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(54) Title: ORAL COMPOSITION, AND METHOD FOR SUPPRESSING BITTERNESS DERIVED FROM ERGOTHIONEINE OR SALT THEREOF AND ODOR DERIVED FROM EICOSAPENTAENOIC ACID

(54) 発明の名称: 経口組成物、及び、エルゴチオネイン又はその塩に由来する苦味及びエイコサペンタエン酸類に由来する臭みを抑制する方法

(57) Abstract: The purpose of the present invention is to provide an oral composition which contains ergothioneine or a salt thereof and at least one eicosapentaenoic acid and in which the bitterness derived from ergothioneine or the salt thereof and the odor derived from the eicosapentaenoic acid are reduced. The present invention pertains to an oral composition containing the following components (A) and (B): (A) ergothioneine or a salt thereof; and (B) at least one eicosapentaenoic acid, wherein the weight ratio of component (B) (in terms of eicosapentaenoic acid) to component (A) (in terms of ergothioneine) [(B)/(A)] is 0.5-1.5.

(57) 要約: 本発明は、エルゴチオネイン又はその塩由来の苦味及びエイコサペンタエン酸類に由来する臭みが低減された、エルゴチオネイン又はその塩と少なくとも1種のエイコサペンタエン酸類とを含有する経口組成物を提供することを目的とする。本発明は、下記の成分(A)及び(B): (A) エルゴチオネイン又はその塩、及び、(B) 少なくとも1種のエイコサペンタエン酸類、を含有し、成分(A) (エルゴチオネイン換算) に対する成分(B) (エイコサペンタエン酸換算) の重量比 ((B)/(A)) が0.5~1.5である、経口組成物に関する。

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- 一 国際調査報告（条約第21条(3)）

DESCRIPTION

TITLE OF INVENTION: ORAL COMPOSITION, AND METHOD FOR
SUPPRESSING BITTERNESS DERIVED FROM ERGOTHIONEINE OR SALT
5 THEREOF AND ODOR DERIVED FROM EICOSAPENTAENOIC ACID

TECHNICAL FIELD

[0001]

The present invention relates to an oral composition
10 containing ergothioneine or its salt and at least one
eicosapentaenoic acid-class compound. The present
invention also relates to use of at least one
eicosapentaenoic acid-class compound for reducing
ergothioneine- or its salt-derived bitterness. The present
15 invention also relates to a method of reducing
ergothioneine- or its salt-derived bitterness and
eicosapentaenoic acid-class compound-derived odor.

BACKGROUND ART

20 [0002]

Ergothioneine is one of hydrophilic sulfur-containing
amino acids and is known to have various physiological
activities including an antioxidant ability. Regarding the
physiological activities of ergothioneine, for example,
25 Patent Literature 1 reports, for example, an action that
promotes the production of immune response-activating
cytokine.

Ergothioneine, which has various physiological
activities, has been drawing attention recently for its use
30 for foods, cosmetics, and pharmaceutical products.

[0003]

Eicosapentaenoic acid (hereinafter also referred to
as "EPA"), which is a fatty acid component of fats and oils
contained in fish oil of blue fish such as mackerel, saury,
35 and sardines, is also known to have many physiological

activities. As an example of compositions containing EPA, Patent Literature 2 discloses a pharmaceutical composition containing EPA and nicotinic acid.

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CITATION LIST

- Patent Literature

[0004]

Patent Literature 1: JP 2017-218431 A

Patent Literature 2: JP 2020-100673 A

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SUMMARY OF INVENTION

- Technical Problem

[0005]

As described above, ergothioneine has useful
15 physiological activities, foods such as supplements
containing ergothioneine or its salt are useful for
maintaining or promoting health. However, ergothioneine or
its salt has a unique aroma and flavor, particularly an
unpleasant bitterness (bitter taste) that stings the
20 tongue, so that there is room for improvement in providing
an oral composition containing ergothioneine or its salt.

Although foods such as supplements containing EPA are
similarly useful, EPA and its derivatives have an
unpleasant aroma and flavor (odor), so that there is still
25 room for improvement in providing an oral composition.

Thus, while various useful effects are expectable
from oral compositions containing ergothioneine or its salt
and an eicosapentaenoic acid-class compound, such oral
compositions are considered to cause problems such as
30 bitterness and odor.

