

Description

Title of Invention: COMPOSITION

Technical Field

[0001]

The present invention relates to an oral liquid composition containing collagen and an imidazole dipeptide, a method of producing the oral liquid composition, a method of improving taste quality of a collagen-containing oral liquid composition, and the like.

Background Art

[0002]

Collagen is a raw material that has originally been widely used in the field of foods and has received attention due to the growing health consciousness in recent years. Collagen is an animal protein and is a main component of the dermis and connective tissue, and thus products obtained utilizing collagen have been developed in the medical field, cosmetic field, and health food field.

[0003]

For example, JP 6956846 B (Patent Literature 1) describes a low back pain relief agent and a trunk muscle strength improving agent containing proteoglycan, hyaluronic acid, and an imidazole dipeptide in addition to type II collagen.

[0004]

In addition, chicken extract beverages rich in collagen are increasingly popular mainly in Asia.

Citation List

Patent Literature

[0005]

Patent Literature 1: JP 6956846 B

Summary of Invention

Technical Problem

[0006]

Under the circumstances as described above, there is a demand for the development of an oral liquid composition rich in collagen and having a reduced characteristic odor of collagen.

Solution to Problem

[0007]

Increased content of collagen in beverages tends to strengthen the characteristic odor (fishy smell) of collagen. However, the present inventors have found that the characteristic odor

of collagen in beverages containing collagen even at a high concentration can be reduced by containing one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine at a given concentration. The present invention is based on such a finding.

[0008]

The present invention provides an oral liquid composition described below and a method of producing the oral liquid composition.

[1]

An oral liquid composition containing:
6 g/100 mL or more and less than 20 g/100 mL of collagen; and
more than 0.25 g/100 mL and less than 2.0 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine.

[2]

The composition according to [1], in which a content of the one or more imidazole dipeptides is from 0.3 to 1.6 g/100 mL.

[3]

The composition according to [1], in which a content of the one or more imidazole dipeptides is from 0.35 to 1.4 g/100 mL.

[4]

The composition according to [1], in which
a content of the collagen is from 6 to 11 g/100 mL, and
a content of the one or more imidazole dipeptides is from 0.5 to 1.3 g/100 mL.

[5]

The composition according to [1], in which
a content of the collagen is from 6 to 10 g/100 mL, and
a content of the one or more imidazole dipeptides is from 0.6 to 1.25 g/100 mL.

[6]

The composition according to any of [3] to [5], satisfying Formula (1):

$$Y \geq -17.705X + 16.705 \quad (1)$$

where Y (g/100 mL) is a content of the collagen, and X (g/100 mL) is a total content of carnosine and anserine.

[7]

The composition according to any of [1] to [6], containing anserine and carnosine.

[8]

The composition according to any of [1] to [7], containing from 50 to 200 mg/100 mL of sodium.

[9]

The composition according to any of [1] to [8], containing from 300 to 900 mg/100 mL of a BCAA.

[10]

The composition according to any of [1] to [9], being a pouched soup.

[11]

A method of improving taste quality of a collagen-containing oral liquid composition, the method including:

adjusting an amount of collagen contained in the collagen-containing oral liquid composition to 6 g/100 mL or more, and one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine to 0.04 to 0.5 g per gram of collagen contained in the collagen-containing oral liquid composition.

[12]

The method according to [11], in which the amount of collagen contained in the collagen-containing oral liquid composition is less than 20 g/100 mL.

Advantageous Effects of Invention

[0009]

According to an aspect of the present invention, there can be provided an oral liquid composition rich in collagen and having a reduced characteristic odor of collagen. According to a preferred aspect of the present invention, there is provided an oral liquid composition rich in collagen and having a reduced characteristic odor (fishy smell) of collagen and reduced bitterness.

Description of Embodiments

[0010]

The present invention will be described in detail below. The following embodiments are examples for explaining the present invention and are not intended to limit the present invention to these embodiments only. The present invention can be implemented in various embodiments as long as the gist of the present invention is not deviated.

All literatures, patent application publications, patent publications, and other patent literatures cited in the present specification are incorporated herein by reference. In addition, the present specification encompasses the contents described in the specification of Japanese Patent Application (JP 2022-066395) filed on April 13, 2021, which serves as a basis for claiming priority of the present application.

[0011]

1. Oral Liquid Composition

The present invention provides, as an aspect, an oral liquid composition containing collagen and an imidazole dipeptide (hereinafter also referred to as “the oral liquid composition of the present invention”).

[0012]

In the present specification, “the oral liquid composition” means an orally ingestible composition in a liquid form and encompasses from beverages with high fluidity, such as soft drinks or ready-to-drink (RTD) beverages, to beverages with relatively low fluidity, such as gelatinous beverages. The oral liquid composition also encompasses a composition that is heated and consumed in a soup-like state, for example, a pouched soup (such as chicken essence or drip essence of chicken (DEOC)). The liquid composition in a preferred embodiment of the present invention is a pouched soup.

[0013]

An oral liquid composition according to an embodiment of the present invention contains: 6 g/100 mL or more and less than 20 g/100 mL of collagen; and more than 0.25 g/100 mL and 2.0 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine. The oral liquid composition of the present invention will be described below.

[0014]

Collagen

Collagen is one of proteins constituting the dermis, ligament, tendon, bone, cartilage, and the like and is a main component of the extracellular substrate (extracellular matrix) of multicellular animals. Collagen may be classified into several types according to the part from which collagen is obtained, but the collagen used in the present invention is not particularly limited.

[0015]

In some embodiments of the present invention, the collagen may contain a collagen peptide. The collagen peptide is a relatively low molecular weight substance produced by degradation of collagen. The collagen peptide is preferred in terms of higher absorbability into the body when orally ingested than normal collagen. The average molecular weight (Mw) of the collagen peptide is not particularly limited, and, for example, a collagen peptide with an average molecular weight of 8000 or less can be used. The molecular weight of the collagen is according to the product information provided by the supplier in the case of a commercially available product, but for collagen without such information, the molecular weight can be measured by a usual method using gel permeation chromatography (GPC: polyethylene glycol (PEG) standard). Examples of the commercially available collagen peptide include “Peptan F 2000 HD” (average molecular weight (Mw): 2000) available from Rousselot.

[0016]

The origin of the collagen is not particularly limited, and any collagen that can be used in foods and beverages can be used. According to some embodiments, chicken-derived and/or fish-derived collagen is used. Purified collagen may be added separately or may be contained by adjusting the blending amount of a raw material containing collagen, such as a chicken extract. The supply source of the collagen may be one type or two or more types.

