

Description

SEASONING COMPOSITION FOR IMPARTING COOKED FLAVOR

Technical Field

The present invention relates to a seasoning composition for imparting a cooked flavor to a food or beverage, such as clear chicken soup. The invention also relates to foods and beverages using such a seasoning composition.

Background Art

Chicken broth and chicken consommé serve as bases for Western-style cooking, and are used in various cuisines. As chicken consommé is heated and cooked, some types of tastes develop, such as "thickness of mid-taste" and "mouthfulness (fullness in the mouth)". For imparting such tastes, a technique that achieves the tastes by controlling chicken bone materials and extraction conditions has been known (see Patent Document 1).

Meanwhile, as a method for improving the taste and flavor of a food product, a technique that uses amino acids, saccharides, and the like as components thereof has been known (see Patent Document 2 and Patent Document 3).

Patent Document 1

JP-A-08-242806

Patent Document 2

JP-A-2002-10768

Patent Document 3

JP-A-2004-350554

Disclosure of the Invention

However, the invention of Patent Document 1 mentioned above is problematic in that, for example, it requires *jidori* chicken (a native breed of chicken) as an essential material for producing a high-quality chicken bone extract. Further, the production conditions are limited.

Patent Document 2 is aimed to reduce the acidity caused due to the use of an acidulant or a pH adjustor for improving keeping quality. Therefore, in terms of problems to be solved, objects, and material compositions, the taste improvement thereby is different from the case of imparting a cooked flavor. Further, Patent Document 3 is aimed to impart acidity together with kokumi (rich flavor), and is different from the case of imparting a cooked flavor in terms of problems to be solved and material compositions.

Against the above background, an object of the invention is to provide a seasoning composition that can be used more simply and widely and is capable of imparting a cooked flavor.

The present inventors conducted extensive research to solve the above problems, and, as a result, accomplished the

invention. The invention encompasses the following embodiments.

1. A seasoning composition containing:

sodium glutamate;

inosinic acid or a salt thereof in a weight ratio to the sodium glutamate of 0.76:1 to 1.5:1;

alanine in a weight ratio to the sodium glutamate of 0.72:1 to 1.5:1; and

sucrose in a weight ratio to the sodium glutamate of 5:1 to 9:1.

2. A seasoning composition according to item 1 above, further containing:

phosphoric acid or a salt thereof in a weight ratio to the sodium glutamate of 0.95:1 to 1.78:1 calculated as the weight of phosphate ions; and

potassium or a salt thereof in a weight ratio to the sodium glutamate of 1.48:1 to 2.77:1 calculated as the weight of potassium ions.

3. A seasoning composition according to item 1 or 2 above, further containing histidine.

4. A food or beverage containing a seasoning composition according to any one of items 1 to 3 above.

5. A food or beverage comprising a seasoning composition according to any one of items 1 to 3 above in an amount of 0.1 wt% to 10 wt% based on the food or beverage.

The invention also encompasses any combination of these configurations. Further, the expression thereof may also be replaced with a method, an apparatus, etc.

For example, the invention provides a method for producing a seasoning composition containing sodium glutamate, inosinic acid or a salt thereof in a 0.76:1 to 1.5:1 weight ratio to the sodium glutamate, alanine in a 0.72:1 to 1.5:1 weight ratio to the sodium glutamate, and sucrose in a 5:1 to 9:1 weight ratio to the sodium glutamate. The invention also provides a food or beverage using the seasoning composition and a method for producing the same. Further, the invention also provides a cooked-flavor-imparting agent using the seasoning composition, which is to be applied to foods and beverages, etc.

The invention makes it possible to provide a seasoning composition for imparting a cooked flavor to foods and beverages.

Best Mode for Carrying Out the Invention

A seasoning composition according to the invention is characterized by containing sodium glutamate, inosinic acid or a salt thereof in a weight ratio to the sodium glutamate of 0.76:1 to 1.5:1, alanine in a weight ratio to the sodium glutamate of 0.72:1 to 1.5:1, and sucrose in a weight ratio to the sodium glutamate of 5:1 to 9:1. More preferably, the

seasoning composition is characterized by containing sodium glutamate, inosinic acid or a salt thereof in a weight ratio to the sodium glutamate of 0.76:1 to 1.25:1, alanine in a weight ratio to the sodium glutamate of 0.76:1 to 1.25:1, and sucrose in a weight ratio to the sodium glutamate of 5:1 to 7:1. As the concentrations go beyond or below these ranges, bitterness increases, the taste fades away, etc., and such concentrations are thus undesirable.