[0006]

The present invention aims to provide an oral
composition containing ergothioneine or its salt and at
least one eicosapentaenoic acid-class compound in which
35 ergothioneine- or its salt-derived bitterness and

eicosapentaenoic acid-class compound-derived odor are reduced. The present invention also aims to provide use of at least one eicosapentaenoic acid-class compound for reducing ergothioneine- or its salt-derived bitterness.

5 The present invention also aims to provide a method of reducing ergothioneine- or its salt-derived bitterness and eicosapentaenoic acid-class compound-derived odor of an oral composition containing ergothioneine or its salt and at least one eicosapentaenoic acid-class compound.

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- Solution to Problem

[0007]

As a result of extensive studies, the present inventors found that a combination of ergothioneine or its salt and at least one eicosapentaenoic acid in a specific weight ratio can effectively reduce the ergothioneine- or its salt-derived bitterness and the eicosapentaenoic acid-class compound-derived odor.

15

[0008]

20 The present invention encompasses the following oral composition and the like.

(1) An oral composition containing: a component (A); and a component (B), the component (A) being ergothioneine or its salt, the component (B) being at least one eicosapentaenoic acid-class compound, wherein a weight ratio (B)/(A) of the component (B) in terms of eicosapentaenoic acid to the component (A) in terms of ergothioneine is within a range of 0.5 to 15.

25

(2) The composition according to (1) above, wherein the eicosapentaenoic acid-class compound is selected from the group consisting of free eicosapentaenoic acid, its salt, and a compound containing eicosapentaenoic acid as a constituent fatty acid.

30

(3) The composition according to (2) above, wherein the compound containing eicosapentaenoic acid as a

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constituent fatty acid is selected from the group consisting of a triglyceride in which at least one or each constituent fatty acid is eicosapentaenoic acid, a diglyceride in which at least one or each constituent fatty acid is eicosapentaenoic acid, a monoglyceride in which a constituent fatty acid is eicosapentaenoic acid, a phospholipid in which at least one or each constituent fatty acid is eicosapentaenoic acid, a glycolipid in which at least one or each constituent fatty acid is eicosapentaenoic acid, and an alcohol ester of eicosapentaenoic acid.

(4) The composition according to any one of (1) to (3) above, wherein the weight ratio (B)/(A) of the component (B) in terms of eicosapentaenoic acid to the component (A) in terms of ergothioneine is within a range of 2 to 20.

(5) The composition according to any one of (1) to (4) above, wherein the component (B) is derived from fish or shellfish.

(6) The composition according to any one of (1) to (5) above, wherein the composition is a food or beverage.

(7) Use of at least one eicosapentaenoic acid-class compound for reducing ergothioneine- or its salt-derived bitterness.

(8) A method of reducing ergothioneine- or its salt-derived bitterness and eicosapentaenoic acid-class compound-derived odor in preparing an oral composition containing (A) ergothioneine or its salt, and (B) at least one eicosapentaenoic acid-class compound, the method including: adjusting a weight ratio (B)/(A) of the component (B) in terms of eicosapentaenoic acid to the component (A) in terms of ergothioneine within a range of 0.5 to 15.

- Advantageous Effects of Invention

[0009]

The present invention can provide an oral composition containing ergothioneine or its salt and at least one eicosapentaenoic acid-class compound in which
5 ergothioneine- or its salt-derived bitterness and eicosapentaenoic acid-class compound-derived odor are reduced. The present invention can also provide use of at least one eicosapentaenoic acid-class compound for reducing ergothioneine- or its salt-derived bitterness. The present
10 invention can also provide a method of reducing ergothioneine- or its salt-derived bitterness and eicosapentaenoic acid-class compound-derived odor of an oral composition containing ergothioneine or its salt and at least one eicosapentaenoic acid-class compound.

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DESCRIPTION OF EMBODIMENTS

[0010]

The oral composition of the present invention (hereinafter also referred to as "the composition of the
20 present invention") contains a component (A) and a component (B), the component (A) being ergothioneine or its salt, the component (B) being at least one eicosapentaenoic acid-class compound, wherein a weight ratio (B)/(A) of the component (B) in terms of eicosapentaenoic acid to the
25 component (A) in terms of ergothioneine is within a range of 0.5 to 15.

