

DESCRIPTION

TITLE OF INVENTION: Oral composition, method for masking bitterness in oral composition, and method for producing oral composition.

TECHNICAL FIELD

[0001]

The present invention relates to an oral composition, a method for masking bitterness in an oral composition, and a method for producing an oral composition. More specifically, the present invention relates to an oral composition whose bitterness is masked and which is used in fields such as pharmaceuticals and health foods, a method for masking bitterness in an oral composition, and a method for producing an oral composition whose bitterness is masked.

BACKGROUND ART

[0002]

Among components contained in foods, pharmaceuticals, and quasi-drugs that are orally ingested, there are components that exhibit an unpleasant taste. In the first place, sour taste, bitter taste, salty taste, sweet taste and the like are important tastes; however, when such tastes are too strong, such tastes sometimes reduce consumer palatability.

Agrimol B has attracted attention in recent years as an active ingredient of foods, pharmaceuticals, and quasi-drugs, and it has been clarified that Agrimol B has various pharmacological effects such as an effect of activating SIRT1, which is referred to as a longevity gene because SIRT1 prevents aging of organisms and prolongs lifespan, a whitening effect due to melanin production inhibitory activity, an improving effect on type I allergy, and a muscle atrophy-suppressing effect.

Although Agrimol B is a component for which research has been advanced for

various uses, when Agrimol B is applied as an oral composition as a food or pharmaceutical, Agrimol B has a strong bitter taste; therefore, there is a problem in that the strong bitter taste affects consumer palatability and reduces market value, and in that administration as a pharmaceutical becomes difficult.

[0003]

With respect to methods for suppressing such unpleasant tastes such as a strong bitter taste in foods and pharmaceuticals, for example, Patent Literature 1 discloses a fat- or oil-containing food in which bitterness, astringency, and harsh taste of flavonoids are remarkably reduced by causing the food to contain an oil phase containing diacylglycerol and an aqueous phase containing a flavonoid glycoside. In addition, Patent Literature 2 discloses a method for suppressing the astringency or puckering sensation of naringin by adding 0.001 to 2 parts by weight of sucralose to 1 part by weight of naringin.

CONVENTIONAL ART DOCUMENT

PATENT LITERATURE

[0004]

[Patent Literature 1] Japanese Unexamined Patent Application Publication No. 2007-129983

[Patent Literature 2] Japanese Patent No. 5259149

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0005]

In general, when an active ingredient having an extremely strong bitter taste is formulated as an oral composition, separate formulation designs are assumed in order to mask the bitter taste, such as forming a sugar-coated tablet or a coated tablet as a tablet, or performing coating granulation as

granules. However, such an increase in manufacturing steps causes a problem in terms of cost. On the other hand, in foods and oral pharmaceuticals containing Agrimol B, a simple and low-cost method for suppressing the excessively strong bitter taste has not been established. Therefore, in an agent containing the component Agrimol B that exhibits such a strong bitter taste, a simple and low-cost method capable of suppressing the strong bitter taste is desired.

Accordingly, an object of the present invention is to easily provide an oral composition which contains Agrimol B and whose bitter taste is masked.

SOLUTION TO PROBLEM

[0006]

The present inventors have intensively studied the above problem, and as a result, the present inventors have found that, by including a powder containing Agrimol B and a powder of specific generally used excipients or additives, the strong bitter taste exhibited by Agrimol B can be easily and inexpensively masked without going through coating or granulation steps, and have thereby completed the present invention.

[0007]

That is, the present invention provides the following items [1] to [6].

[1] An oral composition that contains a powder containing the following component (a) and one or more powders selected from the following components (B1) to component (C):

(a) Agrimol B

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution

(B2) carrageenan in an amount of 0.5 to 40 mass%

(B3) pregelatinized starch in an amount of 1 to 40 mass%

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE)

of 2 to 20, in an amount of 1 to 40 mass%

(C) a metal salt of a higher fatty acid or sucrose fatty acid ester in an amount of 0.5 to 10 mass%

According to this oral composition, even when the oral composition contains Agrimol B having a strong bitter taste, by further including powders of specific generally used excipients or additives, the oral composition can be provided as an oral composition in which an unpleasant taste due to bitterness is masked.

[2] In the oral composition according to [1], component (a) is derived from component (A), which is a kinmizuhiki extract.

According to this feature, since Agrimol B is derived from an extract of kinmizuhiki (*Agrimonia pilosa*), which is a natural product, the oral composition meets the demands of consumers who prefer natural products, and by selecting methods of extraction and purification, it is possible to easily provide an oral composition in which adjustment of purity and content of Agrimol B and reduction of cost in accordance with needs are readily possible.

[3] The oral composition according to [1] or [2] that contains both one or more powders selected from components (B1) to (B5) and a powder of component (C).

According to this feature, by including one or more powders selected from components (B1) to (B5) and component (C) together, the oral composition can exhibit a synergistic effect in which the oral composition exerts an effect of masking bitterness that components (B1) to (B5) and component (C) have.

[4] In the oral composition according to any one of [1] to [3], a ratio of a content of component (B1) to component (C) with respect to a content of component (a) is at least one of the following:

the ratio (B1/a) of the content of component (B1) to the content of component (a) is 1 to 450,

the ratio (B2/a) of the content of component (B2) to the content of component (a) is 2 to 450,

the ratio (B3/a) of the content of component (B3) to the content of component (a) is 10 to 450,

the ratio (B4/a) of the content of component (B4) to the content of component (a) is 10 to 450,

the ratio (B5/a) of the content of component (B5) to the content of component (a) is 5 to 450,

the ratio (C/a) of the content of component (C) to the content of component (a) is 5 to 100.

According to this feature, by specifying the ratio of the content of component (B1) to component (B5) or component (C), which are bitterness-masking components, to the content of component (a) Agrimol B, which is a bitter component, the oral composition can more reliably exhibit an effect of masking bitterness.

[5] In a method for masking bitterness in a powder oral composition containing the following component (a), the oral composition contains one or more powders selected from the following components (B1) to component (C):

(a) Agrimol B

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution

(B2) carrageenan in an amount of 0.5 to 40 mass%

(B3) pregelatinized starch in an amount of 1 to 40 mass%

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20, in an amount of 1 to 40 mass%

(C) a metal salt of a higher fatty acid or sucrose fatty acid ester in an amount of 0.5 to 10 mass%

According to this method for masking bitterness in an oral composition, even when the oral composition contains Agrimol B having a strong bitter

taste, by further including specific generally used excipients or additives, the unpleasant taste due to bitterness can be masked.

[6] A method for producing the oral composition according to any one of [1] to [4] includes a step of stirring and mixing the following component (a) and at least one selected from components (B1) to component (C):

(a) Agrimol B

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution

(B2) carrageenan in an amount of 0.5 to 40 mass%

(B3) pregelatinized starch in an amount of 1 to 40 mass%

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20, in an amount of 1 to 40 mass%

(C) a metal salt of a higher fatty acid or sucrose fatty acid ester in an amount of 0.5 to 10 mass%

ADVANTAGEOUS EFFECT OF INVENTION

[0009]

Hereinafter, the oral composition of the present invention and the method for masking bitterness in an oral composition according to the present invention will be described.

The oral composition and the method for masking bitterness in an oral composition described in the embodiments are merely examples for explaining the present invention, and the present invention is not limited thereto.

[0010]

[Oral composition]

The oral composition of the present invention is an oral composition that contains a powder containing the following component (a) and one or more powders selected from the following components (B1) to component (C):

(a) Agrimol B

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution

(B2) carrageenan in an amount of 0.5 to 40 mass%

(B3) pregelatinized starch in an amount of 1 to 40 mass%

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20, in an amount of 1 to 40 mass%

(C) a metal salt of a higher fatty acid or sucrose fatty acid ester in an amount of 0.5 to 10 mass%

First, each component constituting the oral composition of the present invention will be described in detail. Unless otherwise specified, the content of each component indicates the content in the oral composition.

[0011]

<(a) Agrimol B>

The oral composition of the present invention contains Agrimol B as a main component that exhibits bitterness. By containing Agrimol B, which exhibits a strong bitter taste, the oral composition causes a strong bitter taste to be perceived at the time of oral ingestion of the oral composition.

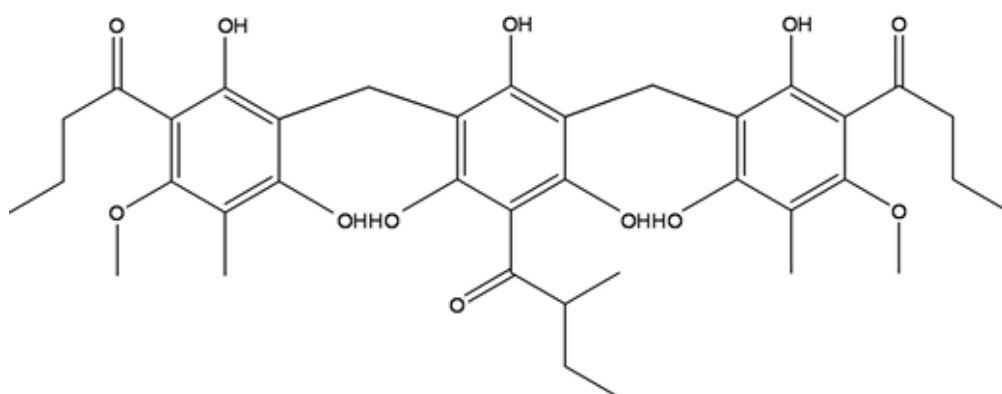
Agrimol B has attracted attention in recent years as an active ingredient in pharmaceuticals and foods, and it has been reported that Agrimol B has an effect of activating SIRT1, which is referred to as a longevity gene because SIRT1 prevents aging of organisms and prolongs lifespan. Various studies have been conducted on physiological activities that Agrimol B has, and for example, it has been disclosed that Agrimol B has various pharmacological effects such as a whitening effect due to melanin production inhibitory activity (Japanese Unexamined Patent Application Publication No. H11-335256), an improving effect on type I allergy (Japanese Unexamined Patent Application Publication No. 2022-93893), and a muscle atrophy-suppressing effect (Japanese Unexamined Patent Application Publication

No. 2022-167403), and Agrimol B is attracting great attention regarding use in fields such as foods and pharmaceuticals.