[0017]

The amount of the collagen contained in the oral liquid composition in some embodiments of the present invention is 6 g/100 mL or more and less than 20 g/100 mL. Adjusting the amount of the collagen to this range and combining the collagen with the imidazole dipeptide described later make it possible to maintain a high level of collagen content as an oral liquid composition and to reduce the characteristic fishy smell of collagen. The high content of the collagen is expected to enhance health functional effects and to increase customer appeal. The content of the collagen in a preferred embodiment of the present invention may be from 6 to 19 g/100 mL, from 6 to 18 g/100 mL, from 6 to 17 g/100 mL, from 6 to 16 g/100 mL, from 6 to 15 g/100 mL, from 6 to 14 g/100 mL, from 6 to 13 g/100 mL, from 6 to 12 g/100 mL, from 6 to 11 g/100 mL, from 6 to 10 g/100 mL, 6 g/100 mL or more and less than 10 g/100 mL, from 6 to 9 g/100 mL, from 6 to 8 g/100 mL, from 6 g to 7 g/100 mL, more than 6 g/100 mL and less than 13 g/100 mL, more than 6 g/100 mL and 12 g/100 mL or less, more than 6 g/100 mL and 11 g/100 mL or less, more than 6 g/100 mL and 10 g/100 mL or less, more than 6 g/100 mL and less than 10 g/100 mL, more than 6 g/100 mL and 9 g/100 mL or less, more than 6 g/100 mL and 8 g/100 mL or less, more than 6 g/100 mL and 7 g/100 mL or less, from 6.1 to 13 g/100 mL, 6.1 g/100 mL or more and less than 13 g/100 mL, from 6.1 to 12 g/100 mL, from 6.1 to 11 g/100 mL, from 6.1 to 10 g/100 mL, 6.1 g/100 mL or more and less than 10 g/100 mL, from 6.1 to 9 g/100 mL, from 6.1 to 8 g/100 mL, from 6.1 to 7 g/100 mL, 6.2 g/100 mL or more and less than 13 g/100 mL, from 6.2 to 12 g/100 mL, from 6.2 to 11 g/100 mL, from 6.2 to 10 g/100 mL, 6.2 g/100 mL or more and less than 10 g/100 mL, from 6.2 to 9 g/100 mL, from 6.2 to 8 g/100 mL, from 6.2 to 7 g/100 mL, 6.5 g/100 mL or more and less than 13 g/100 mL, from 6.5 to 12 g/100 mL, from 6.5 to 11 g/100 mL, from 6.5 to 10 g/100 mL, 6.5 g/100 mL or more and less than 10 g/100 mL, from 6.5 to 9 g/100 mL, from 6.5 to 8 g/100 mL, from 6.5 to 7 g/100 mL, 7 g/100 mL or more and less than 13 g/100 mL, from 7 to 12 g/100 mL, from 7 to 11 g/100 mL, from 7 to 10 g/100 mL, 7 g/100 mL or more and less than 10 g/100 mL, from 7 to 9 g/100 mL, from 7 to 8 g/100 mL, 8 g/100 mL or more and less than 13 g/100 mL, from 8 to 12 g/100 mL, from 8 to 11 g/100 mL, from 8 to 10 g/100 mL, 8 g/100 mL or more and less than 10 g/100 mL, or from 8 to 9 g/100 mL. The content of the collagen is more preferably from 6 to 11 g/100 mL, from 6 to 10 g/100 mL, or 6.1 g/100 mL or more and less than 10 g/100 mL.

[0018]

The content of the collagen can be determined by quantifying hydroxyproline contained in the oral liquid composition with an amino acid analyzer and may be determined from the blending amount in the case where the content can be calculated from the blending amount. The measurement conditions for the measurement with an amino acid analyzer can be measured by a standard measurement method of the analyzer. For the amino acid analyzer, a fully automatic amino acid analyzer available from JEOL Ltd. (JLC-500/V2) or the like can be used. The hydroxyproline coefficient required for calculating the collagen amount from the hydroxyproline amount can be calculated from the amino acid composition data of the collagen in a raw material (e.g., such as chicken, fish, or pork). For example, to determine the collagen amount from the

amount of hydroxyproline derived from chicken or pork, it can be calculated by multiplying the hydroxyproline amount by a coefficient of 8.

[0019]

Imidazole Dipeptide

The oral liquid composition in some embodiments of the present invention contains an imidazole dipeptide. Imidazole dipeptide is a generic term for dipeptides composed of histidine having an imidazole ring (Nobuya YANAI, *Nippon Shokuhin Kagaku Kogaku Kaishi* (Journal of the Japanese Society for Food Chemistry and Technology), 2014, Vol. 61, No. 1, p. 45). Here, imidazole is a kind of five-membered aromatic heterocyclic compound and is a nitrogen-containing aromatic heterocyclic compound having nitrogen atoms at positions 1 and 3.

[0020]

The present inventors have surprisingly found that the characteristic odor (fishy smell) of collagen can be effectively suppressed by using one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine together with the collagen in the oral liquid composition. This fishy smell is also described as a trimethylamine-like odor. According to a preferred aspect, the unique bitterness of the imidazole dipeptide is also reduced by combining it with a given amount of the collagen.

[0021]

There are various types of imidazole dipeptides, and the oral liquid composition may contain an imidazole dipeptide other than anserine, carnosine, balenine, homoanserine, and homocarnosine. The oral liquid composition in some embodiments of the present invention contains one or more imidazole dipeptides selected from the group consisting of anserine and carnosine. The oral liquid composition in a preferred embodiment of the present invention contains anserine and carnosine.

[0022]

The imidazole dipeptide used in the oral liquid composition in some embodiments of the present invention may be obtained by extraction from a material containing an imidazole dipeptide (e.g., fish) with an aqueous solvent or may be obtained by chemical synthesis, and its origin and raw material are not particularly limited. The imidazole dipeptide can be obtained, for example, from fish, such as tuna, bonito, and salmon; beef, pork, and chicken. It is said that mammals, such as pigs and cattle, contain a large amount of carnosine, aquatic mammals contain carnosine and balenine in a ratio of about 1:2, birds contain carnosine and anserine in a ratio of 1:3, and larger fishes contain almost only anserine (Nobuya YANAI, *Nippon Shokuhin Kagaku Kogaku Kaishi* (Journal of the Japanese Society for Food Chemistry and Technology), 2014, Vol. 61, No. 1, p. 45). In the present invention, the raw material for the imidazole dipeptide can be selected according to the desired efficacy and application.

[0023]

The amount of the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine contained in the oral liquid