[0011]

Ergothioneine is one of the sulfur-containing amino acids. In the present invention, ergothioneine is
30 preferably L-ergothioneine.

The salt of ergothioneine is not limited as long as it is a pharmacologically acceptable salt or a dietary acceptable salt, and it may be either an acid salt or a basic salt. Examples of the acid salt include inorganic
35 acid salts such as hydrochloride, sulfate, nitrate, and

phosphate, and organic acid salts such as acetate, citrate, maleate, malate, oxalate, lactate, succinate, fumarate, and propionate. Examples of the basic salt include alkali metal salts such as sodium salt and potassium salt, and
5 alkaline earth metal salts such as calcium salt and magnesium salt.

[0012]

Ergothioneine or its salt is not limited in any way by its form, production method, or the like. Ergothioneine
10 or its salt that can be used may be a chemically synthesized product or a purified extract from a natural product. L-ergothioneine is abundant in golden/yellow oyster mushrooms (scientific name: *Pleurotus cornucopiae* var. *citrinopileatus*) belonging to the genus *Pleurotus* of
15 the family Pleurotaceae. L-ergothioneine is also present in mushrooms such as common mushrooms (scientific name: *Agaricus bisporus*) including white button mushrooms, cremini mushrooms, and portabella mushrooms; grey oyster mushrooms (scientific name: *Pleurotus ostreatus*), shiitake
20 (scientific name: *Lentinula edodes*), hen-of-the-woods (scientific name: *Grifola frondosa*), reishi mushrooms (scientific name: *Ganoderma lucidum*), lion's mane mushrooms (scientific name: *Hericium erinaceus*), Yanagi-matsutake (scientific name: *Agrocybe aegerita*), girolles (scientific
25 name: *Cantharellus cibarius*), porcini mushrooms (scientific name: *Boletus edulis*, and morel mushrooms (scientific name: *Morchella esculenta*). When L-ergothioneine is obtained from a natural product, preferably, it is extracted from a golden/yellow oyster mushroom, for example. Ergothioneine
30 or its salt can also be produced by microbial fermentation. Ergothioneine or its salt may be in an isolated form.

[0013]

The composition of the present invention contains ergothioneine or its salt and at least one eicosapentaenoic
35 acid-class compound in the above ratio, whereby the

ergothioneine- or its salt-derived bitterness and the eicosapentaenoic acid-class compound-derived odor are reduced. This facilitates continuous intake of ergothioneine or its salt and an eicosapentaenoic acid-class compound.

[0014]

The eicosapentaenoic acid-class compound that can be used is eicosapentaenoic acid (free eicosapentaenoic acid), its salt or derivative, or a derivative of the salt. One eicosapentaenoic acid-class compound may be used alone, or two or more may be used in combination. A usable derivative of eicosapentaenoic acid may be, for example, a compound having a structure in which eicosapentaenoic acid is bonded or a compound from which eicosapentaenoic acid can be isolated by hydrolysis. Examples of the compound from which eicosapentaenoic acid can be isolated by hydrolysis include compounds containing eicosapentaenoic acid as a constituent fatty acid.

Preferably, the eicosapentaenoic acid-class compound for use in the present invention is selected from the group consisting of free eicosapentaenoic acid, its salt, and a compound containing eicosapentaenoic acid as a constituent fatty acid.

Examples of the salt of eicosapentaenoic acid include a calcium salt and a sodium salt.

Preferably, the compound containing eicosapentaenoic acid as a constituent fatty acid is a compound selected from the group consisting of a triglyceride in which at least one or each constituent fatty acid is eicosapentaenoic acid, a diglyceride in which at least one or each constituent fatty acid is eicosapentaenoic acid, a monoglyceride in which a constituent fatty acid is eicosapentaenoic acid, a phospholipid in which at least one or each constituent fatty acid is eicosapentaenoic acid, a glycolipid in which at least one or each constituent fatty

acid is eicosapentaenoic acid, and an alcohol ester of eicosapentaenoic acid.

Of these, the eicosapentaenoic acid-class compound is more preferably a triglyceride, diglyceride, or
5 phospholipid in which at least one or each constituent fatty acid is eicosapentaenoic acid, still more preferably a triglyceride or diglyceride in which at least one or each constituent fatty acid is eicosapentaenoic acid,
particularly preferably a triglyceride in which at least
10 one or each constituent fatty acid is eicosapentaenoic acid.