What is important in the invention is that the formulation (reconstitution) following analytical values obtained from the general analysis of clear chicken soup (analysis of amino acids, organic acids, nucleic acids, saccharides, and mineral salts) does not reproduce the heated, mature flavor, for example, "thickness of mid-taste" and "mouthfulness". The present inventors newly found that the problems cannot be solved by a simple omission test of clear chicken soup or by the reconstitution of the components, and conducted further research. As a result, they found that by changing the proportions of specific components from the ordinary clear chicken soup formulation, a seasoning composition that imparts the heated, mature flavor, for example, "thickness of mid-taste" and "mouthfulness", can be obtained. The invention was thus accomplished.

In terms of taste, it is preferable that the seasoning composition of the invention contains, in addition to sodium

glutamate, inosinic acid or a salt thereof, alanine, and sucrose, phosphoric acid or a salt thereof in an amount of 0.95 to 1.78 calculated as phosphoric acid and potassium or a salt thereof in an amount of 1.48 to 2.77 calculated as potassium. The use of phosphoric acid or a salt thereof is advantageous in that according to such a formulation, the phosphate ion moiety contributes to the taste in terms of the "thickness of mid-taste." The use of potassium or a salt thereof is advantageous in that according to such a formulation, the potassium ion moiety contributes to the taste in terms of the "thickness of mid-taste."

When the seasoning composition of the invention further contains histidine in addition to sodium glutamate, inosinic acid or a salt thereof, alanine, and sucrose, this enhances the taste and thus is preferable. The histidine is preferably present in a weight ratio to the sodium glutamate of 0.1:1 to 0.4:1. A concentration higher than this range is likely to increase acidity or weaken the taste, and thus is undesirable.

As the ingredients for the seasoning composition for use in the invention, synthetic ingredients, fermented ingredients, and the like of any background can be used as long as they are usable for foods and beverages. Such ingredients may be used in any form. For example, they may be directly added to the seasoning composition, and may alternatively be mixed therewith in the form of a dilution with water, a solvent,

or the like, or in the form of a yeast extract, a meat extract, a seafood extract, or a protein hydrolysate, for example.

The form of the seasoning composition of the invention is not limited. It may be used in the form of a dry powder, a paste, a solution, or the like, for example.

"To impart a cooked flavor to a food or beverage" herein specifically means to impart a mature flavor including "thickness of mid-taste" and "mouthfulness", for example, which develops in a food or beverage with heating. A feature of the invention is that without a maturing process of heating a food or beverage for a long period of time, a taste similar to that obtained through such a process can be imparted. "thickness of mid-taste" means the strength of taste 3 to 5 seconds after an evaluation sample is placed in the mouth, and "mouthfulness" means the intensity of mouthfulness of taste in the mouth.

In the invention, foods or beverages to be provided with a cooked flavor are not limited, but the invention is significantly effective when applied to foods and beverages containing a meat extract, especially a chicken extract. Specifically, in terms of imparting a cooked flavor including "thickness of mid-taste", "mouthfulness", etc., preferred examples thereof are Western cuisines such as clear chicken soup, curry, beef stew, white stew, and steak; Chinese cuisines; Japanese cuisines; seasonings such as

Worcestershire sauce, demiglace sauce, catsup, and other sauces; Japanese-style simmered foods such as *niku-jaga* (simmered meat with potatoes) and *chikuzen-ni* (simmered chicken with root vegetables); deep-fried foods such as fried chicken and pork cutlet; and rice dishes such as rice balls and pilaf.

Examples

Hereinafter, the invention will be explained in further detail with reference to the examples. However, the technical scope of the invention is not limited thereto. In the Examples, unless otherwise noted, sensory evaluation was performed using aqueous solutions, and five trained panelists participated in the evaluation.

(Reference Example 1: Analysis of Components of Clear Chicken Soup, and Omission Test)

The following clear chicken soup was prepared by a chef.