composition in some embodiments of the present invention is more than 0.25 g/100 mL and less than 2.0 g/100 mL. In the case where two or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine are contained in the oral liquid composition, the amount described here means the total amount of the imidazole dipeptides. Adjusting the content of the given imidazole dipeptide to this range makes it possible to reduce the characteristic odor (fishy smell) of collagen and also to reduce the bitterness of the imidazole dipeptide, and thus a liquid composition having excellent taste quality can be provided. The content of the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine may be preferably from 0.26 to 1.9 g/100 mL, from 0.26 to 1.8 g/100 mL, from 0.26 to 1.7 g/100 mL, from 0.26 to 1.6 g/100 mL, from 0.26 to 1.5 g/100 mL, from 0.26 to 1.4 g/100 mL, from 0.26 to 1.3 g/100 mL, from 0.26 to 1.2 g/100 mL, from 0.26 to 1.1 g/100 mL, from 0.26 to 1.0 g/100 mL, from 0.26 to 0.9 g/100 mL, from 0.26 to 0.8 g/100 mL, from 0.26 to 0.7 g/100 mL, from 0.26 to 0.6 g/100 mL, from 0.3 to 1.9 g/100 mL, from 0.3 to 1.8 g/100 mL, from 0.3 to 1.7 g/100 mL, from 0.3 to 1.6 g/100 mL, from 0.3 to 1.5 g/100 mL, from 0.3 to 1.4 g/100 mL, from 0.3 to 1.3 g/100 mL, from 0.3 to 1.2 g/100 mL, from 0.3 to 1.1 g/100 mL, from 0.3 to 1.0 g/100 mL, from 0.3 to 0.9 g/100 mL, from 0.3 to 0.8 g/100 mL, from 0.3 to 0.7 g/100 mL, from 0.3 to 0.6 g/100 mL, from 0.35 to 1.9 g/100 mL, from 0.35 to 1.8 g/100 mL, from 0.35 to 1.7 g/100 mL, from 0.35 to 1.6 g/100 mL, from 0.35 to 1.5 g/100 mL, from 0.35 to 1.4 g/100 mL, from 0.35 to 1.3 g/100 mL, from 0.35 to 1.2 g/100 mL, from 0.35 to 1.1 g/100 mL, from 0.35 to 1.0 g/100 mL, from 0.35 to 0.9 g/100 mL, from 0.35 to 0.8 g/100 mL, from 0.35 to 0.7 g/100 mL, from 0.35 to 0.6 g/100 mL, from 0.45 to 1.9 g/100 mL, from 0.45 to 1.8 g/100 mL, from 0.45 to 1.7 g/100 mL, from 0.45 to 1.6 g/100 mL, from 0.45 to 1.5 g/100 mL, from 0.45 to 1.4 g/100 mL, from 0.45 to 1.3 g/100 mL, from 0.45 to 1.2 g/100 mL, from 0.45 to 1.1 g/100 mL, from 0.45 to 1.0 g/100 mL, from 0.45 to 0.9 g/100 mL, from 0.45 to 0.8 g/100 mL, from 0.45 to 0.7 g/100 mL, from 0.45 to 0.6 g/100 mL, from 0.5 to 1.9 g/100 mL, from 0.5 to 1.8 g/100 mL, from 0.5 to 1.7 g/100 mL, from 0.5 to 1.6 g/100 mL, from 0.5 to 1.5 g/100 mL, from 0.5 to 1.4 g/100 mL, from 0.5 to 1.3 g/100 mL, from 0.5 to 1.2 g/100 mL, from 0.5 to 1.1 g/100 mL, from 0.5 to 1.0 g/100 mL, from 0.5 to 0.9 g/100 mL, from 0.5 to 0.8 g/100 mL, from 0.5 to 0.7 g/100 mL, from 0.5 to 0.6 g/100 mL, from 0.6 to 1.9 g/100 mL, from 0.6 to 1.8 g/100 mL, from 0.6 to 1.7 g/100 mL, from 0.6 to 1.6 g/100 mL, from 0.6 to 1.5 g/100 mL, from 0.6 to 1.4 g/100 mL, from 0.6 to 1.25 g/100 mL, from 0.6 to 1.3 g/100 mL, from 0.6 to 1.2 g/100 mL, from 0.6 to 1.1 g/100 mL, from 0.6 to 1.0 g/100 mL, from 0.6 to 0.9 g/100 mL, from 0.6 to 0.8 g/100 mL, or from 0.6 to 0.7 g/100 mL. The content of the imidazole dipeptide may be more preferably from 0.3 to 1.6 g/100 mL or from 0.35 to 1.4 g/100 mL. Alternatively, in another embodiment, the content of the imidazole dipeptide may be 0.5 g/100 mL or more and less than 1.0 g/100 mL, 0.5 g/100 mL or more and 1.0 g/100 mL or less, 0.6 g/100 mL or more and 1.3 g/100 mL or less, or 0.6 g/100 mL or more and 1.25 g/100 mL or less.

[0024]

The total amount of anserine and carnosine contained in the oral liquid composition in some embodiments of the present invention is more than 0.25 g/100 mL and less than 2.0 g/100 mL. Adjusting the total content of anserine and carnosine to this range makes it possible to reduce the characteristic odor (fishy smell) of collagen and also to reduce the bitterness of anserine and carnosine, and thus a liquid composition having excellent taste quality can be provided. The total content of anserine and carnosine may be preferably from 0.26 to 1.9 g/100 mL, from 0.26 to 1.8 g/100 mL, from 0.26 to 1.7 g/100 mL, from 0.26 to 1.6 g/100 mL, from 0.26 to 1.5 g/100 mL, from 0.26 to 1.4 g/100 mL, from 0.26 to 1.3 g/100 mL, from 0.26 to 1.2 g/100 mL, from 0.26 to 1.1 g/100 mL, from 0.26 to 1.0 g/100 mL, from 0.26 to 0.9 g/100 mL, from 0.26 to 0.8 g/100 mL, from 0.26 to 0.7 g/100 mL, from 0.26 to 0.6 g/100 mL, from 0.3 to 1.9 g/100 mL, from 0.3 to 1.8 g/100 mL, from 0.3 to 1.7 g/100 mL, from 0.3 to 1.6 g/100 mL, from 0.3 to 1.5 g/100 mL, from 0.3 to 1.4 g/100 mL, from 0.3 to 1.3 g/100 mL, from 0.3 to 1.2 g/100 mL, from 0.3 to 1.1 g/100 mL, from 0.3 to 1.0 g/100 mL, from 0.3 to 0.9 g/100 mL, from 0.3 to 0.8 g/100 mL, from 0.3 to 0.7 g/100 mL, from 0.3 to 0.6 g/100 mL, from 0.35 to 1.9 g/100 mL, from 0.35 to 1.8 g/100 mL, from 0.35 to 1.7 g/100 mL, from 0.35 to 1.6 g/100 mL, from 0.35 to 1.5 g/100 mL, from 0.35 to 1.4 g/100 mL, from 0.35 to 1.3 g/100 mL, from 0.35 to 1.2 g/100 mL, from 0.35 to 1.1 g/100 mL, from 0.35 to 1.0 g/100 mL, from 0.35 to 0.9 g/100 mL, from 0.35 to 0.8 g/100 mL, from 0.35 to 0.7 g/100 mL, from 0.35 to 0.6 g/100 mL, from 0.45 to 1.9 g/100 mL, from 0.45 to 1.8 g/100 mL, from 0.45 to 1.7 g/100 mL, from 0.45 to 1.6 g/100 mL, from 0.45 to 1.5 g/100 mL, from 0.45 to 1.4 g/100 mL, from 0.45 to 1.3 g/100 mL, from 0.45 to 1.2 g/100 mL, from 0.45 to 1.1 g/100 mL, from 0.45 to 1.0 g/100 mL, from 0.45 to 0.9 g/100 mL, from 0.45 to 0.8 g/100 mL, from 0.45 to 0.7 g/100 mL, from 0.45 to 0.6 g/100 mL, from 0.5 to 1.9 g/100 mL, from 0.5 to 1.8 g/100 mL, from 0.5 to 1.7 g/100 mL, from 0.5 to 1.6 g/100 mL, from 0.5 to 1.5 g/100 mL, from 0.5 to 1.4 g/100 mL, from 0.5 to 1.3 g/100 mL, from 0.5 to 1.2 g/100 mL, from 0.5 to 1.1 g/100 mL, from 0.5 to 1.0 g/100 mL, from 0.5 to 0.9 g/100 mL, from 0.5 to 0.8 g/100 mL, from 0.5 to 0.7 g/100 mL, from 0.5 to 0.6 g/100 mL, from 0.6 to 1.9 g/100 mL, from 0.6 to 1.8 g/100 mL, from 0.6 to 1.7 g/100 mL, from 0.6 to 1.6 g/100 mL, from 0.6 to 1.5 g/100 mL, from 0.6 to 1.4 g/100 mL, from 0.6 to 1.25 g/100 mL, from 0.6 to 1.3 g/100 mL, from 0.6 to 1.2 g/100 mL, from 0.6 to 1.1 g/100 mL, from 0.6 to 1.0 g/100 mL, from 0.6 to 0.9 g/100 mL, from 0.6 to 0.8 g/100 mL, or from 0.6 to 0.7 g/100 mL. The total content of anserine and carnosine may be more preferably from 0.3 to 1.6 g/100 mL or from 0.35 to 1.4 g/100 mL. Alternatively, in another embodiment, the total content of anserine and carnosine may be 0.5 g/100 mL or more and less than 1.0 g/100 mL, 0.5 g/100 mL or more and 1.0 g/100 mL or less, 0.6 g/100 mL or more and 1.3 g/100 mL or less, or 0.6 g/100 mL or more and 1.25 g/100 mL or less.