[0015]

The eicosapentaenoic acid-class compound for use in the present invention is not limited in any way by its
15 form, production method, or the like. A chemically synthesized product, a product derived from a natural product, or a product derived from a genetically modified organism (e.g., *Escherichia coli*, yeast, plants, etc.) may be used. Examples of the product derived from a natural
20 product include products capable of producing EPA and derived from fish or shellfish, algae, fungi (labyrinthulids, etc.), and plants (*Marchantia polymorpha*, etc.). Of these, the eicosapentaenoic acid-class compound is preferably one derived from fish or shellfish.

25 An eicosapentaenoic acid-class compound extracted/purified from a raw material such as a natural product containing an eicosapentaenoic acid-class compound may also be used, or such a raw material may be directly used to add an eicosapentaenoic acid-class compound to a
30 composition. Examples of the raw material containing an eicosapentaenoic acid-class compound include edible fats and oils such as fat and oil extracts from fish oil, eggs, meat, milk, and algae. The fish oil containing an eicosapentaenoic acid-class compound is preferably fish oil
35 in which the eicosapentaenoic acid-class compound (in terms

of eicosapentaenoic acid) content is concentrated to 5 wt% or more, preferably 10 wt% or more, more preferably 20 wt% or more. For example, an eicosapentaenoic acid-class compound extracted and/or purified from fish oil containing
5 an eicosapentaenoic acid-class compound may be used, or such fish oil may be used directly. In one embodiment, the oral composition of the present invention may contain fish oil, and the eicosapentaenoic acid-class compound may be a part of the fish oil.

10 [0016]

In the composition of the present invention, the weight ratio ((B)/(A)) of the component (B) (in terms of eicosapentaenoic acid) to the component (A) (in terms of ergothioneine) is within a range of 0.5 to 15. When the
15 weight ratio is in the above range, the bitterness derived from the component (A) can be reduced. The odor derived from the component (B) can also be reduced. This makes the composition suitable for ingestion. The weight ratio is preferably within a range of 1 to 15, more preferably
20 within a range of 2 to 14.

Herein, regarding the expression for the amount in terms of ergothioneine or an expression similar thereto, in the case where the component (A) is ergothioneine, the expression refers to the amount of ergothioneine; whereas
25 in the case where the component (A) is a salt of ergothioneine, the expression refers to a value obtained by multiplying the molar number of the salt by the molecular weight of ergothioneine.

Regarding the expression for the amount in terms of
30 eicosapentaenoic acid or an expression similar thereto, in the case where the component (B) is free EPA, the expression refers to the amount of free EPA; whereas in the case where the component (B) is not free EPA, the expression refers to an amount in terms of free EPA
35 obtained by isolating EPA by saponification or enzymatic

treatment. When the composition contains two or more eicosapentaenoic acid-class compounds, the amount is the total amount.

[0017]

5 The amount of ergothioneine or its salt in the composition of the present invention is not limited and may be set according to the form of the composition or the like.

10 The amount of ergothioneine or its salt in terms of ergothioneine in the composition of the present invention is, for example, preferably 0.1 wt% or more, more preferably 0.5 wt% or more, still more preferably 1 wt% or more, particularly preferably 1.5 wt% or more and is also preferably 50 wt% or less, more preferably 30 wt% or less, 15 still more preferably 20 wt% or less, particularly preferably 10 wt% or less. In one embodiment, the amount of ergothioneine or its salt in terms of ergothioneine in the composition of the present invention is preferably 0.1 to 50 wt%, more preferably 0.5 to 30 wt%, still more 20 preferably 1 to 20 wt%, particularly preferably 1.5 to 10 wt%.

 The amount of ergothioneine can be measured by high-performance liquid chromatography (HPLC).

[0018]

25 The amount of the eicosapentaenoic acid-class compound in the composition of the present invention is not limited and can be set according to the form of the composition and the like.

30 When the composition contains two or more eicosapentaenoic acid-class compounds, the amount is the total amount. The amount of eicosapentaenoic acid can be measured by gas chromatography (GC).

[0019]

35 The amount of ergothioneine or its salt in terms of ergothioneine in the composition of the present invention

per adult daily intake is preferably 1 to 100 mg, more preferably 2 to 50 mg, still more preferably 5 to 25 mg, particularly preferably 5 to 20 mg.