[0012]

Agrimol B is a compound represented by the following Chemical Formula 1 (MW: 682.75). As the Agrimol B of the present invention, as long as the Agrimol B is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds, the Agrimol B is not particularly limited and can be used by being chemically synthesized or extracted, separated, and purified from natural products such as plants. The oral composition may contain Agrimol B as a plant extract containing Agrimol B from a plant containing Agrimol B. Furthermore, an oral composition can also be produced by purchasing and using a commercially available product distributed on the market.

[Chemical Formula 1]



[0013]

As a chemical synthesis of Agrimol B, Agrimol B can be synthesized using phloroglucinol or the like as a starting material. For example, Agrimol B can be synthesized by a method described in *Acta Pharmaceutica Sinica* 1989, 24(6): 431–437, or a method disclosed in Japanese Unexamined Patent Application Publication No. H11-335256.

[0014]

Agrimol B obtained by synthesis includes two types, (S)-(+)-Agrimol B and (R)-(-)-Agrimol B, which is an optical isomer of (S)-(+)-Agrimol B. As used

in the present specification, “Agrimol B” may be a single compound composed of one of these two types, or may be a mixture composed of the two types.

[0015]

The content of component (a) Agrimol B in the oral composition of the present invention is not particularly limited and can be changed depending on the purity and origin of Agrimol B and also on a subject and purpose of administration. For example, the content is 0.001 to 2 mass% relative to the whole oral composition. As a lower limit value, the content is more preferably 0.01 mass% or more, and even more preferably 0.02 mass% or more. As an upper limit value, the content is more preferably 1 mass% or less, even more preferably 0.6 mass% or less, and most preferably 0.3 mass% or less. By setting the content within the above range, an effect of Agrimol B as an active ingredient can be reliably exhibited and, at the same time, a masking effect on the bitterness of Agrimol B, which is obtained by forming a mixture of Agrimol B with components (B1) to component (C) described later, can be more reliably exhibited.

[0016]

<Plant extract>

The oral composition of the present invention may contain Agrimol B as a plant extract as described above. As such a plant extract, as long as the plant extract contains Agrimol B, the plant extract is not particularly limited, but component (A), which is a kinmizuhiki extract derived from kinmizuhiki, can be preferably used. Kinmizuhiki (scientific name: *Agrimonia pilosa*) is a perennial plant of the genus *Agrimonia* in the family Rosaceae and grows wild at forest edges, fields, and roadsides in Honshu, Shikoku, Kyushu, and the like. Kinmizuhiki is also called “Ryugaso” in Japanese. In the present invention, whole plants that are naturally growing or cultivated can be harvested and used after being naturally dried or heat-dried, and dried kinmizuhiki that is commercially available as a crude drug

for Kampo medicines, folk remedies, or as a raw material for health foods (herbal teas) can also be used. Dried whole plants of kinmizuhiki are commercially available under the crude drug name “Senkakuso” in Japanese. [0017]

Examples of the plant extract in the present invention include extracts obtained with water or various organic solvents, distillates obtained by steam distillation, dried powders, grated materials, and juices obtained by squeezing grated materials. From the viewpoint of yield and purity of the kinmizuhiki extract, the plant extract is preferably an extract obtained with water or various organic solvents, and more preferably an extract obtained with aqueous ethanol containing ethanol and water.

Extraction with water or various organic solvents can be carried out by using, as a solvent, water and various organic solvents and mixtures thereof and performing extraction by a known extraction method. Before performing an extraction operation, a raw material as such or a coarsely cut raw material may be washed with a hydrophobic or hydrophilic solvent alone or a mixed organic solvent to remove unnecessary substances such as pigments. Examples of the hydrophobic solvent include chloroform, ether, hexane, cyclohexane, toluene, dichloromethane, petroleum ether, and benzene, and examples of the hydrophilic solvent include lower alcohols (for example, methyl alcohol, ethyl alcohol, n-propyl alcohol, isobutyl alcohol, or butyl alcohol), ethyl acetate, acetone, isopropyl alcohol, and acetonitrile. Water may be appropriately added to the raw material to moisten the raw material as desired.

[0018]

In order to perform extraction with water, for example, 0.5 to 10 parts by mass of water are added to 1 part by mass of the raw material, and extraction can be performed at 40 to 120°C for 5 minutes to 2 hours, preferably for 10 to 60 minutes, and more preferably for 10 to 20 minutes. At this time, extraction efficiency can be enhanced by stirring. The

extraction may also be carried out by heated reflux. After extraction, filtration or pressing is carried out using a filter cloth, a filter, or a mesh metal screen. In this case, the working efficiency may be improved by pressurization. As another method, an extract can be obtained by centrifugation (1,000 to 20,000 rpm). In order to increase recovery, this extraction and filtration step can be repeated 1 to 5 times.

[0019]

In order to perform extraction with an organic solvent, for example, 0.5 to 10 parts by mass of the solvent are added to 1 part by mass of the raw material, and an extract can be obtained in the same manner as in the case of extraction with water. As the solvent to be used, the hydrophobic and hydrophilic solvents described above can be used alone or in combination of two or more, and an aqueous solvent can also be used. In particular, when the raw material is washed with a hydrophobic solvent prior to extraction as described above to remove unnecessary substances such as pigments, and when a crude extract after extraction is washed with a hydrophobic solvent as described below, water, a lower alcohol, or a 50 to 80% (v/v) aqueous lower alcohol is preferably used as the solvent for extraction. Examples of such lower alcohols include those similar to the above. Removal of the solvent can be carried out by a conventional method such as filtration, centrifugation, or distillation.

[0020]

As a particularly preferred extraction method for the plant extract, particularly component (A) kinmizuhiki extract, the extraction can be performed, for example, as follows.

Whole plants that are naturally growing or cultivated are harvested and used after being naturally dried or heat-dried. The dried material is then cut into small pieces and immersed for 3 to 5 days in about 10 times the amount of water or aqueous ethanol having an ethanol concentration of 0 to 99.5% (v/v), preferably aqueous ethanol having an ethanol concentration of 1 to

50%, and particularly preferably aqueous ethanol having an ethanol concentration of 5 to 10%, and extraction is carried out at room temperature, or the material is extracted at 50 to 80°C for 5 to 24 hours under reflux with a reflux condenser, and the extract solution is recovered by filtration. Water and ethanol are removed from this extract solution by using a reduced-pressure vacuum drying apparatus such as a rotary evaporator or a freeze-drying apparatus to obtain a plant extract (solid matter).

[0021]

Next, a step of concentrating the plant extract is carried out. In this step, the plant extract is concentrated by washing with 0 to 40% ethanol and removing components that are soluble in 0 to 40% ethanol.

Specifically, the plant extract (solid matter) is washed with 0 to 40% ethanol, particularly preferably 10 to 30% ethanol, and components that are soluble in 0 to 40% ethanol, particularly preferably components that are soluble in 10 to 30% ethanol, are removed by filtration or the like, and then a more concentrated plant extract can be obtained by removing water and ethanol from the filtration residue using a reduced-pressure vacuum drying apparatus such as a rotary evaporator or a freeze-drying apparatus. The concentrated plant extract is redissolved in 50 to 99.5% ethanol, particularly preferably 70 to 90% ethanol, and an excipient used for formulation is added and freeze-dried to obtain a concentrated plant extract having a desired concentration. The concentrated plant extract may be subjected to sieving so as to be easily mixed with other powders.

[0022]

The content of component (A) kinmizuhiki extract in the oral composition of the present invention is not particularly limited and can be changed depending on the purity and degree of purification of component (A) kinmizuhiki extract and also on a subject and purpose of administration. For example, the content is 0.5 to 70 mass% relative to the whole oral

composition. As an upper limit value, the content is more preferably 50 mass% or less, even more preferably 40 mass% or less, and most preferably 30 mass% or less. By setting the content within the above range, an effect of kinmizuhiki extract as an active ingredient can be reliably exhibited and, at the same time, a masking effect on the bitterness of kinmizuhiki extract, which is obtained by forming a mixture of kinmizuhiki extract with components (B1) to component (C) described later, can be more reliably exhibited.

[0023]

The oral composition of the present invention can contain, as component (B), the following components (B1) to (B5). By mixing powders of components (B1) to (B5) with a powder containing Agrimol B, an oral composition in which the strong bitter taste of Agrimol B is masked can be easily obtained. Each of these components will be described in detail below.

[0024]

<(B1) Cellulose derivative>

The cellulose derivative that can be used in the oral composition of the present invention is a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate of 10/s for 1 minute at 20°C in a 2% aqueous solution. Cellulose is a polymer compound having a structure in which a large number of β -glucose units are polymerized in a linear form by glycosidic bonds, and a cellulose derivative is a derivative of this cellulose. The cellulose derivative that can be used in the present invention is not particularly limited as long as the cellulose derivative is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds. Examples of the cellulose derivative include, for example, the following cellulose derivatives and salts thereof.

Specific examples of the cellulose derivative include hydroxyalkyl celluloses such as hydroxypropyl cellulose (HPC), hydroxyethyl cellulose, low-substituted hydroxypropyl cellulose, hydroxypropyl methylcellulose

(HPMC), hydroxyethyl methylcellulose, hydroxypropyl methylcellulose acetate succinate, and hydroxypropyl methylcellulose phthalate; alkyl celluloses such as methyl cellulose and ethyl cellulose; and carboxyalkyl celluloses such as carboxymethyl cellulose, carboxymethyl cellulose potassium, carboxymethyl cellulose calcium, carboxymethyl cellulose sodium, carboxymethylethyl cellulose, croscarmellose sodium, and croscarmellose.

The upper limit value of the viscosity of the cellulose derivative is not particularly limited, but is more preferably 400 mPa·s or less.