[0025]

The content of the imidazole dipeptide can be determined by measurement by high-performance liquid chromatography (HPLC) and may be determined from the blending amount in the case where the content can be calculated from the blending amount. The measurement conditions for the measurement by HPLC can be measured by a standard

measurement method of the analyzer. In the measurement by HPLC, an ion-exchange column (e.g., 300SCX (size of 4.6×250 mm, particle size of $5 \mu\text{m}$)) or the like can be used.

[0026]

In the oral liquid composition in some embodiments of the present invention, a ratio of the content of the collagen to the content of the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine (collagen/imidazole dipeptides) is not particularly limited and may be, for example, from 3 to 50, from 3 to 40, from 3 to 30, from 3 to 25, from 3 to 20, from 3 to 15, from 3 to 10, from 4 to 50, from 4 to 40, from 4 to 30, from 4 to 25, from 4 to 20, from 4 to 15, from 4 to 10, from 5 to 50, from 5 to 40, from 5 to 30, from 5 to 25, from 5 to 20, from 5 to 15, or from 5 to 10.

[0027]

In the oral liquid composition in some embodiments of the present invention, the ratio of the content of the collagen to the total content of anserine and carnosine (collagen/[anserine + carnosine]) is not particularly limited and may be, for example, from 3 to 50, from 3 to 40, from 3 to 30, from 3 to 25, from 3 to 20, from 3 to 15, from 3 to 10, from 4 to 50, from 4 to 40, from 4 to 30, from 4 to 25, from 4 to 20, from 4 to 15, from 4 to 10, from 5 to 50, from 5 to 40, from 5 to 30, from 5 to 25, from 5 to 20, from 5 to 15, or from 5 to 10.

[0028]

The oral liquid composition in a preferred embodiment of the present invention is an oral liquid composition, in which the content of the collagen is from 6 to 11 g/100 mL, and the content of the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine is from 0.5 to 1.3 g/100 mL. The oral liquid composition in another preferred embodiment of the present invention is an oral liquid composition, in which the content of the collagen is from 6 to 10 g/100 mL, and the content of the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine is from 0.6 to 1.25 g/100 mL.

[0029]

The oral liquid composition in yet another preferred embodiment of the present invention is an oral liquid composition, in which the content of the collagen is from 6 to 11 g/100 mL, and the total content of anserine and carnosine is from 0.5 to 1.3 g/100 mL. The oral liquid composition in still another preferred embodiment of the present invention is an oral liquid composition, in which the content of the collagen is from 6 to 10 g/100 mL, and the total content of anserine and carnosine is from 0.6 to 1.25 g/100 mL.

[0030]

The oral liquid composition in some embodiments of the present invention satisfies Formula (1):

$$Y \geq -17.705X + 16.705 \quad (1)$$

where Y (g/100 mL) is the content of the collagen, and X (g/100 mL) is the total content of carnosine and anserine. Formula (1) is based on an expression of a linear approximation curve

obtained from data of Examples 1-14, 1-33, and 1-35 in Example 1 described later. Being in the range above this linear approximation curve on the graph is preferred in terms of reducing the characteristic odor (fishy smell) of collagen of the oral liquid composition and reducing the bitterness.

[0031]

Chicken Extract

The oral liquid composition in some embodiments of the present invention may contain a chicken extract as a raw material containing the collagen and the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine. The chicken extract is a component produced by hot water extraction or the like using parts of chicken, such as meat, bone, leg, and skin, as a raw material. The chicken extract usually contains one or more imidazole dipeptides selected from the group consisting of carnosine and anserine.

[0032]

In the case where the chicken extract used in the oral liquid composition in some embodiments of the present invention contains salts of the one or more imidazole dipeptides selected from the group consisting of carnosine and anserine, the content of the imidazole dipeptides in the chicken extract means the total amount of the imidazole dipeptides and their salts.

[0033]

Examples of the salt of the imidazole dipeptide are not particularly limited and include salts including inorganic salts, such as hydroxides, carbonates, and bicarbonates of sodium, lithium, calcium, magnesium, aluminum, and ammonia; and organic salts, such as mono-, di-, or tri-alkylamine salts like salts of methylamine, dimethylamine, and trimethylamine, and mono-, di-, or tri-hydroxyalkylamine salts, guanidine salts, and N-methylglucosamine salts.

[0034]

In the case of using a chicken extract in the oral liquid composition in some embodiments of the present invention, an extract produced by heating chicken or the like used as a raw material in a liquid may be used, or a commercially available chicken extract may be used. The raw material for the chicken extract may contain bone, cartilage, leg, and/or the like of chicken.

[0035]

Examples of the commercially available products of the chicken extract include “Brand's Essence of Chicken (BEC) (available from Suntory Beverage & Food Asia)”, “Scotch (trade name) Essence of Chicken (available from Scotch Industrial, Thailand)”, “Quaker Essence of chicken (available from Standard Foods Corporation, Taiwan)”, “Chicken stock and broth of SWANSON (trade name) (available from Campbell Soup Company)”, “Drip Chicken Essence (available from Eu Yan Sang International, Singapore)”, “Boned Chicken Tonic (available from Eu Yan Sang International, Singapore)”, and “Boiled Essence of Chicken (available from Lao Xie Zhen, Taiwan)”. Any of such commercial products can be used, and Brand's Essence of Chicken (BEC) is preferably used.

[0036]

In the case of producing the chicken extract used in the oral liquid composition in some embodiments of the present invention by hot water extraction of chicken, chicken bone, cartilage, leg, and/or the like (hereinafter “chicken and/or the like”), the chicken extract can be produced by a commonly used method. For example, the chicken extract can be produced by treating chicken and/or the like in a solvent at a high temperature under normal pressure or increased pressure. When the chicken extract is produced, the concentration may be increased by removing fat and cholesterol after crude extraction with a solvent and then removing the excess solvent.

[0037]

In the present specification, the chicken extract encompasses a liquid extract produced by the above method, a diluted solution, concentrate, or dry powder of the liquid extract, and purified products thereof. The purified product can be produced, for example, by subjecting the chicken extract to ultrafiltration, membrane treatment, liquid separation operation, and/or fractionation treatment with a resin or the like to increase the purity.

[0038]

The amount of the chicken extract (on a solid basis) in the oral liquid composition in some embodiments of the present invention is not particularly limited as long as the amounts of the collagen and the imidazole dipeptide are within the given range, and is preferably from 5 wt.% to 25 wt.%. The amount (on a solid basis) of the chicken extract in a preferred embodiment of the present invention may be from 8 wt.% to 16 wt.%, from 10 wt.% to 14 wt.%, or from 11 wt.% to 13 wt.%.

[0039]

Additional Component and Properties

The oral liquid composition according to some embodiments of the present invention contains water. The water is not particularly limited, and any water can be used as long as it does not adversely affect the flavor. Examples of the water include tap water, ion-exchanged water, softened water, distilled water, carbonated water, reverse osmosis water (RO water), activated carbon-treated water, purified water, and demineralized water.