In the composition of the present invention, the
5 amount of the eicosapentaenoic acid-class compound in terms of eicosapentaenoic acid per adult daily intake is preferably 10 to 2500 mg, more preferably 25 to 1000 mg, still more preferably 50 to 500 mg.

[0020]

10 Ergothioneine, its salts, and eicosapentaenoic acid-class compounds are compounds that are found in natural products and food or beverages and that have been consumed. Thus, for example, daily ingestion of ergothioneine or its salt and an eicosapentaenoic acid-class compound is less
15 likely to cause problems in terms of safety. The present invention can provide a highly safe and easy-to-ingest composition in which the ergothioneine- or its salt-derived bitterness and the eicosapentaenoic acid-class compound-derived odor are reduced.

20 [0021]

As described above, ergothioneine or a salt thereof is known to provide various physiological activities and health functions. Known examples include antioxidant
25 action, brain function improving effect, anti-aging action, eye disease alleviating effect, whitening effect, UV absorbing effect, melanin production suppressing effect, active oxygen species scavenging effect, elastase activity inhibitory effect, wrinkle suppressing effect, anti-skin sagging effect, and autophagy promoting effect.

30 Thus, the composition of the present invention can be suitably used for antioxidation, brain function improvement, anti-aging, eye disease, whitening, UV absorption, melanin production suppression, active oxygen species scavenging, elastase activity inhibition, wrinkle
35 suppression, anti-skin sagging, autophagy promotion, and

the like.

[0022]

Eicosapentaenoic acid-class compounds are known to exert various health functions such as an anti-inflammatory effect, a blood neutral fat reducing effect, and an anti-allergic effect.

Since the composition of the present invention contains an eicosapentaenoic acid-class compound, the composition can also be used to obtain the above effects exerted by the eicosapentaenoic acid-class compound.

[0023]

The composition of the present invention is applicable for therapeutic use (medical use) and non-therapeutic use (non-medical use). The "non-therapeutic" is a concept that does not include medical activities, i.e., a concept that does not include methods of surgery, therapy, or diagnosis of humans.

The composition of the present invention can be provided in the form of a food or beverage, a pharmaceutical product, a quasi-pharmaceutical product, feed, or the like. The composition of the present invention may be a material, preparation, or the like to be added to a food or beverage, a pharmaceutical product, a quasi-pharmaceutical product, feed, or the like.

[0024]

The composition of the present invention is an oral composition. Specifically, the oral composition may be a food or beverage, an oral pharmaceutical product, an oral quasi-pharmaceutical product, feed, or the like. A food or beverage or an oral pharmaceutical product is preferred, and a food or beverage is more preferred.

[0025]

The composition of the present invention can contain any additives and any components in addition to ergothioneine or its salt and an eicosapentaenoic acid-

class compound, as long as the effect of the present invention is not impaired. Such additives and components may be selected depending on the form of the composition, for example, and those generally usable in oral
5 compositions such as food or beverages, pharmaceutical products, quasi-pharmaceutical products, and feed can be used.

[0026]

For example, a fat and oil containing a fatty acid
10 other than eicosapentaenoic acid or a fat and oil not containing any eicosapentaenoic acid-class compound can be added to the composition of the present invention.

When the composition of the present invention contains a fat and oil, the percentage by weight of EPA of
15 all the fatty acids constituting the fat and oil is preferably 5 wt% or more, more preferably 10 wt% or more, still more preferably 15 wt% or more, particularly preferably 20 wt% or more.

Preferably, of all the fatty acids constituting the
20 fat and oil, an n-3 (ω 3) fatty acid has the highest percentage by weight of EPA.

[0027]

The composition of the present invention may be produced by any method. For example, the composition can
25 be produced by adding (A) ergothioneine or its salt and (B) at least one eicosapentaenoic acid in a weight ratio in the above range. In preparing an oral composition containing (A) ergothioneine or its salt and (B) at least one eicosapentaenoic acid-class compound, the weight ratio
30 ((B)/(A)) of the component (B) (in terms of eicosapentaenoic acid) to the component (A) (in terms of ergothioneine) is adjusted within a range of 0.5 to 15, whereby an oral composition can be obtained in which the ergothioneine- or its salt-derived bitterness and the
35 eicosapentaenoic acid-class compound-derived odor are

reduced. The weight ratio can be adjusted by, for example, adding the component (A) and/or the component (B).