[0025]

Among cellulose derivatives, from the viewpoint of the bitterness-masking effect of the present invention, hydroxyalkyl celluloses are preferred, and hydroxypropyl cellulose (HPC) and hydroxypropyl methylcellulose (HPMC) can be more preferably used. The upper limit value of the viscosity of these hydroxypropyl celluloses is not particularly limited, but is more preferably 400 mPa·s or less, and even more preferably 300 mPa·s or less. On the other hand, the lower limit value of the viscosity of hydroxypropyl methylcellulose is not particularly limited, but is more preferably 4 mPa·s or more. As an upper limit value, the viscosity is more preferably 150 mPa·s or less, even more preferably 100 mPa·s or less, and particularly preferably 60 mPa·s or less. The cellulose derivative may be blended alone, or two or more cellulose derivatives may be blended in combination. The method for producing the cellulose derivative of the present invention is not particularly limited, and the cellulose derivative can be produced by a known method. A commercially available product that is commercially obtainable can also be used as the cellulose derivative.

[0026]

The content of component (B1) cellulose derivative is not particularly limited but is, for example, 0.05 to 60 mass%. As a lower limit value, the content is preferably 0.1 mass% or more, more preferably 0.2 mass% or

more, even more preferably 1 mass% or more, and most preferably 5 mass% or more. As an upper limit value, the content is not particularly limited, but is preferably 50 mass% or less, and more preferably 30 mass% or less.

By setting the content of the cellulose derivative within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of the cellulose derivative itself can be minimized, and at the same time, a degree of freedom in formulation design can be ensured.

[0027]

The ratio (B1/a) of the content of component (B1) cellulose derivative to the content of component (a) Agrimol B is not particularly limited but is, for example, 1 to 450. As a lower limit value, the ratio is more preferably 1.5 or more, even more preferably 7 or more, and most preferably 40 or more. As an upper limit value, the ratio is not particularly limited, but is more preferably 200 or less, and even more preferably 150 or less.

By setting the ratio of the content of component (B1) cellulose derivative to the content of component (a) Agrimol B within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of the cellulose derivative itself can be minimized, and at the same time, a degree of freedom in formulation design can be ensured.

Furthermore, the ratio (B1/A) of the content of component (B1) cellulose derivative to the content of component (A) kinmizuhiki extract is not particularly limited but is, for example, 0.005 to 2. As a lower limit value, the ratio is preferably 0.01 or more, more preferably 0.03 or more, even more preferably 0.1 or more, and most preferably 0.2 or more. As an upper limit value, the ratio is preferably 1 or less, and more preferably 0.7 or less. By setting the ratio of the content of component (B1) cellulose derivative to the content of component (A) kinmizuhiki extract within the above range, the bitterness-masking effect of the present invention can be sufficiently

exhibited, the influence of the taste of the cellulose derivative itself can be minimized, and a degree of freedom in formulation design can be ensured.

[0028]

<(B2) Carrageenan>

Carrageenan is a polysaccharide having a main chain with a linear structure in which D-galactose units are alternately linked by α -1,3 bonds and β -1,4 bonds. The carrageenan that can be used in the present invention is not particularly limited as long as the carrageenan is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds. Examples include kappa-carrageenan, iota-carrageenan, and lambda-carrageenan, and any of these can be suitably used in the present invention. The origin of the carrageenan is not particularly limited, and carrageenan derived from seaweeds such as *Eucheuma cottonii* and *Eucheuma spinosum* can be used. The carrageenan may be blended alone, or two or more types of carrageenan may be blended in combination. A commercially available product that is commercially obtainable can also be used as carrageenan.

[0029]

The content of component (B2) carrageenan is 0.5 to 40 mass% relative to the whole oral composition. As a lower limit value, the content is more preferably 1 mass% or more, and even more preferably 5 mass% or more. As an upper limit value, the content is not particularly limited, but is more preferably 30 mass% or less, and even more preferably 20 mass% or less. By setting the content of carrageenan within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of carrageenan itself can be minimized, and at the same time, a separate effect of carrageenan on the oral composition (for example, a thickening effect) can be expected to be exhibited.

[0030]

The ratio (B2/a) of the content of component (B2) carrageenan to the content of component (a) Agrimol B is not particularly limited but is, for

example, 2 to 450. As a lower limit value, the ratio is more preferably 7 or more, and even more preferably 30 or more. As an upper limit value, the ratio is more preferably 200 or less, and even more preferably 150 or less. By setting the ratio of the content of component (B2) carrageenan to the content of component (a) Agrimol B within the above range, the bitterness-masking improvement effect of the present invention can be sufficiently exhibited, the influence of the taste of carrageenan itself can be minimized, and a separate effect of carrageenan on the oral composition (for example, a thickening effect) can also be expected to be exhibited.

Furthermore, the ratio (B2/A) of the content of component (B2) carrageenan to the content of component (A) kinmizuhiki extract is not particularly limited but is, for example, 0.01 to 2. As a lower limit value, the ratio is more preferably 0.03 or more, even more preferably 0.05 or more, and most preferably 0.1 or more. As an upper limit value, the ratio is more preferably 1 or less, and even more preferably 0.7 or less.

By setting the ratio of the content of carrageenan to the content of component (A) kinmizuhiki extract within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of carrageenan itself can be minimized, and a separate effect of carrageenan on the oral composition (for example, a thickening effect) can also be expected to be exhibited.

[0031]

<(B3) Pregelatinized starch>

Pregelatinized starch is starch that has been gelatinized and dried by a gelatinization and drying method, for example, by heating an aqueous suspension of starch by spray-drying, drum-drying, or extrusion granulation to gelatinize and dry the starch. The method of gelatinization and drying is not particularly limited as long as at least part or all of the starch becomes cold-water-soluble. The pregelatinized starch that can be used in the present invention is not particularly limited as long as the pregelatinized starch is

acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds, and any degree of pregelatinization can be used. The type of starch that is used as a raw material for pregelatinized starch is not particularly limited and may be, for example, corn starch, wheat starch, rice starch, potato starch, tapioca starch, high-amylose starch, hydroxypropyl starch, starch hydrolysate, starch acetate, starch phosphate, octenyl succinate starch, carboxymethyl starch, crosslinked phosphate starch, oxidized starch, dialdehyde starch, acid-treated starch, sweet potato starch, sago starch, pea starch, and the like. Furthermore, in addition to pregelatinization treatment, a modified starch obtained by chemical treatment such as esterification, etherification, oxidation, or crosslinking may be used.

[0032]

Among pregelatinized starches, from the viewpoint of the bitterness-masking effect of the present invention, pregelatinized cornstarch, pregelatinized tapioca starch, and partially pregelatinized cornstarch can be preferably used. These pregelatinized starches may be blended alone, or two or more pregelatinized starches may be blended in combination. The method for producing the pregelatinized starch of the present invention is not particularly limited, and pregelatinized starch can be produced by a known method. A commercially available product that is commercially obtainable can also be used as the pregelatinized starch.

[0033]

The content of component (B3) pregelatinized starch is 1 to 40 mass% relative to the whole oral composition. As a lower limit value, the content is more preferably 1 mass% or more. As an upper limit value, the content is more preferably 30 mass% or less, and even more preferably 20 mass% or less.

By setting the content of pregelatinized starch within the above range, the bitterness-masking effect of the present invention can be sufficiently

exhibited, the influence of the taste of pregelatinized starch itself can be minimized, and a separate effect of pregelatinized starch on the oral composition (for example, an effect as a binder) can be expected to be exhibited.

[0034]

The ratio (B3/a) of the content of component (B3) pregelatinized starch to the content of component (a) Agrimol B is not particularly limited but is, for example, 10 to 450. As a lower limit value, the ratio is more preferably 20 or more, and even more preferably 40 or more. As an upper limit value, the ratio is more preferably 200 or less, and even more preferably 150 or less.

By setting the ratio of the content of component (B3) pregelatinized starch to the content of component (a) Agrimol B within the above range, the bitterness-masking improvement effect of the present invention can be sufficiently exhibited, the influence of the taste of pregelatinized starch itself can be minimized, and a separate effect of pregelatinized starch on the oral composition (for example, an effect as a binder) can be expected to be exhibited.

Furthermore, the ratio (B3/A) of the content of component (B3) pregelatinized starch to the content of component (A) plant extract is not particularly limited but is, for example, 0.05 to 2. As a lower limit value, the ratio is more preferably 0.1 or more, and even more preferably 0.2 or more. As an upper limit value, the ratio is more preferably 1 or less, and even more preferably 0.7 or less.

By setting the ratio of the content of component (B3) pregelatinized starch to the content of component (A) kinmizuhiki extract within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of pregelatinized starch itself can be minimized, and a separate effect of pregelatinized starch on the oral composition (for example, an effect as a binder) can be expected to be exhibited.

[0035]

<(B4) Sugar alcohol of a disaccharide>

A sugar alcohol is obtained by adding hydrogen to a sugar molecule so that a saccharide having a hydroxyl group ($-OH$) as an alcohol group is obtained. Sugar alcohols are used as poorly digestible and low-calorie sweeteners, and sugar alcohols are further widely used as food quality improvers that improve the shelf life of foods, retain moisture, and suppress coloring, and as materials in fields such as foods for patients, cosmetics, and pharmaceuticals. The sugar alcohol of a disaccharide that can be used in the present invention is not particularly limited as long as the sugar alcohol of a disaccharide is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds. Examples include maltitol (reduced maltose), lactitol (reduced lactose), and reduced palatinose (reduced isomaltulose). Among these, from the viewpoint of the bitterness-masking effect of the present invention, maltitol and reduced palatinose can be more preferably used. The sugar alcohols of disaccharides may be blended alone, or two or more sugar alcohols of disaccharides may be blended in combination. The method for producing the sugar alcohol of a disaccharide of the present invention is not particularly limited, and the sugar alcohol of a disaccharide can be produced by a known method. Furthermore, a commercially available product that is commercially obtainable can also be used as the sugar alcohol of a disaccharide of the present invention.

[0036]

The content of component (B4) sugar alcohol of a disaccharide is 1 to 30 mass%. As a lower limit value, the content is more preferably 5 mass% or more. As an upper limit value, the content is more preferably 20 mass% or less.