First, 5000 g of chicken bone, 5000 g of adult chicken, 600 g of carrot, 600 g of onion, 200 g of celery, 1000 g of tomato, and 10 g of salt were placed in 30 kg of water, and heated at 90°C for 6 hours to prepare chicken broth.

Further, 2000 g of chicken mince, 150 g of carrot, 300 g of onion, 100 g of celery, 750 g of tomato, 40 g of tomato paste, 400g of albumen, and 8000 g of the above-prepared chicken

broth were heated at 90°C for 4 hours to prepare clear chicken soup. This soup is hereinafter referred to as "chef's clear chicken soup".

The chef's clear chicken soup was analyzed for the amino acid content, organic acid content, nucleic acid content, and saccharide content by an HPLC method, and also for the mineral salt content by an atomic absorption method. The quantities of components in the chef's clear chicken soup were thus determined.

The conditions for the HPLC method were as follows.

<Saccharine analysis>

Column: Asahipak NH2P-50 4E, 5 μ m, 4.6 mm ID $\times$ 250 mm

Eluant: A: 90% acetonitrile, B: 70% Acetonitrile

Flow rate: 1 ml/min

Fluorescence detection: Ex = 330 nm, Em = 470 nm

<Nucleic acid analysis>

Column: Inertsil NH2, 5 μ m, 4.6 mm ID $\times$ 250 mm

Eluant: 10% acetonitrile, 90% 20 mM potassium phosphate (pH 2.1)

Flow rate: 1 ml/min

Detection: UV 254 nm

<Organic acid analysis>

Column: Gelpack GL-C61 OH-S (a packed column for HPLC, HITACHI), 7.8mmID $\times$ 300mm

Eluant: 3 mM perchloric acid (pH 2.65)

Flow rate: 0.5 ml/min

Detection: UV/VIS 440 nm

<Amino acid analysis>

Hitachi high-speed amino acid analyzer L-8800

The atomic absorption method was performed using the inductively coupled plasma spectroscopy (see *Eiyou-Hyouji no Tame no Seibun-Bunseki no Pointo* (Points of Component Analysis for Nutrition Labeling), Chuohoki Publishing, 2007).

Further, based on the obtained analytical values, a formulation reproducing the analytical values was prepared (hereinafter referred to as "analytical-value reproduction formulation"). The recipe of the formulation, i.e., the ingredients and their contents, is shown in Table 1.

Further, comparative recipes were made based on the recipe of Table 1, each omitting one of the ingredients. Then, the analytical-value reproduction formulation was compared with the formulations of the comparative recipes each omitting one of the ingredients, thereby conducting an omission test to estimate necessary ingredients. Sensory evaluation was based on pairwise comparisons with the chef's clear chicken soup as control. In sensory evaluation, ingredients were evaluated as Excellent: of extremely high importance, Good: of high importance, Fair: of low importance, or Poor: of no importance. The results are in Table 1, Results of Sensory Evaluation.

Table 1

Recipe of Analytical-Value Reproduction Formulation, and
Sensory Evaluation Results in Omission Test

Components	Content (g/dl)	Results of Sensory Evaluation
Sodium inosinate	0.0090	Excellent
Taurine	0.0200	Poor
Sodium aspartate	0.0156	Poor
Threonine	0.0140	Poor
Serine	0.0120	Poor
Sodium glutamate	0.0550	Excellent
Proline	0.0080	Poor
Glycine	0.0150	Fair
Alanine	0.0150	Good
Cysteine	0.0020	Poor
Valine	0.0090	Poor
Methionine	0.0050	Poor
Isoleucine	0.0060	Poor
Leucine	0.0110	Poor
Tyrosine	0.0070	Poor
Phenylalanine	0.0080	Poor
Lysine hydrochloride	0.0025	Poor
Histidine hydrochloride	0.0086	Good
Arginine	0.0090	Poor
Citric acid	0.0600	Poor
Malic acid	0.0300	Poor
Lactic acid	0.5800	Poor
Acetic acid	0.0666	Poor
Pyroglutamic acid	0.0370	Poor
Sucrose	0.1400	Good
Mannose	0.0130	Poor
Fructose	0.4740	Poor
Glucose	0.4100	Fair
Potassium dihydrogen phosphate	0.2654	Excellent
Potassium chloride	0.2041	Good
Calcium chloride	0.0134	Poor
Magnesium chloride	0.0820	Poor

From the results of sensory evaluation shown in Table 1, the components evaluated as "Excellent" or "Good", i.e.,

salt of inosinic acid, salt of glutamic acid, alanine, histidine, sucrose, salt of potassium, and salt of phosphoric acid, were identified as possibly important.