In the above production method, the ergothioneine or its salt, eicosapentaenoic acid-class compound, and
5 preferred embodiments thereof are the same as those of the composition of the present invention described above. Preferred ranges of the weight ratio of the component (B) (in terms of eicosapentaenoic acid) to the component (A) (in terms of ergothioneine) and the amounts of use of these
10 components are also the same as those for the composition of the present invention.

In one embodiment, the production of the oral composition may include adding fish oil containing one or more eicosapentaenoic acid-class compounds. One or more or
15 all of the eicosapentaenoic acid-class compounds may be added as a part of a fish oil to the composition.

[0028]

When the composition of the present invention is provided as a food or beverage, a pharmaceutical product, a
20 quasi-pharmaceutical product, feed, or the like, any general method can be used for production. In one embodiment, the composition of the present invention may consist of ergothioneine or its salt and an eicosapentaenoic acid-class compound. The oral composition
25 of the present invention may be in any form such as a solid (e.g., powder, granule, or tablet), liquid, or paste.

[0029]

For example, when the composition of the present invention is provided as a food or beverage, components
30 usable in food or beverages (e.g., food materials and optional food additives) can be added to ergothioneine or its salt and an eicosapentaenoic acid-class compound to provide various food or beverages. The food or beverage is not limited. Examples thereof include general food or
35 beverages, health foods, health supplements, health drinks,

foods with function claims, foods for specified health uses, and foods for the sick. The health foods, health supplements, foods with function claims, foods for specified health uses, and the like can be used in various forms of preparations such as fine granules, tablets, granules, powders, capsules, chewable tablets, dry syrups, syrups, liquid agents, beverages, energy drinks, and liquid foods.

[0030]

10 When the composition of the present invention is provided as a pharmaceutical product or a quasi-pharmaceutical product, for example, a pharmacologically acceptable carrier, an optional additive, or the like can be added to ergothioneine or its salt and an
15 eicosapentaenoic acid-class compound to provide various dosage forms of pharmaceutical products or quasi-pharmaceutical products. Such a carrier, additive, or the like may be any pharmacologically acceptable one that can be used in pharmaceutical products or quasi-pharmaceutical
20 products. Examples thereof include excipients, binders, disintegrants, lubricants, antioxidants, and colorants. One or more of these can be used. Examples of the dosage form for oral administration of pharmaceutical products or quasi-pharmaceutical products include liquids, tablets,
25 powders, fine granules, granules, sugar-coated tablets, capsules, suspensions, emulsions, and chewable tablets.

[0031]

 When the composition of the present invention is provided as feed, ergothioneine or its salt and an
30 eicosapentaenoic acid-class compound are simply added to feed. The feed includes feed additives. Examples of the feed include livestock feed for animals such as cows, pigs, chickens, sheep, and horses; feed for small animals such as rabbits, rats, and mice; and pet food for animals such as
35 dogs, cats, and birds.

[0032]

The composition of the present invention may be ingested by or administered to any subject (administration subject). The administration subject is preferably a human
5 or non-human mammal, more preferably a human.

[0033]

The present invention also encompasses the following method:

a method of reducing ergothioneine- or its salt-
10 derived bitterness and eicosapentaenoic acid-class
compound-derived odor in preparing an oral composition
containing (A) ergothioneine or its salt and (B) at least
one eicosapentaenoic acid-class compound, the method
including: adjusting a weight ratio (B)/(A) of the
15 component (B) in terms of eicosapentaenoic acid to the
component (A) in terms of ergothioneine within a range of
0.5 to 15.

The above method can effectively reduce the
ergothioneine- or its salt-derived bitterness and the
20 eicosapentaenoic acid-class compound-derived unpleasant
aroma and flavor (odor).

[0034]

The present invention also encompasses the following use:

25 use of at least one eicosapentaenoic acid-class
compound for reducing ergothioneine- or its salt-derived
bitterness.

In the use, preferably, the weight ratio of at least
one eicosapentaenoic acid-class compound (in terms of
30 eicosapentaenoic acid) to ergothioneine or its salt (in
terms of ergothioneine) is within a range of 0.5 to 15.

