICO NUTRITION CO., LTD.)

Dried egg white ("Dried white egg" supplied by Kewpie

Corporation)

Pregelatinized starch ("Matsunolin" supplied by Matsutani Chemical Industry Co., Ltd.)

Non-pregelatinized starch ("Nisshoku Corn Starch" supplied by NIHON SHOKUJIN KAKO CO., LTD.)

Glucomannan ("Super Mannan" supplied by Ogino Shoten KK)

Powdered oil or fat ("Shortening" supplied by "TAIYO YUSHI CORP.")

Wheat flour ("Flour" supplied by Nisshin Seifun Group Inc.)

Breadcrumbs ("Dried breadcrumbs" supplied by FRYSTAR)
[0030]

(Production Examples 1 - 4)

A protein material (wheat gluten or dried egg white), a thickener (glucomannan or pregelatinized starch), and powdered oil or fat were evenly mixed, respectively, in amounts shown in Table 1 to obtain mixtures (breadcrumb modifiers). Dried breadcrumbs and the mixtures were mixed at the ratio of 100 : 20 (mass ratio) to obtain breadcrumb mixes.

[0031]

(Comparative examples 1 - 7)

The materials shown in Table 1 were evenly mixed to obtain mixtures not containing one of the protein material,

thickener, and powdered oil or fat. Dried breadcrumbs and the mixtures were mixed at the ratio of 100 : 20 (mass ratio) to obtain breadcrumb mixes.

[0032]

(Test Example 1)

The breadcrumb mixes of the production examples 1 to 4 and the comparative examples 1 to 7 were flatly spread in trays, and pieces of pork loin (approximately 1.2 cm in thickness, approximately 100 g per piece) were placed thereon and turned upside down several times to attach the mixes to all over their surfaces. The obtained pieces were deep-fried for three minutes in an oil pan heated to 170°C to obtain pork cutlets. The obtained pork cutlets were subjected to the following evaluation in regard to their appearances and textures, which was conducted by 10 trained panelists. Then, average scores were calculated. Table 1 shows an obtained result.

[0033]

(Evaluation criteria for appearance)

Grade 5: Very good; meat overall evenly coated with the breadcrumb, good Kendachi, even color of the fried food

Grade 4: Good; meat overall coated with the breadcrumb, good Kendachi, almost even color of the fried food

Grade 3: Fair; meat partly thinly coated with the breadcrumb, almost even color of the fried food.

Grade 2: Bad; meat partly thinly coated with the breadcrumb, uneven color of the fried food.

Grade 1: Very bad; meat partly thinly coated with the breadcrumb or partly breadcrumb removing from the meat, uneven color of the fried food.

(Evaluation criteria for texture)

Grade 5: Very good; very crispy texture that goes well with meat's flavor

Grade 4: Good; rather crispy texture that goes with meat's flavor

Grade 3: Fair; rather unsatisfactory crispiness, rather hard meat

Grade 2: Bad; unsatisfactory crispiness, hard meat

Grade 1: Very bad; no crispness, dry and hard meat

[0034]

[Table 1]

Mixture Composition (mass%)	Production examples				Comparative examples						
	1	2	3	4	1	2	3	4	5	6	7
Wheat gluten	70	70			70		70	70	30	99	
Dried egg white			70	70		49					
Glucomannan	29		29				30				
Pregelatinized starch		29		29				30	70		99
Non-pregelatinized starch					29	50					
Powdered oil or fat	1	1	1	1	1	1				1	1
Total	100	100	100	100	100	100	100	100	100	100	100
Mixing ratio of breadcrumbs and mixture	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20
Appearance	4.4	4.6	4.3	4.4	2.8	2.5	2.5	2.5	2.3	2.5	1.9
Texture	4.4	4.7	4.2	4.4	3.2	2.7	2.7	2.2	2.6	1.8	2.2

[0035]

(Test Example 2)

Breadcrumb mixes 1 to 6 were made similarly to the production examples 1 to 4, except that the mixture compositions were changed as shown in Table 2. As in the test example 1, pork cutlets were obtained with these mixes and then evaluated. Table 2 shows an obtained result. Table 2 shows the result of the making example 1 again.