(Reference Example 2: Comparison of Sensory Evaluation of Chef's Clear Chicken Soup, Analytical-Value Reproduction Formulation, and Important-Component-Containing Formulation)

Sodium inosinate, sodium glutamate, alanine, histidine hydrochloride, sucrose, potassium chloride, and potassium dihydrogen phosphate were dissolved in water to concentrations of 0.0090 g/dl, 0.0550 g/dl, 0.0150 g/dl, 0.0086 g/dl, 0.1400 g/dl, 0.2041g/dl, and 0.265g/dl, respectively, thereby giving an important-component-containing formulation.

Next, sensory evaluation was performed for the chef's clear chicken soup, the analytical-value reproduction formulation, and the important-component-containing formulation. The results of sensory evaluation were rated as Excellent: extremely strong, Good: strong, Fair: weak, or Poor: unperceivable. The results are shown in Table 2.

Table 2

Comparison of Sensory Evaluation of Chef's Clear Chicken Soup,
Analytical-Value Reproduction Formulation, and
Important-Component-Containing Formulation

	Chef's Clear Chicken Soup	Analytical-Value Reproduction Formulation	Important-Component-Containing Formulation
Umami	Excellent	Excellent	Excellent
Saltiness	Excellent	Excellent	Excellent
Thickness of mid-taste	Excellent	Fair	Fair
Mouthfulness	Excellent	Fair	Fair

The results of sensory evaluation in Table 2 show that although the analytical-value reproduction formulation and the important-component-containing formulation are capable of reproducing the basic tastes of the chef's clear chicken soup, such as umami and saltiness, they failed to reproduce the complex tastes such as "thickness of mid-taste" and "mouthfulness". It was also confirmed that there is no difference in evaluation results between the analytical-value reproduction formulation and the important-component-containing formulation.

(Reference Example 3: Changes in Taste due to Changes in Contents of Single Components in Important-Component-Containing Formulation)

Table 3 shows the proportions of the important components in the important-component-containing formulation per part by

weight of sodium glutamate, as well as the results of evaluation of each component regarding the taste.

Table 3

Changes in Taste due to Changes in Contents of Single Components in Important-Component-Containing Formulation

	Component Contents of Important-Component-Containing Formulation (g/dl)	Proportion per Weight Part of Sodium Glutamate	Evaluation on Each Component regarding Taste
Sodium glutamate	0.0550	1	Umami imparted
Sodium inosinate	0.0090	0.16	Taste strengthened
Potassium dihydrogen phosphate	0.265	4.83	Taste strengthened
Potassium chloride	0.2041	3.71	Taste strengthened
Alanine	0.0150	0.27	Thickness of mid-taste imparted
Histidine hydrochloride	0.0086	0.16	Strengthen the taste
Sucrose	0.1400	2.55	Thickness of mid-taste imparted

Taking the important-component-containing formulation as a formulation 1, the proportion of each component per part by weight of sodium glutamate was varied, and such formulations were subjected to sensory evaluation for "thickness of mid-taste" and "mouthfulness". The results of sensory evaluation were rated as Excellent: extremely strong, Good: strong, Fair: weak, or Poor: unperceivable. The results are shown in Tables 4 to 9.

Table 4

Changes in Taste due to Changes in Inosinic Acid Salt Content

of Important-Component-Containing Formulation

	Formulation 2	Formulation 1	Formulation 3	Formulation 4	Formulation 5	Formulation 6	Formulation 7
Sodium glutamate	1	1	1	1	1	1	1
Sodium inosinate	0.08	0.16	0.2	0.5	1	1.5	2
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2.55	2.55	2.55	2.55	2.55	2.55	2.55
Thickness of mid-taste	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Mouthfulness	Fair	Fair	Fair	Fair	Fair	Fair	Fair