[0035]

In the method and the use, the ergothioneine or its
salt, eicosapentaenoic acid-class compound, and preferred
35 embodiments thereof are the same as those of the

composition of the present invention described above.

In the method and the use, preferred ranges of the weight ratio of the component (B) (in terms of eicosapentaenoic acid) to the component (A) (in terms of ergothioneine) and the amounts of use of these components are also the same as those for the composition of the present invention.

[0036]

The method and the use can reduce the ergothioneine- or its salt-derived bitterness and the EPA-derived odor, but the method and the use may also be combined with a different bitterness reducing method and/or a different odor reducing method.

Examples of the different bitterness reducing method include a formulation method including adding a sweetener or flavoring agent to a component having bitterness, a formulation method including sugar-coating a component having bitterness, and a formulation method including encapsulating a component having bitterness.

Examples of the different odor reducing method include a formulation method including sugar-coating an odor and a formulation method including encapsulating a component having an odor.

[0037]

The numerical range defined by the lower limit and the upper limit herein, i.e., "the lower limit to the upper limit", includes the lower limit and the upper limit. For example, the range defined by "1 to 2" means 1 or more and 2 or less, with 1 and 2 being inclusive. Herein, the range may be any combination of any upper limit and any lower limit.

EXAMPLES

[0038]

The present invention is described in further detail

below with reference to Examples. The present invention is not limited to these Examples.

[0039]

The following materials were used in an evaluation
5 test described below.

(A) Ergothioneine: raw material containing 100% L-
ergothioneine

Fat and oil containing an eicosapentaenoic acid-class
compound: a fat and oil containing an eicosapentaenoic
10 acid-class compound in an amount of 20 wt% in terms of
eicosapentaenoic acid, with the highest percentage by
weight of EPA among the n-3 fatty acids of all the
constituent fatty acids

[0040]

15 <Examples 1 to 3 and Comparative Examples 1 and 2: Aroma
and flavor evaluation test on oral compositions containing
ergothioneine and eicosapentaenoic acid-class compound>

Oral compositions containing ergothioneine and an
eicosapentaenoic acid-class compound were prepared and
20 subjected to sensory evaluation by three panelists
expertized in sensory evaluation.

The material (A) and the fat and oil containing an
eicosapentaenoic acid-class compound in amounts shown in
Table 1 were used to prepare oral compositions of Examples
25 1 to 3 and Comparative Examples 1 and 2. Table 1 shows the
amount of ergothioneine (A), the amount of fat and oil
containing an eicosapentaenoic acid-class compound, and the
amount of the eicosapentaenoic acid-class compound (B) (in
terms of eicosapentaenoic acid) in each oral composition,
30 as well as the weight ratio ((B)/(A)) of (B)
eicosapentaenoic acid-class compound (in terms of
eicosapentaenoic acid) to (A) ergothioneine.

Each panelist placed the whole amount of the
composition prepared (e.g., 20 mg in the case of
35 Comparative Example 1) directly on the tongue and evaluated

the intensity of the ergothioneine-derived bitterness and the intensity of the eicosapentaenoic acid-class compound-derived odor based on the following criteria.

[0041]

5 (Evaluation criteria for ergothioneine-derived bitterness)

Evaluation was made with one to five points (five-point scale) based on the following criteria. Five points were given as reference points to the intensity of the ergothioneine-derived bitterness that was felt when the material (A) (10 mg) was placed on the tongue.

Evaluation results by the three panelists were collected. Table 1 shows the average results (points).

The bitterness was evaluated as being reduced when the average of the evaluation results was four points or lower.

5 points: The bitterness derived from ergothioneine is strongly felt.

4 points: The bitterness derived from ergothioneine is felt.

20 3 points: The bitterness derived from ergothioneine is slightly felt.

2 points: The bitterness derived from ergothioneine is not much felt.

1 point: The bitterness derived from ergothioneine is not felt.

[0042]

(Evaluation criteria for eicosapentaenoic acid-class compound-derived odor)

Evaluation was made with one to five points (five-point scale) based on the following criteria. Five points were given as reference points to the intensity of the eicosapentaenoic acid-class compound-derived odor that was felt when the fat and oil containing an eicosapentaenoic acid-class compound (10 mg) was placed on the tongue.