By setting the content of the sugar alcohol of a disaccharide within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of the sugar alcohol itself

can be minimized, and a separate effect of the sugar alcohol on the oral composition as a food quality improver, such as retaining moisture and suppressing coloring, can be expected to be exhibited.

[0037]

The ratio (B4/a) of the content of component (B4) sugar alcohol of a disaccharide to the content of component (a) Agrimol B is not particularly limited but is, for example, 10 to 450. As a lower limit value, the ratio is more preferably 20 or more, and even more preferably 40 or more. As an upper limit value, the ratio is more preferably 200 or less, even more preferably 150 or less, and most preferably 100 or less.

By setting the ratio of the content of component (B4) sugar alcohol of a disaccharide to the content of component (a) Agrimol B within the above range, the bitterness-masking improvement effect of the present invention can be sufficiently exhibited, the influence of the taste of the sugar alcohol itself can be minimized, and a separate effect of the sugar alcohol on the oral composition as a food quality improver, such as retaining moisture and suppressing coloring, can be expected to be exhibited.

Furthermore, the ratio (B4/A) of the content of component (B4) sugar alcohol of a disaccharide to the content of component (A) kinmizuhiki extract is not particularly limited but is, for example, 0.05 to 2. As a lower limit value, the ratio is more preferably 0.1 or more, and even more preferably 0.2 or more. As an upper limit value, the ratio is more preferably 0.7 or less, and even more preferably 0.5 or less.

By setting the ratio of the content of the sugar alcohol to the content of component (A) kinmizuhiki extract within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of the sugar alcohol itself can be minimized, and a separate effect of the sugar alcohol on the oral composition as a food quality improver, such as retaining moisture and suppressing coloring, can be expected to be exhibited.

[0038]

<(B5) Linear dextrin or branched dextrin>

Dextrin is obtained by decomposing starch, which is a raw material, with an enzyme or an acid. The dextrin that can be used in the oral composition of the present invention is a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20. The term “linear dextrin” means a dextrin in which glucose units are bonded in a linear form, and the term “branched dextrin” (also referred to as “branched dextrin”) means a dextrin in which glucose units are bonded in a chain while having branch chains. The dextrin of the present invention may be a mixture of linear dextrin and branched dextrin.

The linear dextrin or branched dextrin having a DE of 2 to 20 that can be used in the present invention is not particularly limited as long as the dextrin is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds. For example, the type of glycosidic bond of the sugar may be any of α -1,4 bonds, α -1,6 bonds, β -1,2 bonds, β -1,3 bonds, β -1,4 bonds, β -1,6 bonds, or combinations thereof.

[0039]

As a lower limit value of the DE, the DE is more preferably 4, and as an upper limit value of the DE, the DE is more preferably 18. The DE value can be analyzed by a known method for measuring dextrose, and, for example, the Willstätter-Schudel method can be used.

These dextrans may be blended alone, or two or more dextrans may be blended in combination. The method for producing the dextrin of the present invention is not particularly limited, and the dextrin can be produced by a known method. Furthermore, a commercially available product that is commercially obtainable can also be used as the dextrin of the present invention.

[0040]

The content of component (B5) linear dextrin or branched dextrin having a

DE of 2 to 20 is 1 to 40 mass% relative to the whole oral composition. As a lower limit value, the content is more preferably 2 mass% or more, even more preferably 5 mass% or more, and most preferably 10 mass% or more. As an upper limit value, the content is not particularly limited, but is more preferably 30 mass% or less.

By setting the content of linear dextrin or branched dextrin within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of dextrin itself can be minimized, and at the same time, a degree of freedom in formulation design can be ensured.

The oral composition of the present invention may contain a dextrin having a cyclic structure, such as cyclodextrin, as long as the effect of the present invention is not impaired. The content of the dextrin having a cyclic structure is not particularly limited and can be changed depending on the content of Agrimol B and the content of component (B5) linear dextrin or branched dextrin. For example, the content is 2 mass% or less relative to the oral composition. More preferably, the content is 0.5 mass% or less, even more preferably 0.1 mass% or less, and particularly preferably 0.01 mass% or less, and it is most preferable that the oral composition substantially does not contain dextrin having a cyclic structure. Here, the term “substantially” means that the case where dextrin having a cyclic structure is unavoidably contained is excluded.

[0041]

The ratio (B5/a) of the content of component (B5) linear dextrin or branched dextrin having a DE of 2 to 20 to the content of component (a) Agrimol B is not particularly limited but is, for example, 5 to 450. As a lower limit value, the ratio is more preferably 30 or more, and even more preferably 70 or more. As an upper limit value, the ratio is more preferably 200 or less, and even more preferably 150 or less.

By setting the ratio of the content of dextrin to the content of component (a)

Agrimol B within the above range, the bitterness-masking improvement effect of the present invention can be sufficiently exhibited, the influence of the taste of dextrin itself can be minimized, and at the same time, a degree of freedom in formulation design can be ensured.

Furthermore, the ratio (B5/A) of the content of component (B5) linear dextrin or branched dextrin having a DE of 2 to 20 to the content of component (A) kinmizuhiki extract is not particularly limited but is, for example, 0.03 to 2. As a lower limit value, the ratio is more preferably 0.15 or more, and even more preferably 0.3 or more. As an upper limit value, the ratio is more preferably 1 or less, and even more preferably 0.7 or less.

By setting the ratio of the content of component (B5) linear dextrin or branched dextrin having a DE of 2 to 20 to the content of component (A) kinmizuhiki extract within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of dextrin itself can be minimized, and at the same time, a degree of freedom in formulation design can be ensured.

[0042]

Furthermore, the oral composition of the present invention can contain the following component (C). By mixing a powder of component (C) with a powder containing Agrimol B, an oral composition in which the strong bitter taste of Agrimol B is masked can be easily obtained. Component (C) will be described in detail below.

[0043]

<(C) Metal salt of a higher fatty acid or sucrose fatty acid ester>

The metal salt of a higher fatty acid or sucrose fatty acid ester that can be used in the oral composition of the present invention is not particularly limited. As the metal salt of a higher fatty acid, a metal salt of a higher aliphatic carboxylic acid having 10 to 22 carbon atoms can be preferably used. Examples include capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, behenic acid, oleic acid, and erucic acid. The metal salt is not

particularly limited, and examples include sodium salts, lithium salts, calcium salts, magnesium salts, zinc salts, and aluminum salts. Among these metal salts of higher fatty acids, from the viewpoint of the bitterness-masking effect of the present invention, a metal salt of stearic acid can be preferably used, and among metal salts of stearic acid, calcium stearate and magnesium stearate can be more preferably used. These metal salts of higher fatty acids may be blended alone or two or more metal salts of higher fatty acids may be blended in combination.

[0044]

The sucrose fatty acid ester is not particularly limited, and any substance in which a fatty acid is ester-bonded to sucrose can be used regardless of hydrophilic-lipophilic balance (HLB), the number of carbon atoms in the fatty acid, or the degree of esterification. The fatty acid that is ester-bonded to sucrose is not particularly limited, and examples include lauric acid, myristic acid, palmitic acid, stearic acid, behenic acid, and erucic acid. The metal salt of a higher fatty acid or sucrose fatty acid ester may be blended alone, or two or more compounds selected from metal salts of higher fatty acids and/or sucrose fatty acid esters may be blended in combination.

[0045]

The content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, is 0.5 to 10 mass% relative to the whole oral composition. As a lower limit value of the content of the metal salt of a higher fatty acid or sucrose fatty acid ester, the content is preferably 1 mass% or more, and more preferably 2 mass% or more. As an upper limit value, the content is preferably 7 mass% or less, and more preferably 5 mass% or less. By setting the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of the metal salt of a higher fatty acid or sucrose fatty acid ester itself can be minimized, and a separate effect of the metal salt of

a higher fatty acid or sucrose fatty acid ester on the oral composition (for example, an effect as a lubricant) can be expected to be imparted.

[0046]

The ratio (C/a) of the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, to the content of component (a) Agrimol B is not particularly limited but is, for example, 5 to 100. As a lower limit value, the ratio is more preferably 10 or more. As an upper limit value, the ratio is more preferably 60 or less.

By setting the ratio of the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, to the content of component (a) Agrimol B within the above range, the bitterness-masking improvement effect of the present invention can be sufficiently exhibited, the influence of the taste of the metal salt of a higher fatty acid or sucrose fatty acid ester itself can be minimized, and a separate effect of the metal salt of a higher fatty acid or sucrose fatty acid ester on the oral composition (for example, an effect as a lubricant) can be expected to be imparted.

Furthermore, the ratio (C/A) of the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, to the content of component (A) kinmizuhiki extract is not particularly limited but is, for example, 0.02 to 0.5. As a lower limit value, the ratio is preferably 0.05 or more. As an upper limit value, the ratio is preferably 0.3 or less, and more preferably 0.25 or less.

By setting the ratio of the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, to the content of component (A) kinmizuhiki extract within the above range, the bitterness-masking effect of the present invention can be sufficiently exhibited, the influence of the taste of the metal salt of a higher fatty acid or sucrose fatty acid ester itself can be minimized, and a separate effect of the metal salt of a higher fatty acid or sucrose fatty acid ester on the oral composition (for example, an effect as a lubricant) can be expected to be imparted.

[0047]

<Ratio of component (C) / component (B)>

The mass ratio (C/B) of the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, to the content of components (B1) to (B5), which are components (B), is not particularly limited and is, for example, 0.025 to 1. As a lower limit value, the ratio is more preferably 0.05 or more, and even more preferably 0.1 or more. As an upper limit value, the ratio is more preferably 0.5 or less, and even more preferably 0.25 or less.

By setting the content of component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, relative to the content of components (B1) to (B5), which are components (B), within the above range, the influence on taste can be minimized, and a separate effect of components (B1) to (B5) and component (C), which is the metal salt of a higher fatty acid or sucrose fatty acid ester, on the oral composition can be expected to be imparted.