Table 5

Changes in Taste due to Changes in Phosphoric Acid Salt Content

of Important-Component-Containing Formulation

	Formulation 8	Formulation 9	Formulation 1	Formulation 10	Formulation 11	Formulation 12
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	9.60	7.20	4.83	2.60	1.74	1.30
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.27	0.27	0.27	0.27	0.27	0.27
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2.55	2.55	2.55	2.55	2.55	2.55
Thickness of mid-taste	Poor	Poor	Fair	Fair	Fair	Fair
Mouthfulness	Poor	Poor	Fair	Fair	Fair	Fair

Table 6

Changes in Taste due to Changes in Potassium Salt Content of Important-Component-Containing Formulation

(With the potassium level of potassium dihydrogen phosphate being constant, the potassium level of potassium chloride was varied to change the total potassium level)

	Formulation 13	Formulation 14	Formulation 1	Formulation 15	Formulation 16	Formulation 17
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	7.4	5.56	3.71	2	1.34	1
Alanine	0.27	0.27	0.27	0.27	0.27	0.27
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2.55	2.55	2.55	2.55	2.55	2.55
Thickness of mid-taste	Poor	Poor	Fair	Fair	Fair	Fair
Mouthfulness	Poor	Poor	Fair	Fair	Fair	Fair

Table 7

Changes in Taste due to Changes in Alanine Content of Important-Component-Containing Formulation

	Formulation 18	Formulation 1	Formulation 19	Formulation 20	Formulation 21	Formulation 22
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.20	0.27	0.50	1.00	1.50	2.00
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2.55	2.55	2.55	2.55	2.55	2.55
Thickness of mid-taste	Poor	Fair	Fair	Fair	Fair	Fair
Mouthfulness	Poor	Fair	Fair	Fair	Fair	Fair

Table 8

Changes in Taste due to Changes in Histidine Content of Important-Component-Containing Formulation

	Formulation 23	Formulation 1	Formulation 24	Formulation 25	Formulation 26	Formulation 27
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.27	0.27	0.27	0.27	0.27	0.27
Histidine hydrochloride	0.1	0.16	0.24	0.32	0.40	0.48
Sucrose	2.55	2.55	2.55	2.55	2.55	2.55
Thickness of mid-taste	Fair	Fair	Fair	Fair	Fair	Fair
Mouthfulness	Fair	Fair	Fair	Fair	Fair	Fair

Table 9

Changes in Taste due to Changes in Sucrose Content of Important-Component-Containing Formulation

	Formulation 28	Formulation 1	Formulation 29	Formulation 30	Formulation 31	Formulation 32
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.27	0.27	0.27	0.27	0.27	0.27
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2	2.55	3	6	9	12
Thickness of mid-taste	Fair	Fair	Fair	Fair	Fair	Fair
Mouthfulness	Fair	Fair	Fair	Fair	Fair	Fair

The results of sensory evaluation shown in Tables 4 to 9 confirm that when the amount of a single component in the important-component-containing formulation is increased or reduced, sufficient "thickness of mid-taste" or "mouthfulness" is not imparted.

(Example 1: Changes in Taste due to Changes in Contents of Multiple Components in Important-Component-Containing Formulation)

The proportions of a plurality of components per part by weight of sodium glutamate were varied, and such formulations were subjected to sensory evaluation for "thickness of mid-taste" and "mouthfulness". The results of sensory evaluation were rated as Excellent: extremely strong, Good: strong, Fair: weak, or Poor: unperceivable. The results are shown in Tables 10 to 13.

Table 10

Changes in Taste due to Changes in Contents of Sweet Substances (Alanine and Sucrose) in Important-Component-Containing Formulation

	Formulation 33	Formulation 1	Formulation 34	Formulation 35	Formulation 36	Formulation 37
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.20	0.27	0.50	1.00	1.50	2.00
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2	2.55	3	6	9	12
Thickness of mid-taste	Fair	Fair	Fair	Good	Good	Fair
Mouthfulness	Fair	Fair	Fair	Good	Good	Fair

Table 11

Changes in Taste due to Changes in Contents of Mineral Salts
(Potassium Dihydrogen Phosphate and Potassium Chloride) of
Important-Component-Containing Formulation

