

DESCRIPTION

INGREDIENT MADE FROM SWIFTLET NEST AS RAW MATERIAL, COMPOSITION, AND METHOD FOR PRODUCING INGREDIENT

5 **Technical Field**

[0001]

The present invention relates to an ingredient made from a swiftlet nest as a raw material, a composition, and a method for producing an ingredient.

10 **Background Art**

[0002]

The functionality of many of the ingredients produced using a conventionally-known natural product as a raw material may not exceed a range expected from the raw material.

However, it is known that unknown ingredient having functionality can be generated from the raw material depending on a combination of raw materials, a processing method for the combination of raw materials, or a purification method for the processed raw materials.

[0003]

Patent Literature 1 discloses a skin-beautifying promoter containing an enzymatic decomposition product of a swiftlet nest as an active ingredient. The skin-beautifying promoter further contains a culture obtained by culturing yeast.

Citation List

Patent Literature

[0004]

25 Patent Literature 1: Japanese Unexamined Patent Application Publication No. 2003-95961

Patent Literature 2: Japanese Unexamined Patent Application Publication No. 2008-189635

Summary of Invention

Technical Problem

30 [0005]

An object of the present invention is to provide an unknown ingredient that is produced using a natural product as a raw material and is expected to have a functionality.

Solution to Problem

[0006]

An ingredient according to one aspect of the present invention is a yeast fermentation product of a nest of a bird belonging to the genus Collocalia, family Apodidae. The yeast fermentation product is preferably used as one of a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft drink.

[0007]

Another aspect of the present invention is a composition containing a yeast fermentation product of a nest of a bird belonging to the genus Collocalia, family Apodidae. The composition is preferably used as one of a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft drink.

[0008]

The composition is preferably used to alleviate allodynia or neuropathic pain. The composition is preferably used for at least one of prevention and improvement of a lifestyle-related disease. The lifestyle-related disease is preferably at least one of diabetes, hypertension, ischemic heart disease, and ischemic brain disease. The composition is preferably used for preventing a viral infection.

[0009]

Still another aspect of the present invention is a method for producing an ingredient using a nest of a bird belonging to the genus Collocalia, family Apodidae as a raw material. In the method, yeast is added to the raw material. Further, the raw material is fermented with the yeast. It is preferable to add moisture to the raw material before it is fermented. It is preferable to ferment the raw material with the moisture. The fermentation is preferably performed in a sealed state. It is preferable to evaporate at least a part of the moisture after the fermentation.

[0010]

Still one more aspect of the present invention is an administration of a yeast fermentation product of a nest of a bird belonging to the genus Collocalia, family Apodidae, to a patient affected with any one of diabetes, hypertension, ischemic heart disease, ischemic brain disease, viral infection, pathogen infection, strain and malnutrition, dysmnnesia, dryness of skin, formation of wrinkle associated with the dryness of skin, allodynia, and neuropathic pain.

[0011]

Still one more aspect of the present invention is a use of a yeast fermentation product of a nest of a bird belonging to the genus Collocalia, family Apodidae, for producing any one of a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft

drink.

Advantageous Effects of Invention

[0012]

- 5 The present invention can provide an unknown ingredient produced by using a natural product as a raw material and is expected to have a functionality.

Brief Description of Drawings

[0013]

- 10 Fig. 1 is a graph showing content percentage of essential amino acids contained in a fermented liquid according to Example 1;

 Fig. 2 is a graph showing content percentage of amino acids contained in the fermented liquid according to Example 1;

- Fig. 3 is a graph showing content percentage of vitamins contained in the fermented
15 liquid according to Example 1.

Description of Embodiments

[0014]

 An embodiment of the present invention will be described below.

20 [0015]

 In this embodiment, the term "natural product" refers to a substance produced by an organism. Examples of the organism include animals, plants, and microorganisms. The organism may be artificially produced by breeding. The substance produced by the organism may be a substance which can be artificially obtained. The organism may be a natural material.

- 25 The substance produced by the organism may be a natural material. The natural material described in this embodiment does not refer to an artifact or an artificial product, but instead to a material existing in nature. That is, the natural material is obtained from nature in order to carry out the invention.