[0036]

[Table 2]

Mixture Composition (mass%)	Mix						
	1	2	3	Production example 1	4	5	6
Wheat gluten	17	20	55	70	80	90	93
Pregelatinized starch	29	29	29	29	19	9	6
Powdered oil or fat	1	1	1	1	1	1	1
Wheat flour	53	50	15	-	-	-	-
Total	100	100	100	100	100	100	100
Mixing ratio of breadcrumbs and mixture	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20
Appearance	3.4	3.8	4.2	4.4	4.4	4.2	3.6
Texture	3.1	3.7	4.1	4.4	4.1	3.8	2.9

[0037]

(Test Example 3)

Breadcrumb mixes 7 to 12 were made similarly to the production examples 1 to 4, except that the mixture compositions were changed as shown in Table 3. As in the test example 1, pork cutlets were obtained with these mixes

and then evaluated. Table 3 shows an obtained result.

Table 3 shows the result of the making example 1 again.

[0038]

[Table 3]

Mixture Composition (mass%)	Mix						
	7	8	9	Production example 1	10	11	12
Wheat gluten	70	70	70	70	59	39	33
Pregelatinized starch	0.5	1	10	29	40	60	66
Powdered oil or fat	1	1	1	1	1	1	1
Wheat flour	28.5	28	19	-	-	-	-
Total	100	100	100	100	100	100	100
Mixing ratio to mixture	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20
Appearance	3.6	3.9	4.2	4.4	4.1	3.8	3.3
Texture	3.0	3.6	4.1	4.4	4.2	3.9	3.6

[0039]

(Test Example 4)

Breadcrumb mixes 13 to 18 were made similarly to the production examples 1 to 4, except that the mixture compositions were changed as shown in Table 4. As in the test example 1, pork cutlets were obtained with these mixes and then evaluated. Table 4 shows an obtained result. Table 4 shows the result of the making example 1 again.

[0040]

[Table 4]

Mixture Composition (mass%)	Mix						
	13	14	15	Production example 1	16	17	18
Wheat gluten	70	70	70	70	70	70	70
Pregelatinized starch	29.95	29.9	29.7	29	27	25	24
Powdered oil or fat	0.05	0.1	0.3	1	3	5	6
Total	100	100	100	100	100	100	100
Mixing ratio of breadcrumbs and mixture	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20	100 : 20
Appearance	3.6	4.0	4.1	4.4	4.0	3.7	3.3
Texture	3.4	3.7	4.1	4.4	4.2	3.9	3.5

[0041]

(Test Example 5)

Breadcrumb mixes 19 to 26 were made similarly to the production example 1, except that mixing ratios of the breadcrumbs and mixtures were changed. For comparison, breadcrumb mixes 27 to 38 were also made, which had mixture-breadcrumb mixing ratios similar to the breadcrumb mixes 19 to 26 and mixture compositions that differed from the mixes 19 to 26. As in the test example 1, pork cutlets were obtained with these breadcrumb mixes and then evaluated. Tables 5 and 6 show obtained results. Table 5 shows the result of the making example 1 again, and Table 6 shows the results of the mixes 1, 6, 7, and 12 again.

[0042]

[Table 5]

Mixture Composition (mass%)	Mix								
	19	20	21	Product ion example 1	22	23	24	25	26
Wheat gluten	70	70	70	70	70	70	70	70	70
Pregelatinized starch	29	29	29	29	29	29	29	29	29
Powdered oil or fat	1	1	1	1	1	1	1	1	1
Wheat flour	-	-	-	-	-	-	-	-	-
Total	100	100	100	100	100	100	100	100	100
Mixing ratio of breadcrumbs and mixture	100 : 2	100 : 5	100 : 10	100 : 20	100 : 25	100 : 30	100 : 35	100 : 40	100 : 45
Appearance	3.2	4.0	4.3	4.4	4.3	4.2	4.1	4.0	3.3
Texture	3.3	4.0	4.2	4.4	4.3	4.1	4.0	3.9	3.2

[0043]

[Table 6]

Mixture Composition (mass%)	Mix															
	27	6	28	29	30	7	31	32	33	12	34	35	36	1	37	38
Wheat gluten	93	93	93	70	70	70	70	70	33	33	33	17	17	17	17	17
Pregelatinized starch	6	6	6	0.5	0.5	0.5	0.5	0.5	66	66	66	29	29	29	29	29
Powdered oil or fat	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wheat flour	-	-	-	28.5	28.5	28.5	28.5	28.5	-	-	-	53	53	53	53	53
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Mixing ratio of breadcrumbs and mixture	100 : 2	100 : 20	100 : 35	100 : 2	100 : 5	100 : 20	100 : 30	100 : 35	100 : 2	100 : 20	100 : 35	100 : 2	100 : 5	100 : 20	100 : 30	100 : 35
Appearance	2.1	3.6	2.7	2.3	2.9	3.6	3.0	2.6	1.8	3.3	2.1	2.4	2.9	3.4	2.9	2.6
Texture	1.7	2.9	2.6	2.5	2.7	3.0	3.0	2.8	1.8	3.6	2.3	2.2	2.6	3.1	2.7	2.3