[0048]

The oral composition of the present invention can contain, in any combination, two or more components selected from components (B1) to (B5) or component (C), as long as the oral composition exhibits the effect of the present invention. It is more preferable that at least one component among components (B1) to (B5) or component (C) satisfies the above-described content and/or content ratio. It is even more preferable that at least one component among components (B1) to (B5) or component (C) satisfies both the above-described content and the above-described content ratio.

[0049]

(Other components)

The oral composition according to the present invention may, in addition to Agrimol B and a plant extract containing Agrimol B, further contain active

ingredients and additives as needed. Specific examples of the additive include, for example, an excipient, a binder, a disintegrant, a lubricant, a stabilizer, a preservative, a colorant, a flavoring agent, and a sweetener. The oral composition may also contain Agrimol substances other than Agrimol B, such as Agrimol A to Agrimol G or Agrimofol, as components contained in the kinmizuhiki extract.

[0050]

As the active ingredient, any substance that exhibits efficacy and effect and that is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds is not particularly limited. Examples include medicinal ingredients and functional ingredients used in pharmaceuticals, quasi-drugs, over-the-counter (OTC) drugs, Kampo medicines, crude drugs, cosmetics, cosmetic preparations, health foods, supplements, veterinary drugs, and feeds.

Specific examples of the medicinal ingredients and functional ingredients include, for example, vitamin A, vitamin D, vitamin E, vitamin B1, vitamin B2, vitamin B6, vitamin B12, folic acid, biotin, niacin, niacinamide, pantothenic acid, iron, copper, zinc, manganese, selenium, chromium, molybdenum, polyglutamic acid, tengcha polyphenol, lipid regulators, antidiabetic agents, antihypertensive agents, vasodilators, β -adrenergic receptor blockers, cardiotonic ion channel agents, antiarrhythmic agents, anticoagulants, central nervous system function improving agents, sympathetic nerve stimulants, parasympathetic nerve stimulants, antimuscarinic agents, dopaminergic agents, tranquilizers, antidepressants, anxiolytic agents, hypnotics, animal-derived substances, plant-derived substances, Lapidin, nobiletin, sulforaphane, ampelopsin, curcuminoids, resveratrols, geraniol, osajin, isoliquiritigenin, hydroxytyrosol, 25-hydroxycholecalciferol, S-adenosylmethionine, anthocyanins, proteoglycan, N-acetylglucosamine, collagen, bilberry extract, carrot powder, malt extract, lotus germ extract powder, gokahi, licorice, peony, cinnamon bark,

fennel, cardamom, bifidobacteria, lactic acid bacteria, yeast, and dietary fibers such as polydextrose. Among these, it is preferable to use an active ingredient that exhibits a synergistic effect with an anti-aging action that is expected as an effect of the essential component of the present invention. These medicinal ingredients and functional ingredients may be blended alone, or two or more medicinal ingredients and functional ingredients may be blended in combination.

[0051]

<Form of oral composition>

The form of the oral composition of the present invention is not particularly limited as long as the form is acceptable for use in applications such as pharmaceuticals, foods, veterinary drugs, and feeds. For example, the oral composition may be used as a powder as such in the form of a powder preparation or fine granule preparation; or the oral composition may be used in the form of a solid preparation such as a plain tablet, a sugar-coated tablet, a buccal tablet, a coated tablet, a chewable tablet, a pill, a soft capsule, a hard capsule, or a granule, or in the form of a liquid preparation such as a suspension, an emulsion, a syrup, or an elixir, or in the form of a troche or the like. Among these forms, from the viewpoint of achieving low cost, a powder form is preferred, and a powder mixture obtained by mixing powders of the respective components is more preferred. These preparations can be produced by a known means used in formulation. Furthermore, according to the purpose, these preparations can be used in processed foods, health foods (dietary supplements, foods with nutrient function claims, foods for the sick, foods for specified health uses, foods with function claims, and the like), supplements, foods for patients (hospital foods, foods for the sick, nursing care foods, and the like), confectioneries, oils and fats, dairy products, retort foods, microwave foods, frozen foods, seasonings, dietary supplements, beverages, nutritional drinks, and the like. Among these uses, it is preferable that the oral composition be used for the purpose

of oral administration for anti-aging.

[0052]

[Method for producing oral composition]

The method for producing the oral composition of the present invention is not particularly limited and the oral composition can be produced by a known method. For example, in addition to a step of stirring and mixing each of component (a) or component (A) and at least one of components (B1) to component (C), steps of heating, drying, pulverizing, or sieving may be provided as necessary, and the order and conditions of these steps are not particularly limited.

[0053]

Due to the above characteristics, the oral composition in the present invention can exert an effect of masking bitterness in the oral composition resulting from containing component (a) Agrimol B, by the action of the specific components (B1) to component (C).

[0054]

[Method for masking bitterness in oral composition]

The method for reducing the taste of the oral composition of the present invention is a method in which a powder oral composition containing component (a) Agrimol B or a powder oral composition containing component (A) kinmizuhiki extract containing component (a) Agrimol B is caused to contain one or more powders selected from components (B1) to component (C).

The Agrimol B, kinmizuhiki extract, cellulose derivative, carrageenan, pregelatinized starch, sugar alcohol of a disaccharide, linear dextrin or branched dextrin, and metal salt of a higher fatty acid or sucrose fatty acid ester that constitute the method for masking bitterness in the oral composition may be the same as those in the oral composition of the present invention described above.

[0055]

Similarly, the addition amounts of the cellulose derivative, carrageenan, pregelatinized starch, sugar alcohol of a disaccharide, linear dextrin or branched dextrin, and metal salt of a higher fatty acid or sucrose fatty acid ester are not particularly limited, and may be any amounts as long as the amounts satisfy the descriptions of the cellulose derivative, carrageenan, pregelatinized starch, sugar alcohol of a disaccharide, linear dextrin or branched dextrin, and metal salt of a higher fatty acid or sucrose fatty acid ester in the oral composition described above.

[0056]

Due to the above characteristics, the method for masking bitterness in an oral composition in the present invention can exert an effect of masking bitterness in an oral composition containing Agrimol B by the action of components (B1) to component (C).

[Examples]

[0057]

Hereinafter, Examples of the present invention will be described; however, the present invention is not limited to these Examples, and various modifications can be made within the technical spirit of the present invention.

[0058]

[Test Example 1 Bitterness-masking effect in oral composition containing Agrimol B]

A test was conducted on the bitterness-masking effect in an oral composition containing Agrimol B. More specifically, an evaluation was made on the masking effect on bitterness in a case where a powder mixture of a cellulose derivative, carrageenan, pregelatinized starch, sugar alcohol of a disaccharide, linear dextrin or branched dextrin, and a metal salt of a higher fatty acid or sucrose fatty acid ester was prepared with respect to a kinmizuhiki extract containing Agrimol B. The kinmizuhiki extract used in the Examples contained 0.452 mass% Agrimol B.

[0059]

<Preparation of test samples>

Each test sample was obtained as an oral composition of Reference Example 1, Comparative Examples 1 to 29, and Examples 1 to 82 by weighing each raw material according to the formulation compositions shown in Tables 1 to 14, mixing the raw materials with a mixer (transparent-type mixer S-3, Tsutsui Rikagaku Kikai Co., Ltd.), and sieving the mixture through a 30-mesh sieve. Unless otherwise specified, the numerical values in each table indicate the composition of each component as mass% relative to the whole oral composition. Details of the raw materials used in this test example are shown in Table 1 below.

[0060]

[Table 1]

	Name of Components	Product Name (Manufacturer)
Component (A)	Kinmizuhiki extraction	Kinmizuhiki extract (Maruzen Pharmaceutical Co., Ltd.)
Component (B1)	HPMC 1 (viscosity: 4 mPa·s)	METULOSE SE-03 (Shin-Etsu Chemical Co., Ltd.)
	HPMC 2 (viscosity: 45 mPa·s)	METULOSE SE-50 (Shin-Etsu Chemical Co., Ltd.)
	HPC 1 (viscosity: 2 mPa·s)	CELNY SSL (Nippon Soda Co., Ltd.)
	HPC 2 (viscosity: 287 mPa·s)	CELNY M (Nippon Soda Co., Ltd.)
Component (B2)	Kappa-carrageenan	SOAGINA MW210 (Mitsubishi Chemical Co., Ltd.)
	Iota-carrageenan	Carraginan CSL-1(F) (San-Ei Gen F.F.I., Inc.)
	Lambda-carrageenan	Carraginan CSI-a(F) (San-Ei Gen F.F.I., Inc.)
Component (B3)	Pregelatinized tapioca starch (pregelatinized starch)	Tapioca Alpha (NTP) (Sanwa Starch Co., Ltd.)
	Partially pregelatinized cornstarch (partially pregelatinized starch)	PCS-SC30 (Asahi Kasei Corp.)
	Pregelatinized cornstarch (pregelatinized starch)	Corn Alpha Y (Sanwa Starch Co., Ltd.)
Component (B4)	Maltitol 1	Powder maltitol G-3 (Mitsubishi Corporation Life Sciences Limited)
	Maltitol 2	AMALTY MR50-50 (Mitsubishi Corporation Life Sciences Limited)
	Reduced palatinose	Palatinit PNM-2 (Mitsui Sugar Co., Ltd.)
Component (B5)	Dextrins 1 (DE 4)	Pinedex #100 (Matsutani Chemical Industry Co., Ltd.)
	Dextrins 2 (DE 7-12)	Pineflow (Matsutani Chemical Industry Co., Ltd.)
	Dextrins 3 (DE 18)	TK-16 (Matsutani Chemical Industry Co., Ltd.)
	α -Cyclodextrin	CAVAMAX W-6 Food (Wacker Chemical Corporation)
Component (C)	Calcium stearate	Calcium stearate (food additive) (Sakai Chemical Industry Co., Ltd.)
	Magnesium stearate	Magnesium stearate (San-Ei Gen F.F.I., Inc.)
	Sucrose stearate	RYOTO Sugar Ester S-370F (Mitsubishi Chemical Co., Ltd.)
	Sucrose behenate	RYOTO Sugar Ester B-370F (Mitsubishi Chemical Co., Ltd.)
Component (B1, comparison)	HPMC 3 (viscosity: 3775 mPa·s)	METULOSE NE-4000 (Shin-Etsu Chemical Co., Ltd.)
	HPC 3 (viscosity: 1000-4000 mPa·s)	CELNY H (Nippon Soda Co., Ltd.)
Component (B2, comparison)	Agar	Purified agar for disintegration (Ina Food Industry Co., Ltd.)
	Gum arabic	Instant Gum BA (Nexira Co., Ltd.)
	Xanthan gum	Ultra Xanthan (Ina Food Industry Co., Ltd.)
	Pectin	LMSN 325 CITRUS (Unitech Foods Co., Ltd.)
	Guar gum	VIDOCREM A (Unitech Foods Co., Ltd.)
	Konjac powder	Quick Mannan (Ina Food Industry Co., Ltd.)
	Tamarind gum	GRILLOID (Sumitomo Pharma Food & Chemical Co., Ltd.)
Component (B3, comparison)	Corn starch (β -starch)	Matsutani dried corn starch, JP grade (Matsutani Chemical Industry Co., Ltd.)
	Potato starch (β -starch)	Matsutani dried potato starch (Matsutani Chemical Industry Co., Ltd.)
	Rice starch (β -starch)	Fine Snow (Joetsu Starch Co., Ltd.)
Component (B4, comparison)	Trehalose	Fine trehalose powder (Hayashibara Co., Ltd.)
	Sorbitol	Sorbitol TBS (Bussan Food Science Co., Ltd.)
	Lactose	SuperTab 50 ODT (DFE Pharma)
	Sucrose	Powdered sugar (Tomizawa Shoten Co., Ltd.)
Component (B5, comparison)	γ -Cyclodextrin	CAVAMAX W-8 Food (Wacker Chemical Corporation)
	Dextrins 4 (DE 22)	Pine Oligo 20 (Matsutani Chemical Industry Co., Ltd.)
Excipient	Cellulose	CEOLUS UF-F702 (Asahi Kasei Corp.)