	Formulation 38	Formulation 39	Formulation 1	Formulation 40	Formulation 41	Formulation 42
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.16	0.16	0.16	0.16	0.16	0.16
Potassium dihydrogen phosphate	9.60	7.20	4.83	2.60	1.74	1.30
Potassium chloride	7.4	5.56	3.71	2	1.34	1
Alanine	0.27	0.27	0.27	0.27	0.27	0.27
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2.55	2.55	2.55	2.55	2.55	2.55
Thickness of mid-taste	Poor	Poor	Fair	Good	Good	Fair
Mouthfulness	Poor	Poor	Fair	Good	Good	Fair

Table 12

Changes in Taste due to Changes in Contents of Sweet Substances
and Inosinic Acid Salt in Important-Component-Containing
Formulation

	Formulation 43	Formulation 1	Formulation 44	Formulation 45	Formulation 46	Formulation 47
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.08	0.16	0.5	1	1.5	2
Potassium dihydrogen phosphate	4.83	4.83	4.83	4.83	4.83	4.83
Potassium chloride	3.71	3.71	3.71	3.71	3.71	3.71
Alanine	0.20	0.27	0.50	1.00	1.50	2.00
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2	2.55	3	6	9	12
Thickness of mid-taste	Fair	Fair	Fair	Excellent	Good	Fair
Mouthfulness	Fair	Fair	Fair	Good	Good	Fair

Table 13

Changes in Taste due to Changes in Contents of Sweet Substances,
Inosinic Acid Salt, and Mineral Salts in
Important-Component-Containing Formulation

	Formulation 48	Formulation 1	Formulation 49	Formulation 50	Formulation 51	Formulation 52
Sodium glutamate	1	1	1	1	1	1
Sodium inosinate	0.08	0.16	0.5	1	1.5	2
Potassium dihydrogen phosphate	9.60	7.20	4.83	2.60	1.74	1.30
Potassium chloride	7.4	5.56	3.71	2	1.34	1
Alanine	0.20	0.27	0.50	1.00	1.50	2.00
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.16	0.16
Sucrose	2	2.55	3	6	9	12
Thickness of mid-taste	Fair	Fair	Fair	Excellent	Excellent	Fair
Mouthfulness	Fair	Fair	Fair	Excellent	Excellent	Fair

The results of sensory evaluation shown in Tables 10 to 13 confirm that a simultaneous increase in the amounts of sweet substances (alanine and sucrose) and inosinic acid imparts "thickness of mid-taste", while a reduction in the amounts of mineral salts (potassium dihydrogen phosphate and potassium chloride) imparts "mouthfulness". It was also confirmed that when the amounts of sweet substances (alanine and sucrose) and inosinic acid are increased and the amounts of mineral salts are decreased all at the same time, this is synergistically more effective in imparting "thickness of mid-taste" and "mouthfulness".

(Example 2: Determination of Optimal Formulations for Components in Important-Component-Containing Formulation)

The proportions of a plurality of components per part by weight of sodium glutamate were varied, and such formulations were subjected to sensory evaluation for "thickness of mid-taste" and "mouthfulness". The results of sensory evaluation were rated as Excellent: extremely strong, Good: strong, Fair: weak, or Poor: unperceivable. The results are shown in Table 14.

Table 14

Changes in Taste due to Changes in Contents of Multiple Components in Important-Component-Containing Formulation

	Formulation 49	Formulation 53	Formulation 54	Formulation 50	Formulation 55	Formulation 51	Formulation 56	Formulation 52
Sodium glutamate	1	1	1	1	1	1	1	1
Sodium inosinate	0.5	0.66	0.76	1	1.25	1.5	1.75	2
Potassium dihydrogen phosphate	4.83	3.9	3.26	2.60	1.96	1.74	1.52	1.30
Potassium chloride	3.71	3	2.5	2	1.5	1.34	1.18	1
Alanine	0.50	0.66	0.76	1.00	1.25	1.50	1.75	2.00
Histidine hydrochloride	0.16	0.16	0.16	0.16	0.156	0.16	0.16	0.16
Sucrose	3	4	5	6	7.5	9	10.5	12
Thickness of mid-taste	Fair	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Fair
Mouthfulness	Fair	Good	Excellent	Excellent	Excellent	Excellent	Good	Fair

The results of sensory evaluation shown in Table 14 above confirm that the formulations 50, 51, 54, and 55 are most effective in imparting "thickness of mid-taste" and "mouthfulness."