[0016]

- 30 In this embodiment, the term "ingredient" refers to a substance that is suitably mixed into a composition. In this embodiment, the term "functional ingredient" refers to an ingredient that provides a living organism with some preferable effect, or an ingredient that is expected to have such an effect. The term "functional ingredient" includes ingredients that are mixed so as to raise the added value of compositions. The functional ingredient is preferably a substance

produced using a natural product as a raw material.

[0017]

The composition is preferably any one of a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft drink. The terms "drug" and "quasi-drug" include Chinese medicine (Japanese kampo medicines). The terms "health supplement", "nutritional supplement", and "processed food" include a high nutrition food. The above-mentioned ingredient is preferably an ingredient to be added to the above-mentioned composition. The ingredient is preferably a functional ingredient.

[0018]

The ingredient according to this embodiment is a yeast fermentation product of a nest of a bird belonging to the genus Collocalia, family Apodidae. Hereinafter, birds belonging to the genus Collocalia, family Apodidae may be referred to as the Apodidae family.

[0019]

The term "yeast fermentation product" refers to a product in a state where a raw material is fermented in the presence of yeast. The term "yeast" includes, for example, budding yeast (*Saccharomyces cerevisiae*), but is not limited to this. The term "fermentation" includes decomposition of a raw material due to yeast involving anaerobic respiration of the yeast. The term "yeast fermentation product" refers to a decomposition product of a raw material due to yeast.

[0020]

The composition according to this embodiment is the above-mentioned composition containing the ingredients as mentioned above. The composition may be used for at least one of prevention and improvement of at least one symptom selected from the group consisting of a symptom associated with lifestyle-related diseases including diabetes, hypertension, ischemic heart disease, and ischemic brain disease, a symptom associated with pathogen infections including viral infection and viral infection, a symptom associated with lifestyle factors including strain and malnutrition, dysmnnesia, dryness of skin, and formation of wrinkles associated with the dryness of skin.

[0021]

The composition may be administered to patients exhibiting the symptoms as mentioned above. The administration may be oral administration.

[0022]

In the method for producing the ingredient according to this embodiment, a nest of the Apodidae family is used as a raw material. In this method, yeast is added to the raw material,

and the yeast and the raw material are cultured together.

[0023]

Examples of the Apodidae family suitably used include *A. amelis* (Grey Swiftlet), *A. brevirostris* (Himalayan Swiftlet), *A. elaphra* (Seychelles Swiftlet), *A. francica* (Mascarene Swiftlet), *A. fuciphaga* (Edible-nest Swiftlet), *A. germani* (German's Swiftlet), *A. hirundinacea* (Mountain Swiftlet), *A. infusata* (Moluccan Swiftlet), *A. inquieta* (Micronesian Swiftlet), *A. leucophaeus* (Tahiti Swiftlet), *A. maxima* (Black-nest Swiftlet), *A. mearnsi* (Philippine swiftlet), *A. nuditarsus* (Bare-legged Swiftlet), *A. ocista* (Marquesan Swiftlet), *A. orientalis* (Mayr's Swiftlet), *A. palawanensis* (Palawan Swiftlet), *A. papuensis* (Papuan Swiftlet), *A. pelewensis* (Palau Swiftlet), *A. rogersi* (Indochinese Swiftlet), *A. salangana* (Mossy-nest Swiftlet), *A. sawtelli* (Atiu Swiftlet), *A. spodiopygius* (White-rumped Swiftlet), *A. terraereginae* (Australian Swiftlet), *A. unicolor* (Indian Swiftlet), *A. whiteheadi* (Whitehead's Swiftlet), *A. vanikorensis* (Uniform Swiftlet), *A. vulcanorum* (Volcano Swiftlet), *C. esculenta* (Glossy Swiftlet), *C. linchi* (Cave Swiftlet), and *C. troglodytes* (Pygmy Swiftlet).

15 [0024]

A nest is a solidified secretion product secreted from the Apodidae family. The secretion product is a sticky secretion product. The secretion product is secreted from the salivary gland of the Apodidae family. A nest of one species of the Apodidae family may be used as a raw material, or a combination of nests of two or more species of the Apodidae family may be used as a raw material. Waste or a waste product from the Apodidae family and other undesired substances are preferably removed from the nest.

20 [0025]

In this embodiment, the ingredient is obtained by adding yeast to the nest and fermenting the nest with the yeast. It is desirable to add 10 g to 100 g of yeast to 100 g of the nest. The yeast may be a yeast produced by breeding artificially, or may be obtained from nature.