[0040]

The oral liquid composition according to some embodiments of the present invention may contain a branched-chain amino acid (BCAA). The oral liquid composition contains one or more of valine, leucine, and isoleucine as the BCAA. The content of the BCAA is preferably from 300 to 900 mg/100 mL, more preferably from 350 to 800 mg/100 mL, even more preferably from 400 to 700 mg/100 mL, and still more preferably from 500 to 600 mg/100 mL. In the present specification, the content of the BCAA means the total content of valine, leucine, and isoleucine, and the content of any of these amino acids may be 0. Containing the BCAA is preferred in that an effect on fatigue prevention can be expected. The amount of the BCAA in the oral liquid composition can be determined by measurement by high-performance liquid chromatography (HPLC) and may be determined from the blending amount in the case where the

content can be calculated from the blending amount. The measurement conditions for the measurement by high-performance liquid chromatography (HPLC) can be measured by a standard measurement method of the analyzer. In the measurement by high-performance liquid chromatography (HPLC), a reverse phase HPLC column (e.g., RP-18 (size of 25 x 0.46 cm, particle size of 5 μ m)) or the like can be used.

[0041]

The oral liquid composition according to some embodiments of the present invention may contain sodium. Sodium contained in the oral liquid composition may be derived from a raw material for the collagen and/or the like or may be added separately in the form of sodium citrate or the like. The content of sodium is preferably from 50 to 200 mg/100 mL, more preferably from 70 to 180 mg/100 mL, even more preferably from 100 to 160 mg/100 mL, and still more preferably from 135 to 155 mg/100 mL. Containing sodium is preferred in terms of improving body feel (mouth feel). The amount of sodium in the oral liquid composition can be measured by atomic absorption spectrometry. When the blending amount of a sodium-containing compound blended in the oral liquid composition is known, a value calculated from the blending amount may be used.

[0042]

The form of sodium is not limited as long as sodium is contained in an ingestible state in the oral liquid composition, and sodium may be, for example, in the form of at least one form selected from the group consisting of sodium chloride, sodium hydroxide, sodium malate, sodium sulfate, sodium citrate (monosodium citrate, disodium citrate, or trisodium citrate), sodium phosphate, sodium carbonate, sodium disulfide, sodium bicarbonate, sodium alginate, sodium arginate, sodium glucoheptanoate, sodium gluconate, sodium glutamate, sodium tartrate, sodium aspartate, sodium lactate, sodium caseinate, sodium ascorbate, and mixture thereof; or its ionized product.

[0043]

The pH of the oral liquid composition according to some embodiments of the present invention may be preferably from 4 to 7, from 4.5 to 7, from 5 to 7, from 5.5 to 7, from 6 to 7, from 4 to 6.8, from 4.5 to 6.8, from 5 to 6.8, from 5.5 to 6.8, from 6 to 6.8, from 4 to 6.6, from 4.5 to 6.6, from 5 to 6.6, from 5.5 to 6.6, or from 6 to 6.6. Adjusting the pH to this range can achieve a preferred taste with less sourness.

[0044]

The Brix (soluble solid content) of the oral liquid composition according to some embodiments of the present invention is preferably from 5 to 20, more preferably from 8 to 16, and even more preferably from 10 to 14. The Brix (soluble solid content) of the oral liquid composition can be measured with a sugar refractometer.

[0045]

The oral liquid composition according to some embodiments of the present invention may contain a sweetener. The sweetener may include a low-intensity sweetener, a high-intensity

sweetener, or a combination thereof. Examples of the low-intensity sweetener include glucose, sucrose (such as granulated sugar), fructose, maltose, oligosaccharides, fructose-glucose liquid sugar, lactose, psicose, allose, tagatose, xylose, or ribose. Examples of the high-intensity sweetener include aspartame, neotame, advantame, sucralose, acesulfame potassium (acesulfame K), saccharine, sodium saccharine, sodium cyclamate, dulcin, disodium glycyrrhizinate, trisodium glycyrrhizinate, neohesperidin dihydrochalcone, thaumatin, monellin, curculin, mabinlin, brazzein, pentadin, hernandulcin, 4 β -hydroxyhernandulcin, miraculin, glycyrrhizin, rubusoside, phyllodulcin, mogroside IV, mogroside V, steviol glycosides (rebaudioside A, rebaudioside D, or rebaudioside M), thaumatin, monellin, brazzein, monatin, monk fruit extract, or stevia extract.

[0046]

The oral liquid composition according to some embodiments of the present invention may contain, in addition to the components described above, a component that can be added to ordinary oral liquid compositions as long as the effects of the present invention are not impaired. Examples of such a component include acidulants, flavoring agents, vitamins, coloring matters, antioxidants, emulsifiers, preservatives, seasonings, extracts, pH adjusters, and quality stabilizers.

[0047]

The form of the container for the oral liquid composition according to some embodiments of the present invention is not limited and may be, for example, a form of a packaged oral liquid composition in which the composition is enclosed and packaged in a container, such as a can, a bottle, a PET bottle, a pouch, a paper pack, and a plastic container. According to a preferred embodiment of the present invention, the container for the oral liquid composition is a subdivided pouch from the viewpoint of convenient regular ingestion. In the case of heat-sterilizing the oral liquid composition after packaging, the type of heat sterilization is not particularly limited, and the packaged oral liquid composition can be heat-sterilized using an ordinary technique, such as, for example, overturning sterilization, UHT sterilization, and retort sterilization. The temperature of the heat sterilization process is not particularly limited and is, for example, from 65 to 130°C and preferably from 80 to 120°C for 1 to 40 minutes. However, if a sterilization value equivalent to that in the above conditions is obtained, a sterilization at an appropriate temperature for several seconds, for example, from 5 to 30 seconds, is also acceptable.

[0048]

For the ingestion of the oral liquid composition according to some embodiments of the present invention, the standard of daily intake may be 100 mL/day, 80 mL/day, 68 mL/day, 50 mL/day, 42 mL/day, or 20 mL/day. Alternatively, for the oral liquid composition packaged in a small bottle or subdivided pouch, one bottle or one pouch may be ingested daily.

[0049]

Exemplary Embodiments of Oral Liquid Composition of Present Invention

Exemplary embodiments of the oral liquid composition of the present invention are described below, and the present invention is not limited to the following exemplary embodiments.

According to an embodiment of the present invention, there is provided an oral liquid composition containing:

6 g/100 mL or more and less than 20 g/100 mL of collagen; and
more than 0.25 g/100 mL and less than 2.0 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine, in which

the total content of anserine and carnosine is from 0.3 to 1.6 g/100 mL, preferably from 0.35 to 1.4 g/100 mL, more preferably from 0.5 to 1.3 g/100 mL, even more preferably from 0.6 to 1.0 g/100 mL, and still more preferably from 0.6 to 0.9 g/100 mL.

[0050]

According to an embodiment of the present invention, there is provided an oral liquid composition containing:

from 6 to 13 g/100 mL or from 6.1 to 13 g/100 mL of collagen; and
more than 0.25 g/100 mL and less than 2.0 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine, in which

the total content of anserine and carnosine is from 0.3 to 1.6 g/100 mL, preferably from 0.35 to 1.4 g/100 mL, more preferably from 0.5 to 1.3 g/100 mL, even more preferably from 0.6 to 1.0 g/100 mL, and still more preferably from 0.6 to 0.9 g/100 mL.