[0061]

<Sensory evaluation>

The oral compositions obtained as the test samples described above were placed in the mouth, and bitterness was evaluated according to the evaluation criteria described below. The evaluation was determined by consultation among three expert panelists.

[0062]

(Evaluation criteria)

As evaluation criteria, the bitterness, when compared with the kinmizuhiki raw material alone, was determined and evaluated by consultation among the above panelists according to the following criteria. In addition, samples evaluated as ○ or ◎ were regarded as having a high bitterness-masking effect and were judged as acceptable (Examples), and the respective results are shown in each table.

◎: No bitterness is perceived.

○: Slight bitterness is perceived (not unpleasant).

△: Unpleasant bitterness is perceived.

×: Bitterness of the same degree as in the case of the kinmizuhiki raw material alone is perceived.

[0063]

<(B1)cellulose derivative>

In formulations as shown in Table 2 below, cellulose derivatives having different viscosities were evaluated for their bitterness-masking effect on kinmizuhiki extract. The results of the sensory evaluation are also shown in Table 2. In Reference Example 1 and Comparative Examples 1 to 4, results in which only kinmizuhiki extract and an excipient (cellulose) were contained are shown.

[0064]

[Table 2]

Component (mass%)		Comparative sample	Reference Example 1	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4	Comparative Example 5	Comparative Example 6	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Example 7	Example 8	Example 9	Example 10	Example 11	Example 12	Example 13
A	Kinmizuhiki extraction	100	1	2.5	5	30	50	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
B1	HPMC 1 (viscosity: 4 mPa·s)	0	0	0	0	0	0	0	0	20	0	0	0	0.2	1	5	30	1	30	0	0	0
B1	HPMC 2 (viscosity: 45 mPa·s)	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	10	0	0
B1	HPC 1 (viscosity: 2 mPa·s)	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	10	0
B1	HPC 2 (viscosity: 287 mPa·s)	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	10
B1, comparison	HPMC 3 (viscosity: 3775 mPa·s)	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1, comparison	HPC 3 (viscosity: 1000-4000 mPa·s)	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0
Excipient	Cellulose	0	99	97.5	95	70	50	50	50	50	50	50	50	69.8	69	65	30	94	20	60	60	60
	Total	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
a	Agriamol B	0.452	0.005	0.011	0.023	0.136	0.226	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.181	0.023	0.226	0.136	0.136
	B1/a	0	0	0	0	0	0	-	-	147.5	147.5	147.5	147.5	1.5	7.4	36.9	165.9	44.2	132.7	73.7	73.7	73.7
	B1/A	0	0	0	0	0	0	-	-	0.667	0.667	0.667	0.667	0.007	0.033	0.167	0.750	0.200	0.600	0.333	0.333	0.333
	Sensory evaluation	-	○	△	×	×	×	△	△	○	○	○	○	○	○	○	○	○	○	○	○	○

[0065]

(Results)

From the results of Reference Example 1 and Comparative Examples 1 to 4, it became clear that, when the kinmizuhiki extract is contained in an amount of 2.5 mass% or more, unpleasant bitterness is perceived.

Furthermore, from the results of Comparative Examples 5 and 6, cellulose derivatives having viscosities outside the range of the present invention did not achieve a bitterness-masking effect that satisfied the evaluation criteria. On the other hand, from the results of Examples 1 to 13, it became clear that cellulose derivatives having viscosities within the range of the present invention provide a sufficient bitterness-masking effect.

[0066]

<(B2)carrageenan>

In formulations as shown in Table 3 below, carrageenan and other thickening polysaccharides were evaluated for their bitterness-masking effect on kinmizuhiki extract. The results of the sensory evaluation are also shown in Table 3.

[0067]

[Table 3]

Component (mass%)	Comparative Example 7	Comparative Example 8	Comparative Example 9	Comparative Example 10	Comparative Example 11	Comparative Example 12	Comparative Example 13	Comparative Example 14	Example 14	Example 15	Example 16	Example 17	Example 18	Example 19	Example 20	Example 21	Example 22	Example 23	Example 24
A Kinmizuhiki extraction	30	30	30	30	30	30	30	30	30	30	30	40	20	20	5	10	50	30	30
B2 Kappa-carrageenan	0	0	0	0	0	0	0	0.2	1	5	30	1	5	1	1	30	20	0	0
B2 Iota-carrageenan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
B2 Lambda-carrageenan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
B2, comparison Agar	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2, comparison Gum arabic	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2, comparison Xanthan gum	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2, comparison Pectin	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2, comparison Guar gum	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2, comparison Konjac powder	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0
B2, comparison Tamarind gum	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0
Excipient Cellulose	50	50	50	50	50	50	50	69.8	69	65	30	79	75	94	89	20	50	50	50
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
a Agrimol B	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.181	0.090	0.023	0.045	0.226	0.136	0.136	0.136
B2/a	-	-	-	-	-	-	-	1.5	7.4	36.9	165.9	11.1	55.3	44.2	22.1	132.7	147.5	147.5	147.5
B2/A	-	-	-	-	-	-	-	0.007	0.033	0.167	0.750	0.050	0.250	0.200	0.100	0.600	0.667	0.667	0.667
Sensory evaluation	x	x	x	x	x	x	x	x	○	○	○	○	○	○	○	○	○	○	○

[0068]

(Results)

From the results of Examples 14 to 24, carrageenans such as kappa-carrageenan, iota-carrageenan, and lambda-carrageenan each sufficiently exhibited a bitterness-masking effect and satisfied the evaluation criteria. On the other hand, as shown by the results of Comparative Examples 7 to 14, thickening polysaccharides other than carrageenan did not provide a bitterness-masking effect and did not satisfy the evaluation criteria. In addition, as shown by the results of Comparative Example 14 and Examples 14 to 24 described above, in order to obtain a sufficient bitterness-masking effect of carrageenan, it became clear that a certain minimum content of carrageenan is necessary.

[0069]

<(B3) Pregelatinized starch>

(Examination of types of (B3) pregelatinized starch)

In formulations as shown in Table 4 below, pregelatinized starches and other starches were evaluated for their bitterness-masking effect on kinmizuhiki extract. The results of the sensory evaluation are also shown in Table 4.

[0070]

[Table 4]

Component (mass%)		Comparative Example 15	Comparative Example 16	Comparative Example 17	Example 25	Example 26	Example 27
A	Kinmizuhiki extraction	30	30	30	30	30	30
B3	Pregelatinized tapioca starch	0	0	0	20	0	0
B3	Pregelatinized cornstarch	0	0	0	0	20	0
B3	Partially pregelatinized cornstarch	0	0	0	0	0	20
B3, comparison	Cornstarch	20	0	0	0	0	0
B3, comparison	Potato starch	0	20	0	0	0	0
B3, comparison	Rice starch	0	0	20	0	0	0
Excipient	Cellulose	50	50	50	50	50	50
Total		100	100	100	100	100	100
a	Agrimol B	0.136	0.136	0.136	0.136	0.136	0.136
B3/a		-	-	-	147.5	147.5	147.5
B3/A		-	-	-	0.667	0.667	0.667
Sensory evaluation		×	×	×	○	○	○

[0071]

(Examination of amount of (B3) pregelatinized starch)

Next, in formulations as shown in Table 5 below, the bitterness-masking effect on kinmizuhiki extract was evaluated with respect to the content of pregelatinized starch that exhibited an effect. The results of this sensory evaluation are also shown in Table 5.