25 [0026]

The above-mentioned ingredient is obtained as a fermented liquid of the nest and yeast. Further, moisture is added to the raw material before it is fermented. To add moisture, it is preferable to add water. It is preferable to add 50 g to 10000 g of water to 100 g of the nest. It is preferable to ferment the raw material with the moisture. The fermentation is preferably performed using only the nest, yeast, and water as raw materials.

30 [0027]

Yeast is added to the nest, which is a raw material, and the resultant is fermented for 24

hours or longer and less than three years. The fermentation is performed in a sealed state. This promotes anaerobic respiration of the yeast. The fermentation can be stably performed by periodically removing a gas filled in a fermenter. After the fermentation, at least a part of the moisture is preferably evaporated. The fermented liquid is preferably condensed by evaporating the moisture.

[0028]

The above-mentioned yeast may be one of *Saccharomyces cerevisiae*, *Saccharomyces bayanus*, *Saccharomyces boulardii*, *Saccharomyces bulderi*, *Saccharomyces carioanus*, *Saccharomyces cariocus*, *Saccharomyces chevalieri*, *Saccharomyces dairenensis*, *Saccharomyces ellipsoideus*, *Saccharomyces florentinus*, *Saccharomyces kluyveri*, *Saccharomyces martiniae*, *Saccharomyces norbensis*, *Saccharomyces paradoxus*, *Saccharomyces pastorianus*, *Saccharomyces spencerorum*, *Saccharomyces turicensis*, *Saccharomyces unisporus*, *Saccharomycesuvarum*, and *Saccharomyces zonatus* in the genera *Saccharomyces*, the genera *Saccharomycopsis*, *Candida kefir*, *Candida bombicola*, *Candida utilis*, and *Candida saitoana* in the genera *Candida*, *Zygosaccharomyces rouxii* and *Zygosaccharomyces microellipsoides* in the genera *Zygosaccharomyces*, the genera *Kluyveromyces*, *Schizosaccharomyces pombe* in the genera *Schizosaccharomyces*, *Torulaspora delbrueckii* in the genera *Torulaspora*, *Pichia anomala* in the genera *Pichia*, *Pichia caribbica*, *Pseudoxyma tsukubaensis* in the genera *Pseudoxyma*, and the genera *Endomyces*, or a combination of two or more of the above.

[0029]

A component having at least one of an antiseptic effect, a keeping quality-improving function, and a stability maintaining action is added to the fermented liquid obtained in the manner as described above. The component is preferably at least one compound selected from the group consisting of various esters of parahydroxybenzoic acid, sodium dehydroacetate, potassium sorbate, sodium sorbate, sodium acetate, and pH adjuster.

[0030]

The fermented liquid or product solution can be used for the above-mentioned ingredients. The fermented liquid or product solution can be incorporated, in a stable state, into compositions typified by a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft drink. The above-mentioned ingredients can be suitably used as ingredients for producing these compositions. The above-mentioned component may be added to these compositions.

[0031]

An ingredient for a drug may be used as an active ingredient. A dosage form of a drug

may be one of a suppository form, an ointment, a solution, a dispersive agent, an emulsion, a powder, a pill, a lozenge, a tablet, a troche, a buccal tablet, a capsule preparation, a chewing gum preparation, an agent supported by a filament matrix, and an inhaled pharmaceutical preparation. [0032]

5 If a drug of a solid preparation is used, an active ingredient may be mixed with at least one of a carrier, an excipient, a binder, a disintegrator, a dissolution improving agent, a swelling agent, an anticaking agent, an antiadhesion agent, and a lubricant. If a drug of a liquid preparation is used, an active ingredient may be mixed with at least one of a solvent, a vehicle, an extender, an isotonicizing agent, an auxiliary material for dissolution, a solubilizing agent, an emulsifier, a suspension, dispersant, a viscosity modifier, a thickener, and an inhibitor for
10 adsorption onto a container. The drug may be coated with a coating agent. An auxiliary material for coat-forming may also be used.