[0051]

According to an embodiment of the present invention, there is provided an oral liquid composition containing:

from 6 to 11 g/100 mL or from 6.1 to 11 g/100 mL of collagen; and
more than 0.25 g/100 mL and less than 2.0 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine, in which

the total content of anserine and carnosine is from 0.3 to 1.6 g/100 mL, preferably from 0.35 to 1.4 g/100 mL, more preferably from 0.5 to 1.3 g/100 mL, even more preferably from 0.6 to 1.0 g/100 mL, and still more preferably from 0.6 to 0.9 g/100 mL.

[0052]

According to an embodiment of the present invention, there is provided an oral liquid composition containing:

from 6 to 11 g/100 mL or from 6.1 to 11 g/100 mL of collagen; and
from 0.3 to 1.5 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine, in which

the total content of anserine and carnosine is from 0.35 to 1.4 g/100 mL, preferably from 0.5 to 1.3 g/100 mL, more preferably from 0.6 to 1.0 g/100 mL, and even more preferably from 0.6 to 0.9 g/100 mL.

[0053]

According to an embodiment of the present invention, there is provided an oral liquid composition containing:

from 6 to 11 g/100 mL or from 6.1 to 11 g/100 mL of collagen; and

from 0.3 to 1.5 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine,

in which the total content of anserine and carnosine is from 0.35 to 1.4 g/100 mL, preferably from 0.5 to 1.3 g/100 mL, more preferably from 0.6 to 1.0 g/100 mL, and even more preferably from 0.6 to 0.9 g/100 mL, and

the composition contains from 70 to 180 mg/100 mL of sodium.

[0054]

2. Method of Producing Oral Liquid Composition

The present invention provides, as an aspect, a method of producing the oral liquid composition below (hereinafter also referred to as “the production method of the present invention”). The production method of the present invention is not particularly limited as long as an oral liquid composition with contents of collagen and one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine in given ranges is obtained.

[0055]

Examples of the production method of an embodiment of the present invention include the method as follows. First, chicken and/or the like is finely chopped and then treated in a solvent at a high temperature under normal pressure or increased pressure to degrade proteins and/or the like contained in the chicken and/or the like and convert them into relatively low molecular weight peptides that are easily absorbed by humans. Fat and cholesterol are removed from the resulting crude extract, and then the excess solvent is removed to increase the concentration of the chicken essence. This operation may be repeated multiple times. Whether the density, color, and nutritional value are in the desired ranges is confirmed, and the extract is filtered, then packaged, and vacuum-packaged. Then, the packaged product is heat-sterilized. The ratio of components contained varies depending on the parts of the chicken and/or the like used, and thus the oral liquid composition with a desired collagen amount and imidazole dipeptide amount can be obtained by adjusting the parts of the chicken and/or the like used. For example, collagen tends to be contained in a large amount in chicken legs, and imidazole dipeptides tend to be contained in a large amount in chicken breast meat. Thus, the oral liquid composition of the present invention can be produced without an excessive burden by analyzing the amounts of the components contained in each part and appropriately adjusting the ratio of the parts to be used.

[0056]

Alternatively, the oral liquid composition of the present invention may be prepared by adding given amounts of the collagen and the imidazole dipeptide to water. In that case, the amounts of the collagen and the imidazole dipeptide contained in the oral liquid composition may be adjusted by adding, as necessary, the collagen and/or the imidazole dipeptide to the chicken

extract containing the collagen and the imidazole dipeptide. The chicken extract may be prepared by the method as described above using chicken and/or the like, and a commercially available product may be used. The timing of addition of the components may or may not be simultaneous.
[0057]

In the production method of an aspect of the present invention, the “oral liquid composition”, “collagen”, “imidazole dipeptide”, “chicken extract”, and “additional component and properties” are defined in the same way as those described in the section of the above oral liquid composition, and to those numerical values, the numerical values described in the section of the above oral beverage composition are applied as they are.
[0058]

3. Method of Improving Taste Quality of Collagen-Containing Oral Liquid Composition

The present invention provides, as an aspect, a method of improving taste quality of a collagen-containing oral liquid composition below (hereinafter also referred to as “the improvement method of the present invention”). According to the improvement method of the present invention, the characteristic odor (fishy smell) of collagen of a collagen-containing oral liquid composition can be reduced. Specifically, the characteristic odor (fishy smell) of collagen can be reduced by adjusting one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine to be contained at given concentrations in the oral liquid composition containing collagen.
[0059]

The improvement method according to an embodiment of the present invention is a method of improving taste quality of a collagen-containing oral liquid composition, in which the method includes adjusting an amount of collagen contained in the collagen-containing oral liquid composition to 6 g/100 mL or more, and one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine to 0.04 to 0.5 g per gram of collagen contained in the collagen-containing oral liquid composition.
[0060]

In the improvement method according to some embodiments of the present invention, the content of the one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine per gram of collagen contained in the collagen-containing oral liquid composition may be from 0.04 to 0.4 g, from 0.04 to 0.3 g, from 0.04 to 0.25 g, from 0.04 to 0.2 g, from 0.04 to 0.15 g, from 0.04 to 0.1 g, from 0.05 to 0.4 g, from 0.05 to 0.3 g, from 0.05 to 0.25 g, from 0.05 to 0.2 g, from 0.05 to 0.15 g, from 0.05 to 0.1 g, from 0.06 to 0.4 g, from 0.06 to 0.3 g, from 0.06 to 0.25 g, from 0.06 to 0.2 g, from 0.06 to 0.15 g, from 0.06 to 0.1 g, from 0.07 to 0.4 g, from 0.07 to 0.3 g, from 0.07 to 0.25 g, from 0.07 to 0.2 g, from 0.07 to 0.15 g, from 0.07 to 0.1 g, from 0.08 to 0.4 g, from 0.08 to 0.3 g, from 0.08 to 0.25 g, from 0.08 to 0.2 g, from 0.08 to 0.15 g, or from 0.08 to 0.1 g.
[0061]

In the improvement method according to some embodiments of the present invention, the total content of anserine and carnosine per gram of collagen contained in the collagen-containing oral liquid composition may be from 0.04 to 0.4 g, from 0.04 to 0.3 g, from 0.04 to 0.25 g, from 0.04 to 0.2 g, from 0.04 to 0.15 g, from 0.04 to 0.1 g, from 0.05 to 0.4 g, from 0.05 to 0.3 g, from 0.05 to 0.25 g, from 0.05 to 0.2 g, from 0.05 to 0.15 g, from 0.05 to 0.1 g, from 0.06 to 0.4 g, from 0.06 to 0.3 g, from 0.06 to 0.25 g, from 0.06 to 0.2 g, from 0.06 to 0.15 g, from 0.06 to 0.1 g, from 0.07 to 0.4 g, from 0.07 to 0.3 g, from 0.07 to 0.25 g, from 0.07 to 0.2 g, from 0.07 to 0.15 g, from 0.07 to 0.1 g, from 0.08 to 0.4 g, from 0.08 to 0.3 g, from 0.08 to 0.25 g, from 0.08 to 0.2 g, from 0.08 to 0.15 g, or from 0.08 to 0.1 g.

[0062]

In the present specification, “adjusting imidazole dipeptides to 0.04 to 0.5 g per gram of collagen contained in the collagen-containing oral liquid composition” is not particularly limited as long as the final amount of the imidazole dipeptide in the collagen-containing liquid composition is from 0.04 to 0.5 g per gram of collagen. Thus, the amounts of the collagen and the imidazole dipeptide may be adjusted by separately adding a collagen preparation and/or an imidazole dipeptide preparation to the collagen-containing oral liquid composition, or the amounts of the collagen and the imidazole dipeptide in the final product may be adjusted by adjusting the raw materials in the production of the collagen-containing oral liquid composition.