[0072]

[Table 5]

Component (mass%)		Comparative Example 18	Example 28	Example 29	Example 30	Example 31	Example 32	Example 33	Example 34	Example 35	Example 36
A	Kinmizuhiki extraction	15	20	5	30	40	10	50	15	30	5
B3	Pregelatinized tapioca starch	0	5	1	5	30	1	30	0	0	0
B3	Pregelatinized cornstarch	0.5	0	0	0	0	0	0	1	20	0
B3	Partially pregelatinized cornstarch	0	0	0	0	0	0	0	0	0	1
Excipient	Cellulose	84.5	75	94	65	30	89	20	84	50	94
Total		100	100	100	100	100	100	100	100	100	100
a	Agrimol B	0.068	0.090	0.023	0.136	0.181	0.045	0.226	0.068	0.136	0.023
B3/a		7.4	55.3	44.2	36.9	165.9	22.1	132.7	14.7	147.5	44.2
B3/A		0.033	0.250	0.200	0.167	0.750	0.100	0.600	0.067	0.667	0.200
Sensory evaluation		△	○	○	○	○	○	○	○	○	○

[0073]

(Results)

As shown by the results of Comparative Examples 15 to 17 in Table 4, in the case of β -starches, a bitterness-masking effect on the bitterness of the kinmizuhiki extract was not obtained, whereas, as shown by the results of Examples 25 to 27, in the case of pregelatinized starch in which at least a part is pregelatinized, unpleasant bitterness disappeared and a sufficient

bitterness-masking effect that satisfied the evaluation criteria was obtained. In addition, as shown in Table 5, it became clear that, in order to obtain the masking effect of pregelatinized starch, a certain minimum content of pregelatinized starch is necessary.

[0074]

<(B4) Sugar alcohol of a disaccharide>

In formulations as shown in Table 6 below, various sugar alcohols were evaluated for their bitterness-masking effect on kinmizuhiki extract. The results of the sensory evaluation are also shown in Table 6.

[0075]

[Table 6]

Component (mass%)		Comparative Example 19	Comparative Example 20	Comparative Example 21	Comparative Example 22	Comparative Example 23	Example 37	Example 38	Example 39	Example 40	Example 41	Example 42	Example 43	Example 44
A	Kinmizuhiki extraction	30	30	30	30	30	5	10	15	20	30	30	30	30
B4	Maltitol 1	0	0	0	0	0.5	1	1	1	5	5	0	0	0
B4	Maltitol 2	0	0	0	0	0	0	0	0	0	0	10	20	0
B4	Reduced palatinose	0	0	0	0	0	0	0	0	0	0	0	0	20
B4, comparison	Trehalose	20	0	0	0	0	0	0	0	0	0	0	0	0
B4, comparison	Sorbitol	0	20	0	0	0	0	0	0	0	0	0	0	0
B4, comparison	Lactose	0	0	20	0	0	0	0	0	0	0	0	0	0
B4, comparison	Sucrose	0	0	0	20	0	0	0	0	0	0	0	0	0
Excipient	Cellulose	50	50	50	50	69.5	94	89	84	75	65	60	50	50
Total		100	100	100	100	100	100	100	100	100	100	100	100	100
a	Agrimol B	0.136	0.136	0.136	0.136	0.136	0.023	0.045	0.068	0.090	0.136	0.136	0.136	0.136
B4/a		-	-	-	-	3.7	44.2	22.1	14.7	55.3	36.9	73.7	147.5	147.5
B4/A		-	-	-	-	0.017	0.200	0.100	0.067	0.250	0.167	0.333	0.667	0.667
Sensory evaluation		x	△	x	x	x	○	○	○	○	○	○	○	○

[0076]

(Results)

From the results of Comparative Example 23 and Examples 37 to 44, it became clear that, in a powder oral composition that contains, as component (B), a sugar alcohol of a disaccharide alone, a bitterness-masking effect on the bitterness of the kinmizuhiki extract was obtained, and that, in order to obtain a sufficient masking effect, a certain minimum content of the sugar alcohol of a disaccharide is necessary. On the other hand, as shown by the results of Comparative Examples 19 to 22, in the case of other saccharides, unpleasant bitterness could not be sufficiently masked, and the evaluation

criteria were not satisfied.

[0077]

<(B5) Linear dextrin or branched dextrin>

In formulations as shown in Table 7 below, various dextrans were evaluated for their bitterness-masking effect on kinmizuhiki extract. The results of the sensory evaluation are also shown in Table 7.

[0078]

[Table 7]

Component (mass%)		Comparative Example 24	Comparative Example 25	Comparative Example 26	Comparative Example 27	Example 46	Example 47	Example 48	Example 49	Example 50	Example 51	Example 52	Example 53
A	Kinmizuhiki extraction	30	30	30	30	30	30	30	50	50	30	30	30
B5	Dextrins 1 (DE 4)	0	0	0	0.5	1	5	10	10	20	20	0	0
B5	Dextrins 2 (DE 7-12)	0	0	0	0	0	0	0	0	0	0	20	0
B5	Dextrins 3 (DE 18)	0	0	0	0	0	0	0	0	0	0	0	20
B5, comparison	γ -Cyclodextrin	20	50	0	0	0	0	0	0	0	0	0	0
B5, comparison	Dextrins 4 (DE 22)	0	0	20	0	0	0	0	0	0	0	0	0
Excipient	Cellulose	50	20	50	69.5	69	65	60	40	30	50	50	50
Total		100	100	100	100	100	100	100	100	100	100	100	100
a	Agriamol B	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.226	0.226	0.136	0.136	0.136
B5/a		-	-	-	3.7	7.4	36.9	73.7	44.2	88.5	147.5	147.5	147.5
B5/A		-	-	-	0.017	0.033	0.167	0.333	0.200	0.400	0.667	0.667	0.667
Sensory evaluation		×	×	△	×	○	○	○	○	○	○	○	○

[0079]

(Results)

From the results of Comparative Example 27 and Examples 46 to 53, it became clear that, in a powder oral composition that contains, as component (B), a linear dextrin or a branched dextrin having a DE within a specific range alone, a bitterness-masking effect on the bitterness of the kinmizuhiki extract was obtained, and that, in order to obtain a sufficient masking effect, a certain minimum content of component (B5) is necessary. On the other hand, in the case where γ -cyclodextrin having a cyclic structure in the molecule is contained alone, or in the case where a linear dextrin or a branched dextrin having a DE outside the range of the present invention is contained alone, as shown by the results of Comparative Examples 24 to 26, unpleasant bitterness could not be sufficiently masked, and the evaluation criteria were not satisfied.

[0080]

<(C) Metal salt of a higher fatty acid or sucrose fatty acid ester>

In formulations as shown in Table 8 below, various metal salts of higher fatty acids or sucrose fatty acid esters were evaluated for their bitterness-masking effect on kinmizuhiki extract. The results of the sensory evaluation are also shown in Table 8.

[0081]

[Table 8]

Component (mass%)		Comparative Example 28	Comparative Example 29	Example 54	Example 55	Example 56	Example 57	Example 58	Example 59	Example 60	Example 61
A	Kinmizuhiki extraction	20	20	20	20	20	20	20	20	20	20
C	Stearic acid Ca	0	0.1	1	5	0	0	0	0	0	0
C	Stearic acid Mg	0	0	0	0	1	5	0	0	0	0
C	Sucrose stearate	0	0	0	0	0	0	1	5	0	0
C	Sucrose behenate	0	0	0	0	0	0	0	0	1	5
C, comparison	Glycerin fatty acid ester	5	0	0	0	0	0	0	0	0	0
Excipient	Cellulose	75	79.9	79	75	79	75	79	75	79	75
Total		100	100	100	100	100	100	100	100	100	100
a	Agrimol B	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
C/a		-	1.11	11.1	55.3	11.1	55.3	11.1	55.3	11.1	55.3
C/A		-	0.005	0.050	0.250	0.050	0.250	0.050	0.250	0.050	0.250
Sensory evaluation		△	×	○	○	○	○	○	○	○	○

[0082]

(Results)

From the results of Examples 54 to 61, it became clear that, in an oral composition that contains, as component (C), a metal salt of a higher fatty acid or a sucrose fatty acid ester alone, a sufficient bitterness-masking effect on the bitterness of the kinmizuhiki extract was obtained, whereas, in the case of other fatty acid esters in Comparative Example 28, unpleasant bitterness could not be sufficiently masked, and the evaluation criteria were not satisfied.

In addition, from the results of Comparative Example 29, it became clear that, when the ratio (C/a) of component (C) calcium stearate to Agrimol B was 1.11, unpleasant bitterness could not be sufficiently masked.

[0083]

[Test Example 2 Synergistic effect of component (B) and component (C)]

An evaluation was made of the bitterness-masking effect on an oral composition in a case where component (C) was further mixed into a powder oral composition that contains component (A) kinmizuhiki extract and a powder oral composition that contains each of components (B1) to (B5).

[0084]

<(B1) Cellulose derivative and component (C)>

In formulations as shown in Table 9 below, an evaluation was made of a synergistic effect in the bitterness-masking effect on kinmizuhiki extract in a case where a powder mixture that contains both a (B1) cellulose derivative whose effect had been confirmed and component (C) was prepared. The results of this sensory evaluation are also shown in Table 9.

[0085]

[Table 9]

Component (mass%)		Example 62	Example 63
A	Kinmizuhiki extraction	20	20
B1	HPMC 1 (viscosity: 4 mPa·s)	5	5
C	Stearic acid Ca	1	0
C	Sucrose stearate	0	1
Excipient	Cellulose	74	74
Total		100	100
a	Agriamol B	0.0904	0.0904
B1/a		55.310	55.310
B1/A		0.250	0.250
C/a		11.062	11.062
C/A		0.050	0.050
C/B1		0.200	0.200
Sensory evaluation		◎	◎

[0086]

<(B2) Carrageenan and component (C)>

In formulations as shown in Table 10 below, an evaluation was made of a synergistic effect in the bitterness-masking effect on kinmizuhiki extract in a case where a powder mixture that contains both (B2) carrageenan, whose effect had been confirmed, and component (C) was prepared. The results of this sensory evaluation are also shown in Table 10.

[0087]

[Table 10]

Component (mass%)		Example 64	Example 65
A	Kinmizuhiki extraction	20	20
B2	Kappa-carrageenan	5	5
C	Stearic acid Ca	1	0
C	Sucrose stearate	0	1
Excipient	Cellulose	74	74
Total		100	100
a	Agrimol B	0.0904	0.0904
B2/a		55.310	55.310
B2/A		0.250	0.250
C/a		11.062	11.062
C/A		0.050	0.050
C/B2		0.200	0.200
Sensory evaluation		◎	◎

[0088]

<(B3) Pregelatinized starch and component (C)>

In formulations as shown in Table 11 below, an evaluation was made of a synergistic effect in the bitterness-masking effect on kinmizuhiki extract in a case where a powder mixture that contains both (B3) pregelatinized starch, whose effect had been confirmed, and component (C) was prepared. The results of this sensory evaluation are also shown in Table 11.