Example 3: Determination of Effects of Addition of Formulations to Curry Sauce

1. Preparation of Curry Roux

35 parts by weight of lard was heated to 100°C, then 40 parts by weight of flour was added thereto, and the mixture was heated and mixed at 140°C for 20 minutes. After the completion of heating, 10 parts by weight of curry powder, 5 parts by weight of salt, 5 parts by weight of granulated sugar, and 5 parts by weight of seasonings (sodium glutamate, Worcestershire sauce, and tomato paste) were added, mixed, and cooled to give a curry roux.

2. Preparation of Curry Sauce

85 g of boiling water was added to 15 g of the above-obtained curry roux, and then boiled in such a manner not to change the amounts of water and salt, thereby giving a curry sauce. Several formulations were then each added to a concentration of 0.5% relative to the curry sauce.

3. Sensory Evaluation

Sensory evaluation was performed for the curry sauces with the formulations added. The results of sensory evaluation were rated as Excellent: effect of addition is extremely high, Good: effect of addition is high, Fair: effect of addition is low, or Poor: effect of addition is unknown. The results are shown in Table 15.

Table 15

Effects of Addition of Formulations to Curry Sauce

	With No Formulation Added	Chef's Clear Chicken Soup	Important-Component- Containing Formulation	Formulation 50
Thickness of mid-taste	Poor	Excellent	Fair	Excellent
Mouthfulness	Poor	Excellent	Fair	Excellent

The results of sensory evaluation shown in Table 15 confirm that the addition of the formulation 50 to curry sauce is effective in imparting a cooked flavor with "thickness of mid-taste" and "mouthfulness".

Example 4: Determination of Effects of Addition of Formulations to White sauce

1. Preparation of White Roux

35 parts by weight of salt-free butter was heated to 100°C, then 40 parts by weight of flour was added thereto, and the mixture was heated and mixed at 120°C for 20 minutes. After the completion of heating, 4 parts by weight of salt, 5 parts by weight of granulated sugar, 1 part by weight of seasonings (sodium glutamate and pepper), and 15 parts by weight of fresh cream were added, mixed, and cooled to give a white roux.

2. Preparation of White Sauce

80 g of boiling water was added to 20 g of the above-obtained white roux, and then boiled in such a manner not to change the amounts of water and salt, thereby giving

a white sauce. Several formulations were then each added to a concentration of 0.5% relative to the white sauce.

3. Sensory Evaluation

Sensory evaluation was performed for the white sauces with the formulations added. The results of sensory evaluation were rated as Excellent: effect of addition is extremely high, Good: effect of addition is high, Fair: effect of addition is low, or Poor: effect of addition is unknown. The results are shown in Table 16.

Table 16

Effects of Addition of Formulations to White Sauce

	With No Formulation Added	Chef's Clear Chicken Soup	Important-Component- Containing Formulation	Formulation 50
Thickness of mid-taste	Poor	Excellent	Fair	Excellent
Mouthfulness	Poor	Excellent	Fair	Excellent

The results of sensory evaluation shown in Table 16 confirm that the addition of the formulation 50 to white sauce is effective in imparting a cooked flavor with "thickness of mid-taste" and "mouthfulness".

Industrial applicability

The present invention allows the provision of a seasoning composition for imparting a cooked flavor to a food or beverage, such as clear chicken soup, and also of foods and beverages

using the seasoning composition.

Claims

1. A seasoning composition comprising:
sodium glutamate;
inosinic acid or a salt thereof in a weight ratio to the sodium glutamate of 0.76:1 to 1.5:1;
alanine in a weight ratio to the sodium glutamate of 0.72:1 to 1.5:1; and
sucrose in a weight ratio to the sodium glutamate of 5:1 to 9:1.
2. A seasoning composition according to claim 1, further comprising:
phosphoric acid or a salt thereof in a weight ratio to the sodium glutamate of 0.95:1 to 1.78:1 calculated as the weight of phosphate ions; and
potassium or a salt thereof in a weight ratio to the sodium glutamate of 1.48:1 to 2.77:1 calculated as the weight of potassium ions.
3. A seasoning composition according to claim 1 or 2, further comprising histidine.
4. A food or beverage comprising a seasoning composition according to any one of claims 1 to 3.
5. A food or beverage comprising a seasoning composition according to any one of claims 1 to 3 in an amount of 0.1 wt% to 10 wt% based on the food or beverage.