[0063]

In some embodiments of the present invention, the amount of collagen contained in the collagen-containing oral liquid composition is less than 20 g/100 mL. In a preferred embodiment of the present invention, the content of the collagen in a preferred embodiment of the present invention may be from 6 to 19 g/100 mL, from 6 to 18 g/100 mL, from 6 to 17 g/100 mL, from 6 to 16 g/100 mL, from 6 to 15 g/100 mL, from 6 to 14 g/100 mL, from 6 to 13 g/100 mL, from 6 to 12 g/100 mL, from 6 to 11 g/100 mL, from 6 to 10 g/100 mL, 6 g/100 mL or more and less than 10 g/100 mL, from 6 to 9 g/100 mL, from 6 to 8 g/100 mL, from 6 to 7 g/100 mL, more than 6 g/100 mL and less than 13 g/100 mL, more than 6 g/100 mL and 12 g/100 mL or less, more than 6 g/100 mL and 11 g/100 mL or less, more than 6 g/100 mL and 10 g/100 mL or less, more than 6 g/100 mL and less than 10 g/100 mL, more than 6 g/100 mL and 9 g/100 mL or less, more than 6 g/100 mL and 8 g/100 mL or less, more than 6 g/100 mL and 7 g/100 mL or less, 6.1 g/100 mL or more and less than 13 g/100 mL, from 6.1 to 12 g/100 mL, from 6.1 to 11 g/100 mL, from 6.1 to 10 g/100 mL, 6.1 g/100 mL or more and less than 10 g/100 mL, from 6.1 to 9 g/100 mL, from 6.1 to 8 g/100 mL, from 6.1 to 7 g/100 mL, 6.2 g/100 mL or more and less than 13 g/100 mL, from 6.2 to 12 g/100 mL, from 6.2 to 11 g/100 mL, from 6.2 to 10 g/100 mL, 6.2 g/100 mL or more and less than 10 g/100 mL, from 6.2 to 9 g/100 mL, from 6.2 to 8 g/100 mL, from 6.2 to 7 g/100 mL, 6.5 g/100 mL or more and less than 13 g/100 mL, from 6.5 to 12 g/100 mL, from 6.5 to 11 g/100 mL, from 6.5 to 10 g/100 mL, 6.5 g/100 mL or more and less than 10 g/100 mL, from 6.5 to 9 g/100 mL, from 6.5 to 8 g/100 mL, from 6.5 to 7 g/100 mL, 7 g/100 mL or more and less than 13 g/100 mL, from 7 to 12 g/100 mL, from 7 to 11 g/100 mL, from 7 to 10

g/100 mL, 7 g/100 mL or more and less than 10 g/100 mL, from 7 to 9 g/100 mL, from 7 to 8 g/100 mL, 8 g/100 mL or more and less than 13 g/100 mL, from 8 to 12 g/100 mL, from 8 to 11 g/100 mL, from 8 to 10 g/100 mL, 8 g/100 mL or more and less than 10 g/100 mL, or from 8 to 9 g/100 mL. The content of the collagen is more preferably from 6 to 11 g/100 mL, from 6 g/100 mL to 10 g/100 mL, or 6.1 g/100 mL or more and less than 10 g/100 mL.

[0064]

In the improvement method of an aspect of the present invention, the “oral liquid composition”, “collagen”, “imidazole dipeptide”, “chicken extract”, and “additional component and properties” are defined in the same way as those described in the section of the above oral liquid composition.

[0065]

In the present specification, the phrase “at least” means that the number of a particular item may be not less than the listed number. In addition, within the present application, the phrase “about” means that the subject is present in a range of $\pm 25\%$, $\pm 10\%$, $\pm 5\%$, $\pm 3\%$, $\pm 2\%$, or $\pm 1\%$ of the numerical value following “about”. For example, “about 10” means a range of 7.5 to 12.5.

Examples

[0066]

Hereinafter, the present invention will be specifically described by illustrating examples, but the present invention is not limited to the following examples.

[0067]

Example 1

Examples 1-1 to 1-39

Oral liquid compositions were obtained by mixing the raw materials listed in Table 1 with water. The raw materials used are as follows:

collagen preparation (“Peptan F 2000 HD” available from Rousselot, collagen purity 90% or more, fish-derived collagen peptide),

imidazole dipeptide preparation (“Imida 15” available from Lytone Enterprise Inc., anserine and carnosine purity 15% or more (10% or more of anserine and 5% or more of carnosine))), and

water (reverse osmosis water (RO water)).

[Table 1]

Table 1-1

Examples	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10
Anserine + carnosine (g/100 mL)	0	2	2	0	1	0	1	2	1	0.6
Collagen (g/100 mL)	6	6	20	20	13	13	6	13	20	16.5

Table 1-2

Examples	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19	1-20
Anserine + carnosine (g/100 mL)	1.5	0.6	1.5	0.6	1.5	0.6	1.5	0.6	1	1
Collagen (g/100 mL)	16.5	10	10	6	6	20	20	13	16.5	10

Table 1-3

Examples	1-21	1-22	1-23	1-24	1-25	1-26	1-27	1-28	1-29	1-30
Anserine + carnosine (g/100 mL)	0.75	1	1.25	1	0.25	0.25	0.25	1.25	1.4	1.25
Collagen (g/100 mL)	10	8	10	11.5	6	10	13	6	6	13

Table 1-4

Examples	1-31	1-32	1-33	1-34	1-35	1-36	1-37	1-38	1-39
Anserine + carnosine (g/100 mL)	1.25	0.6	0.375	0.5	0.5	0.375	0.9	1.25	1
Collagen (g/100 mL)	11.5	11.5	10	10	8	11.5	10	8	9

[0068]

The content of collagen and the total content of anserine and carnosine in each sample were calculated based on information in a certificate of analysis (COA) showing the detailed content of each component for each lot of each raw material.

[0069]

The taste qualities of the oral liquid compositions obtained by the above procedure were evaluated. Each sample was evaluated by three expert panelists based on the following criteria.

[Table 2]

Table 2

Rating	1	2	3	4	5
Taste quality					
Bitterness	Negative taste quality is very strong and unacceptable	Negative taste quality is improved but is still unacceptable	Negative taste quality remains but is somewhat acceptable	Negative taste quality gradually disappears and is acceptable	Very acceptable
Unpleasant fishy smell					

[0070]

Before conducting the test, the panelists thoroughly worked out with each other to adjust for the above evaluation criteria. The results are summarized in Table 3. The results listed in Table 3 are the average values of ratings by three expert panelists. Furthermore, among the

obtained results, the rating of the worse result of the evaluation of “bitterness” or “unpleasant fishy smell” was used as an overall evaluation.