[0089]

[Table 11]

Component (mass%)		Example 66	Example 67	Example 68	Example 69	Example 70	Example 71	Example 72
A	Kinmizuhiki extraction	20	20	20	20	20	30	30
B3	Partially pregelatinized cornstarch	10	10	10	10	10	10	10
C	Stearic acid Ca	0	0	0	1	0	0	0
C	Stearic acid Mg	0	1	5	0	0	0	0
C	Sucrose stearate	0	0	0	0	5	0	0
C	Sucrose behenate	0	0	0	0	0	1	5
Excipient	Cellulose	70	69	65	69	65	59	55
Total		100	100	100	100	100	100	100
a	Agrimol B	0.090	0.090	0.090	0.090	0.090	0.136	0.136
B3/a		110.6	110.6	110.6	110.6	110.6	73.7	73.7
B3/A		0.500	0.500	0.500	0.500	0.500	0.333	0.333
C/a		0.0	11.1	55.3	11.1	55.3	7.4	36.9
C/A		0.000	0.050	0.250	0.050	0.250	0.033	0.167
C/B3		0.000	0.100	0.500	0.100	0.500	0.100	0.500
Sensory evaluation		○	◎	◎	◎	◎	◎	◎

[0090]

<(B4) Sugar alcohol of a disaccharide and component (C)>

In formulations as shown in Table 12 below, an evaluation was made of a synergistic effect in the bitterness-masking effect on kinmizuhiki extract in a case where a powder mixture that contains both (B4) sugar alcohol of a disaccharide, whose effect had been confirmed, and component (C) was prepared. The results of this sensory evaluation are also shown in Table 12.

[0091]

[Table 12]

Component (mass%)		Example 73	Example 74	Example 75	Example 76	Example 77	Example 78
A	Kinmizuhiki extraction	30	30	30	30	30	30
B4	Maltitol 1	20	20	20	20	0	0
B4	Reduced palatinose	0	0	0	0	20	20
C	Stearic acid Ca	5	0	0	0	0	0
C	Stearic acid Mg	0	5	0	0	1	5
C	Sucrose stearate	0	0	5	0	0	0
C	Sucrose behenate	0	0	0	5	0	0
Excipient	Cellulose	45	45	45	45	49	45
Total		100	100	100	100	100	100
a	Agrimol B	0.136	0.136	0.136	0.136	0.136	0.136
B4/a		147.5	147.5	147.5	147.5	147.5	147.5
B4/A		0.667	0.667	0.667	0.667	0.667	0.667
C/a		36.9	36.9	36.9	36.9	7.4	36.9
C/A		0.167	0.167	0.167	0.167	0.033	0.167
C/B4		0.250	0.250	0.250	0.250	0.050	0.250
Sensory evaluation		◎	◎	◎	◎	◎	◎

[0092]

<(B5) Linear dextrin or branched dextrin and component (C)>

In formulations as shown in Table 13 below, an evaluation was made of a synergistic effect in the bitterness-masking effect on kinmizuhiki extract in a case where a powder mixture that contains both (B5) linear dextrin or branched dextrin having a DE of 2 to 20, whose bitterness-masking effect had been confirmed, and component (C) was prepared. The results of this sensory evaluation are also shown in Table 13.

[0093]

[Table 13]

Component (mass%)		Example 79	Example 80
A	Kinmizuhiki extraction	30	30
B5	Dextrins 2 (DE value: 7-12)	10	10
C	Stearic acid Mg	1	5
Excipient	Cellulose	59	55
Total		100	100
a	Agrimol B	0.136	0.136
Component B5 / Component a		73.7	73.7
Component B5 / Component A		0.333	0.333
Component C / Component a		7.4	36.9
Component C / Component A		0.033	0.167
Component C / Component B5		0.100	0.500
Sensory evaluation		◎	◎

[0094]

(Results)

As shown in Tables 9 to 13, by providing a powder oral composition that contains both component (B) and component (C), the masking effect was exhibited to such an extent that bitterness was not perceived in any of the sensory evaluations, and the highest rating “◎” was obtained. Accordingly, a synergistic effect of component (B) and component (C) in the bitterness-masking effect on kinmizuhiki extract was confirmed.

[0095]

[Test Example 3 Confirmation of manufacturability of tablets and bitterness-masking effect]

<Preparation of tablets>

The raw materials were mixed according to the formulations shown in Table 14, sieved through a 30-mesh sieve, and then mixed using a mixer. The obtained mixture was tableted using a single-punch tableting machine (N-30E, Okada Seiko Co., Ltd.) to obtain tablets of Examples 81 and 82. The tableting conditions were as follows: tablet diameter ϕ 9 mm, R12, tablet weight 300 mg per tablet, and tableting pressure 1000 kgf.

[0096]

<Sensory evaluation and evaluation of tableting properties>

The tablets obtained by tableting were placed in the mouth, and a sensory evaluation of bitterness was carried out in the same manner as described

above. An evaluation of tableting properties was also carried out. The tableting properties were evaluated as “no problem” when no tableting defects such as capping or sticking occurred. These evaluations are also shown in Table 14.

[0097]

[Table 14]

Component (mass%)		Example 81	Example 82
A	Kinmizuhiki extraction	20	30
B3	Partially pregelatinized cornstarch	5	0
B3	Pregelatinized cornstarch	0	20
C	Stearic acid Ca	1	1
Excipient	Cellulose	74	49
Total		100	100
a	Agrimol B	0.090	0.136
B3/a		55.3	147.5
B3/A		0.250	0.667
C/a		11.1	7.4
C/A		0.050	0.033
C/B3		0.200	0.050
Sensory evaluation		◎	◎
Tableting properties		No problem	No problem

[0098]

(Results)

As shown in Table 14, even in tablets prepared by tableting a powder oral composition containing kinmizuhiki extract, component (B3) pregelatinized starch, and component (C), the result of the sensory evaluation was the highest rating. Accordingly, it became clear that, even when the composition was formulated as a tablet, the bitterness-masking effect of components (B) and (C) on kinmizuhiki extract that was similar to that obtained with the powder mixture described above could be obtained. At the same time, it also became clear that the tablets had tableting properties that were acceptable as a product.

[0099]

As described above, in an oral composition containing Agrimol B, bitterness can be masked by causing the oral composition to contain components (B1) to component (C), and it has been confirmed that formulation into tablets is

possible.

[Industrial Applicability]

[0100]

The present invention makes it possible to easily prepare an oral composition that contains Agrimol B and in which bitterness is masked, and therefore pharmaceuticals, quasi-drugs, ingestible cosmetic preparations, ingestible cosmetic products, health foods (dietary supplements, foods with nutrient function claims, foods for the sick, foods for specified health uses, foods with function claims, and the like), supplements, feeds, and the like that utilize advantageous effects that Agrimol B has as an active ingredient can be provided.

CLAIMS

[Claim 1]

An oral composition comprising:

a powder containing the following component (a); and

one or more powders selected from the following components (B1) to (C):

(a) Agrimol B,

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution,

(B2) carrageenan in an amount of 0.5 to 40 mass%,

(B3) pregelatinized starch in an amount of 1 to 40 mass%,

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20, in an amount of 1 to 40 mass%, and

(C) a metal salt of a higher fatty acid or a sucrose fatty acid ester in an amount of 0.5 to 10 mass%.

[Claim 2]

The oral composition according to Claim 1, wherein component (a) is derived from component (A), which is a kinmizuhiki (*Agrimonia pilosa*) extract.

[Claim 3]

The oral composition according to Claim 1 or 2, wherein the composition contains both one or more powders selected from components (B1) to (B5) and a powder of component (C).

[Claim 4]

The oral composition according to Claim 1 or 2, wherein a ratio of a content of components (B1) to (C) to a content of component (a) is at least one selected from the following:

the ratio (B1/a) of the content of component (B1) to the content of component (a) is 1 to 450,
the ratio (B2/a) of the content of component (B2) to the content of component (a) is 2 to 450,
the ratio (B3/a) of the content of component (B3) to the content of component (a) is 10 to 450,
the ratio (B4/a) of the content of component (B4) to the content of component (a) is 10 to 450,
the ratio (B5/a) of the content of component (B5) to the content of component (a) is 5 to 450, and
the ratio (C/a) of the content of component (C) to the content of component (a) is 5 to 100.

[Claim 5]

A method for masking bitterness in a powder oral composition containing the following component (a),

wherein the oral composition contains one or more powders selected from the following components (B1) to (C):

(a) Agrimol B

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution

(B2) carrageenan in an amount of 0.5 to 40 mass%

(B3) pregelatinized starch in an amount of 1 to 40 mass%

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20, in an amount of 1 to 40 mass%, and

(C) a metal salt of a higher fatty acid or sucrose fatty acid ester in an amount of 0.5 to 10 mass%

[Claim 6]

A method for producing an oral composition containing the following component (a) and one or more powders selected from components (B1) to (C),

wherein the method comprises a step of stirring and mixing component (a) and at least one selected from components (B1) to (C):

(a) Agrimol B

(B1) a cellulose derivative having a viscosity of 2 to 800 mPa·s at a shear rate at 20°C in a 2% aqueous solution

(B2) carrageenan in an amount of 0.5 to 40 mass%

(B3) pregelatinized starch in an amount of 1 to 40 mass%

(B4) a sugar alcohol of a disaccharide in an amount of 1 to 30 mass%

(B5) a linear dextrin or a branched dextrin having a dextrose equivalent (DE) of 2 to 20, in an amount of 1 to 40 mass%, and

(C) a metal salt of a higher fatty acid or sucrose fatty acid ester in an amount of 0.5 to 10 mass%