35 Evaluation results by the three panelists were

collected. Table 1 shows the average results (points).

The odor was evaluated as being reduced when the average of the evaluation results was four points or lower.

5 5 points: Eicosapentaenoic acid-class compound-derived odor is strongly felt.

4 points: Eicosapentaenoic acid-class compound-derived odor is felt.

3 points: Eicosapentaenoic acid-class compound-derived odor is slightly felt.

10 2 points: Eicosapentaenoic acid-class compound-derived odor is not much felt.

1 point: Eicosapentaenoic acid-class compound-derived odor is not felt.

[0043]

15 [Table 1]

	Amount (mg)		Content (mg) (B) Eicosapentaenoic acid- class compound (in terms of EPA)	Weight ratio (B)/(A)	Evaluation results (points)	
	(A) Ergothioneine	Fat and oil containing eicosapentaenoic acid-class compound			Ergothioneine- derived bitterness	Eicosapentaenoic acid- class compound-derived odor
Comparative Example 1	10	10	2	0.2	4.3	1.7
Example 1	10	100	20	2	3.0	2.0
Example 2	20	300	60	3	3.0	2.0
Example 3	10	500	100	10	1.7	3.3
Comparative Example 2	10	1000	200	20	1.0	4.7

[0044]

<Results>

The results confirmed that while the ergothioneine-derived bitterness was strongly felt when the ergothioneine
5 was used alone, the ergothioneine-derived bitterness was reduced when the weight ratio ((B)/(A)) of (B) eicosapentaenoic acid-class compound (in terms of eicosapentaenoic acid) to (A) ergothioneine and was within the range of 0.5 to 15. Likewise, the results confirmed
10 that while the eicosapentaenoic acid-class compound-derived odor was strong and was thus not suitable for ingestion when the fat and oil containing an eicosapentaenoic acid-class compound was used alone, the eicosapentaenoic acid-class compound-derived odor was reduced when the
15 eicosapentaenoic acid-class compound was combined with ergothioneine in the above ratio.

CLAIMS

Claim 1. An oral composition comprising:
a component (A); and
5 a component (B),
the component (A) being ergothioneine or its salt,
the component (B) being at least one eicosapentaenoic acid-
class compound,
wherein a weight ratio (B)/(A) of the component (B)
10 in terms of eicosapentaenoic acid to the component (A) in
terms of ergothioneine is within a range of 0.5 to 15.

Claim 2. The composition according to claim 1,
wherein the eicosapentaenoic acid-class compound is
15 selected from the group consisting of free eicosapentaenoic
acid, its salt, and a compound containing eicosapentaenoic
acid as a constituent fatty acid.

Claim 3. The composition according to claim 2,
20 wherein the compound containing eicosapentaenoic acid
as a constituent fatty acid is selected from the group
consisting of a triglyceride in which at least one or each
constituent fatty acid is eicosapentaenoic acid, a
diglyceride in which at least one or each constituent fatty
25 acid is eicosapentaenoic acid, a monoglyceride in which a
constituent fatty acid is eicosapentaenoic acid, a
phospholipid in which at least one or each constituent
fatty acid is eicosapentaenoic acid, a glycolipid in which
at least one or each constituent fatty acid is
30 eicosapentaenoic acid, and an alcohol ester of
eicosapentaenoic acid.

Claim 4. The composition according to any one of
claims 1 to 3,
35 wherein the weight ratio (B)/(A) of the component (B)

in terms of eicosapentaenoic acid to the component (A) in terms of ergothioneine is within a range of 2 to 20.

5 Claim 5. The composition according to any one of claims 1 to 3,
wherein the component (B) is derived from fish or shellfish.

10 Claim 6. The composition according to any one of claims 1 to 3,
wherein the composition is a food or beverage.

15 Claim 7. Use of at least one eicosapentaenoic acid-class compound for reducing ergothioneine- or its salt-derived bitterness.

20 Claim 8. A method of reducing ergothioneine- or its salt-derived bitterness and eicosapentaenoic acid-class compound-derived odor in preparing an oral composition containing (A) ergothioneine or its salt, and (B) at least one eicosapentaenoic acid-class compound, the method comprising:

25 adjusting a weight ratio (B)/(A) of the component (B) in terms of eicosapentaenoic acid to the component (A) in terms of ergothioneine within a range of 0.5 to 15.