[Table 3]

Table 3-1

Examples	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10
Anserine + carnosine (g/100 mL)	0	2	2	0	1	0	1	2	1	0.6
Collagen (g/100 mL)	6	6	20	20	13	13	6	13	20	16.5
Bitterness	5	2	2	5	4	5	5	3	4	4
Unpleasant fishy smell	1	5	2	1	3	1	5	3	2	2
Overall evaluation	1	2	2	1	3	1	5	3	2	2

Table 3-2

Examples	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19	1-20
Anserine + carnosine (g/100 mL)	1.5	0.6	1.5	0.6	1.5	0.6	1.5	0.6	1	1
Collagen (g/100 mL)	16.5	10	10	6	6	20	20	13	16.5	10
Bitterness	3	5	4	5	3	4	3	5	4	5
Unpleasant fishy smell	3	5	4	5	4	1	2	3	3	4
Overall evaluation	3	5	4	5	3	1	2	3	3	4

Table 3-3

Examples	1-21	1-22	1-23	1-24	1-25	1-26	1-27	1-28	1-29	1-30
Anserine + carnosine (g/100 mL)	0.75	1	1.25	1	0.25	0.25	0.25	1.25	1.4	1.25
Collagen (g/100 mL)	10	8	10	11.5	6	10	13	6	6	13
Bitterness	5	5	4	5	4	4	4	5	4	4
Unpleasant fishy smell	5	5	5	4	3	3	2	5	5	3
Overall evaluation	5	5	4	4	3	3	2	5	4	3

Table 3-4

Examples	1-31	1-32	1-33	1-34	1-35	1-36	1-37	1-38	1-39
Anserine + carnosine (g/100 mL)	1.25	0.6	0.375	0.5	0.5	0.375	0.9	1.25	1
Collagen (g/100 mL)	11.5	11.5	10	10	8	11.5	10	8	9
Bitterness	4	5	4	5	5	4	5	5	5
Unpleasant fishy smell	4	4	4	5	5	4	5	5	5
Overall evaluation	4	4	4	5	5	4	5	5	5

[0071]

Example 2

Examples 2-1 to 2-20

Oral liquid compositions were obtained by mixing the raw materials listed in Table 4 with water. The raw materials used are as follows:

collagen preparation (“Peptan F 2000 HD” available from Rousselot, collagen purity: 90% or more, fish-derived collagen peptide),

imidazole dipeptide preparation (“Imida 15” available from Lytone Enterprise Inc., anserine and carnosine purity: 15% or more (10% or more of anserine and 5% or more of carnosine))),

water (reverse osmosis water (RO water)), and

trisodium citrate preparation (“Trisodium citrate dehydrate fine F60000” available from Jungbunzlauer Canada Inc., purity: 99% or more).

[Table 4]

Table 4-1

Examples	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10
Anserine + carnosine (g/100 mL)	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1
Collagen (g/100 mL)	6	6	8	8	6	6	8	8	6	6
Sodium (mg/100 mL)	54	79	59	85	100	100	100	100	120	120

Table 4-2

Examples	2-11	2-12	2-13	2-14	2-15	2-16	2-17	2-18	2-19	2-20
Anserine + carnosine (g/100 mL)	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1
Collagen (g/100 mL)	8	8	6	6	8	8	6	6	8	8
Sodium (mg/100 mL)	120	120	140	140	140	140	160	160	160	160

[0072]

The content of collagen and the total content of anserine and carnosine in each sample were calculated based on information in a certificate of analysis (COA) showing the detailed content of each component for each lot of each raw material. The sodium content in each sample was calculated by calculating the sodium amount originally contained in the collagen preparation and the imidazole dipeptide preparation based on the information in the certificates of analysis and adding the sodium amount calculated from the amount of trisodium citrate added to it. The sodium amount contained in the collagen preparation used in this example was 0.24 wt.%, and the sodium amount contained in the imidazole dipeptide preparation was 0.95 wt.%.

[0073]

The taste qualities of the oral liquid compositions obtained by the above procedure were evaluated. Each sample was evaluated by three expert panelists based on the following criteria. The body feel (mouth feel) with a rating of 3 or more is a preferred evaluation.

[Table 5]

Table 5

Rating Taste quality	1	2	3	4	5
Bitterness	Negative taste	Negative taste	Negative taste	Negative taste	Very acceptable
Unpleasant fishy smell	quality is very strong and unacceptable	quality is improved but is still unacceptable	quality remains but is somewhat acceptable	quality gradually disappears and is acceptable	
Body feel (Mouth feel)	The mouth feel is very heavy	The mouth feel is very heavy, but is somewhat improved	The mouth feel is light or slightly heavy	The mouth feel is slightly light or heavy	The mouth feel is best and just right

[0074]

Before conducting the test, the panelists thoroughly worked out with each other to adjust for the above evaluation criteria. The results are summarized in Table 6. The results listed in Table 6 are the average values of ratings by three expert panelists.

Table 6

Table 6-1

Examples	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10
Anserine + carnosine (g/100 mL)	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1
Collagen (g/100 mL)	6	6	8	8	6	6	8	8	6	6
Sodium (mg/100 mL)	54	79	59	85	100	100	100	100	120	120
Bitterness	5	5	5	5	5	5	5	5	5	5
Unpleasant fishy smell	5	5	5	5	5	5	5	5	5	5
Body feel (mouth feel)	3	4	3	5	3	5	4	5	4	5

Table 6-2

Examples	2-11	2-12	2-13	2-14	2-15	2-16	2-17	2-18	2-19	2-20
Anserine + carnosine (g/100 mL)	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1
Collagen (g/100 mL)	8	8	6	6	8	8	6	6	8	8
Sodium (mg/100 mL)	120	120	140	140	140	140	160	160	160	160

Bitterness	5	5	5	5	5	5	5	5	5	5
Unpleasant fishy smell	5	5	5	5	5	5	5	5	5	5
Body feel (mouth feel)	5	5	5	5	5	4	5	4	5	3

Claims

[Claim 1]

An oral liquid composition comprising:
6 g/100 mL or more and less than 20 g/100 mL of collagen; and
more than 0.25 g/100 mL and less than 2.0 g/100 mL of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine.

[Claim 2]

The composition according to claim 1, wherein a content of the one or more imidazole dipeptides is from 0.3 to 1.6 g/100 mL.

[Claim 3]

The composition according to claim 1, wherein a content of the one or more imidazole dipeptides is from 0.35 to 1.4 g/100 mL.

[Claim 4]

The composition according to claim 1, wherein
a content of the collagen is from 6 to 11 g/100 mL, and
a content of the one or more imidazole dipeptides is from 0.5 to 1.3 g/100 mL.

[Claim 5]

The composition according to claim 1, wherein
a content of the collagen is from 6 to 10 g/100 mL, and
a content of the one or more imidazole dipeptides is from 0.6 to 1.25 g/100 mL.

[Claim 6]

The composition according to any one of claims 3 to 5, satisfying Formula (1):
$$Y \geq -17.705X + 16.705 \quad (1)$$

where Y (g/100 mL) is a content of the collagen, and X (g/100 mL) is a total content of carnosine and anserine.

[Claim 7]

The composition according to any one of claims 1 to 6, comprising anserine and carnosine.

[Claim 8]

The composition according to any one of claims 1 to 7, comprising from 50 to 200 mg/100 mL of sodium.

[Claim 9]

The composition according to any one of claims 1 to 8, comprising from 300 to 900 mg/100 mL of a BCAA.

[Claim 10]

The composition according to any one of claims 1 to 9, being a pouched soup.

[Claim 11]

A method of improving taste quality of a collagen-containing oral liquid composition, the method comprising:

adjusting an amount of collagen contained in the collagen-containing oral liquid composition to 6 g/100 mL or more, and an amount of one or more imidazole dipeptides selected from the group consisting of anserine, carnosine, balenine, homoanserine, and homocarnosine to 0.04 to 0.5 g per gram of collagen contained in the collagen-containing oral liquid composition.

[Claim 12]

The method according to claim 11, wherein the amount of collagen contained in the collagen-containing oral liquid composition is less than 20 g/100 mL.