[0033]

 At least one of the following agents may be added to the drug. That is, a controlled-
15 release agent, a maintaining agent, a quick-release agent, a rapid-dissolution agent, an absorption promoter, a penetrant, a gelatinizing agent, a coagulation promoter, a light stabilizer, a preservative, an antiseptic agent, an anti-moisture agent, an emulsifier, a suspension, a dispersion stabilizer, a coloration preventing agent, a deoxidant, an antioxidant, flavoring agents for gustation, flavoring agents for olfaction, a colorant, a pigment, a paint, a bleacher, a foaming
20 agent, an antifoaming agent, a soothing agent for preventing skin irritation, a moistening agent, a moisturizer, an antistatic agent, a buffering agent, a pH conditioner, an isomerization inhibitor, a decomposition inhibitor, an interaction inhibitor, and a side-effect reducing agent.

[0034]

 A drug administration route may be one of an oral administration, an injection
25 administration, a coelomic administration, a mucosal administration, a transdermal administration, and implant.

[0035]

 Each of a quasi-drug, a health supplement, and a nutritional supplement may have a shape similar to that of the above-mentioned drug.

30 [0036]

 Examples of a processed food may include jelly, gummi candy, candy, gum, snacks, baked goods, vacuum-packed food, and instant food.

[0037]

 The above-mentioned ingredients include a viscous substance mucin, N-

Acetylneuraminic acid, various types of cytokines, and a compound typified by a sugar chain specific to a swiftlet nest. These ingredients can be suitably used as the above-mentioned functional ingredient. This is because that these ingredients have an advantageous effect of at least one of prevention and improvement of the above-mentioned symptoms, or are expected to have such an advantageous effect.

[0038]

The viscous substance mucin is considered to be a major component of mucus secreted from an epithelial cell or the like of an animal.

[0039]

The N-Acetylneuraminic acid is a compound typified by a sialic acid which is one type of sugar. The N-Acetylneuraminic acid is a sialic acid having a highest abundance ratio among the sialic acids existing in nature. According to the description in Japanese Unexamined Patent Application Publication No. 2008-189635, it has been confirmed that the N-Acetylneuraminic acid exhibits an anti-allodynic action and alleviates neuropathic pain.

[0040]

The above-mentioned cytokines are cytokines typified by interleukin-6, an epidermal growth factor (EGF), and a fibroblast growth factor (FGF).

[0041]

The sugar chain has at least one of an effect of alleviating one or two or more symptoms associated with the above-mentioned lifestyle-related diseases, and an effect of preventing a viral infection.

Example 1

[0042]

Assume that a nest formed by solidifying a sticky secretion product secreted from the salivary gland of the Apodidae family is used as a raw material. The nest is preferably a nest of one or more species of birds selected from the group consisting of *A. amelis* (Grey Swiftlet), *A. brevirostris* (Himalayan Swiftlet), *A. elaphra* (Seychelles Swiftlet), *A. francica* (Mascarene Swiftlet), *A. fuciphaga* (Edible-nest Swiftlet), *A. germani* (German's Swiftlet), *A. hirundinacea* (Mountain Swiftlet), *A. infusata* (Moluccan Swiftlet), *A. inquieta* (Micronesian Swiftlet), *A. leucophaeus* (Tahiti Swiftlet), *A. maxima* (Black-nest Swiftlet), *A. mearnsi* (Philippine swiftlet), *A. nuditarsus* (Bare-legged Swiftlet), *A. ocista* (Marquesan Swiftlet), *A. orientalis* (Mayr's Swiftlet), *A. palawanensis* (Palawan Swiftlet), *A. papuensis* (Papuan Swiftlet), *A. pelewensis* (Palau Swiftlet), *A. rogersi* (Indochinese Swiftlet), *A. salangana* (Mossy-nest Swiftlet), *A. sawtelli* (Atiu Swiftlet), *A. spodiopygius* (White-rumped Swiftlet), *A. terraereginae* (Australian Swiftlet),

A. unicolor (Indian Swiftlet), A. whiteheadi (Whitehead's Swiftlet), A. vanikorensis (Uniform Swiftlet), A. vulcanorum (Volcano Swiftlet), C. esculenta (Glossy Swiftlet), C. linchi, and C. troglodytes. The selection of these species makes it possible to increase the content of N-Acetylneuraminic acid.