CLAIMS

1. A breadcrumb modifier, comprising from 20 to 90 mass% of a protein material, from 1 to 60 mass% of a thickener, and from 0.1 to 5 mass% of an oil or fat.
2. The breadcrumb modifier according to claim 1, comprising from 55 to 80 mass% of the protein material and from 10 to 40 mass% of the thickener.
3. The breadcrumb modifier according to claim 1 or 2, wherein the protein material is one or more selected from the group consisting of wheat protein, egg protein, lactoprotein, and soybean protein.
4. The breadcrumb modifier according to any one of claims 1 to 3, wherein the thickener is one or more selected from the group consisting of pregelatinized starch, glucomannan, agar, curdlan, sodium alginate, carrageenan, and gellan gum.
5. The breadcrumb modifier according to any one of claims 1 to 4, wherein the oil or fat is a vegetable oil or fat.
6. The breadcrumb modifier according to any one of claims 1 to 5, wherein the breadcrumb modifier comprises from 80 to 100 mass% in total of the protein material, the thickener, and the oil or fat.
7. The breadcrumb modifier according to any one of claims 1 to 6, wherein the breadcrumb modifier is a powder.
8. The breadcrumb modifier according to claim 7, wherein the powder has an average particle size of from 20 to 500

μm.

9. A breadcrumb mix, comprising, from 5 to 40 parts by mass of the breadcrumb modifier comprising the protein material, the thickener, and the oil or fat according to any one of claims 1 to 8 relative to 100 parts by mass of breadcrumbs.

10. The breadcrumb mix according to claim 9, comprising from 71 to 95 mass% of the breadcrumbs.

11. The breadcrumb mix according to claim 9 or 10, wherein the mix comprises from 1 to 36 parts by mass of the protein material, from 0.05 to 24 parts by mass of the thickener, and from 0.005 to 2 parts by mass of the oil or fat relative to 100 parts by mass of the breadcrumbs.

12. The breadcrumb mix according to any one of claims 9 to 11, wherein the breadcrumb modifier is attached to the surfaces of the breadcrumbs.

13. The breadcrumb mix according to any one of claims 9 to 12, wherein the mix has an average particle size of from 100 μm to 7 mm.

14. A breaded and cooked food, comprising the breadcrumb mix according to any one of claims 9 to 13 attached thereto.

15. A method of making breaded and cooked food, comprising:
directly attaching the breadcrumb mix according to any one of claims 9 to 13 to the surface of a food item; and
baking or frying, using oil, the food item to which the

breadcrumb mix has been attached.

16. A method of making a breadcrumb mix, comprising blending 100 parts by mass of breadcrumbs with from 5 to 40 parts by mass of the breadcrumb modifier comprising the protein material, the thickener, and the oil or fat according to any one of claims 1 to 8.

17. The method according to claim 16, wherein the breadcrumb mix comprises 71 to 95 mass% of the breadcrumbs.

18. The method according to claim 16 or 17, wherein the breadcrumb mix comprises from 1 to 36 parts by mass of the protein material, from 0.05 to 24 parts by mass of the thickener, and from 0.005 to 2 parts by mass of the oil or fat relative to 100 parts by mass of the breadcrumbs.

19. The method according to any one of claims 16 to 18, comprising:

mixing the protein material, the thickener, and the oil or fat to prepare the breadcrumb modifier according to any one of claims 1 to 8; and

blending from 5 to 40 parts by mass of the breadcrumb modifier with 100 parts by mass of the breadcrumbs.

20. The method according to claim 19, wherein the breadcrumb modifier is attached to the surfaces of the breadcrumbs by blending the breadcrumbs with the breadcrumb modifier.

21. A method of making breaded and cooked food, comprising:

directly attaching the breadcrumb mix made by the method according to any one of claims 16 to 20 to the surface of a food item; and

baking or frying, using oil, the food item to which the breadcrumb mix has been attached.