5 [0043]

After 100 g of nest dried product is immersed in 200 g of water, 60 g of *Saccharomyces cerevisiae* is added to the nest, which is a raw material, and then the nest is fermented. The fermentation period is 48 hours. The fermentation is performed in a sealed state. The fermentation involves anaerobic respiration of yeast. The fermentation can be stably performed
10 by periodically removing a gas filled in a fermenter.

[0044]

A fermented liquid is generated in the above-mentioned process. A preservative and a pH stabilizer are added to the fermented liquid, thereby obtaining a product solution. In a stable fermentation environment, the content of N-Acetylneuraminic acid in the product solution is 7%
15 or more. The fermentation performed using only the nest, yeast, and water as raw materials contributes to the realization of a suitable fermentation environment.

[0045]

As mentioned above, it has been confirmed that the N-Acetylneuraminic acid exhibits an anti-allodynic action, that is, alleviates neuropathic pain. The fermented liquid generated in a
20 suitable fermentation environment contains 7% or more N-Acetylneuraminic acid. Accordingly, it is expected that the fermented liquid exhibits an anti-allodynic action.

[0046]

As described above, it can be expected that the administration of a suitable amount of the fermented liquid or product solution to a patient with allodynia or neuropathic pain enables
25 improvement of neuropathic pain. Therefore, a composition containing the fermented liquid or product solution is suitable for improvement of allodynia or neuropathic pain.

[0047]

In one example, as shown in Fig. 1, the product solution contains amino acids. The amino acids contain nine types of essential amino acids. Further, as shown in Fig. 2, the product
30 solution contains 18 types of amino acids including a γ -amino butyric acid, in addition to the nine types of essential amino acids.

[0048]

Further, in this example, the product solution contains vitamins. As shown in Fig. 3, the ratio of inositol in vitamin C (ascorbic acid) and vitamin B groups is high in the composition of

these vitamins.

Example 2

[0049]

5 The fermented liquid obtained in Example 1 is heated to evaporate the moisture, thereby obtaining a concentrated liquid of the fermented liquid. A preservative and a pH stabilizer are added to the concentrated liquid, thereby obtaining the product solution. This method makes it possible to increase the content of sialic acid (N-Acetylneuraminic acid) in the product solution, as compared with the product solution obtained in Example 1.

10 [0050]

 It is expected that the concentrated liquid obtained by the method according to this example exhibits an anti-allodynic action. Accordingly, it can be expected that the administration of a suitable amount of the concentrated liquid or product solution to a patient with allodynia or neuropathic pain enables improvement of neuropathic pain. Therefore, a
15 composition containing the concentrated liquid or product solution is suitable for improvement of allodynia or neuropathic pain.

[0051]

 Note that the present invention is not limited to the embodiments and examples described above, and the embodiments and examples can be combined as appropriate without
20 departing from the scope of the invention. While the present invention has been described above with reference to the embodiments, the present invention is not limited to the above embodiments. The structure and details of the present invention can be modified in various ways that can be understood by those skilled in the art within the scope of the invention.

[0052]

25 This application is based upon and claims the benefit of priority from Japanese patent application No. 2015-31065, filed on February 3, 2015, the disclosure of which is incorporated herein in its entirety by reference.

Claims

1. A yeast fermentation product of a nest of a bird belonging to the genus *Collocalia* family *Apodiadae*, obtained by fermentation of the nest with yeast for longer than 24 hours and less than three years.
2. The yeast fermentation product according to claim 1 for use as one of a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft drink.
3. A composition containing a yeast fermentation product of a nest of a bird belonging to the genus *Collocalia* family *Apodiadae* obtained by fermentation of the nest with yeast for longer than 24 hours and less than three years.
4. The composition according to claim 3 for use as one of a drug, a quasi-drug, a health supplement, a nutritional supplement, a processed food, and a soft drink.
5. The composition according to claim 3 for use in the alleviation of allodynia or neuropathic pain.
6. A method of producing a yeast fermentation product using a nest of a bird belonging to genus *Collocalia* family *Apodiadae* as a raw material, the method comprising:
 - adding yeast to the raw material;
 - fermenting the raw material with the yeast for longer than 24 hours and less than three years.
7. The method of producing a yeast fermentation product according to claim 6, further comprising adding moisture to the raw material before the raw material is fermented; and fermenting the raw material with the moisture.
8. The method for producing a yeast fermentation product according to claim 7, wherein at least a part of the moisture is evaporated after the fermentation.