Non-Patent Literature 6: Kasahara Y. *et al.,* TMC4 is a novel chloride channel involved in high-concentration salt taste sensation. J Physiol Sci. 2021;71(1):23.
Non-Patent Literature 7: Shen DY. *et al.,* Identification of novel saltiness-enhancing peptides from yeast extract and their mechanism of action for transmembrane channel-like 4 (TMC4) protein through experimental and integrated computational modeling. Food Chem. 2022;388:132993.
SUMMARY
[0012]
3. Summary

The disclosure of the subject application provides a taste composition for enhancing a salty taste of foods or beverages, salt-reduced seasoning or salt-reduced foods or beverages produced using the taste composition, and a method for producing the salt-reduced seasoning or salt-reduced foods or beverages.

In one aspect, the present disclosure provides a taste composition for enhancing a salty taste of foods or beverages, comprising:

ammonium chloride;

one or more sodium salts of an organic acid and/or one or more sodium salts of an inorganic acid except for hydrochloric acid; and

sodium chloride,

wherein a molar ratio of chloride ions/sodium ions is about 1.30 to about 2.30;

wherein the one or more sodium salts of the organic acid are selected from the group consisting of a sodium salt of a carboxylic acid, amino acid, nucleotide, and vitamin or vitamin derivative;

wherein the amino acid is aspartic acid; and

wherein the one or more sodium salts of an inorganic acid except for hydrochloric acid are selected from the group consisting of a sodium salt of a phosphorus-containing inorganic acid, sulfur-containing inorganic acid, nitrogen-containing inorganic acid, and selenium-containing inorganic acid; and

wherein the term "about" means that a numerical value is within 10% of a specified numerical value.

In another aspect, the present disclosure provides salt-reduced seasoning comprising the taste composition as described herein in an amount of about 0.5 wt% to about 95 wt% instead of table salt.

In another aspect, the present disclosure provides salt-reduced foods or beverages comprising the taste composition as described herein in an amount of about 0.01 wt% to about 50 wt% instead of table salt.

In another aspect, the present disclosure provides a method for producing salt-reduced seasoning, comprising adding the taste composition as described herein to seasoning materials.

In another aspect, the present disclosure provides a method for producing salt-reduced foods or beverages, comprising adding the taste composition as described herein or the salt-reduced seasoning as described herein to food or beverage materials or foods or beverages.

In another aspect, the present disclosure provides a method for enhancing the salty taste of foods or beverages, comprising adding the taste composition as described herein or the salt-reduced seasoning as described herein to food or beverage materials or foods or beverages.

TECHNICAL PROBLEM

[0013]

Well-known salt substitutes or salty taste enhancers include those produced by combining more than one raw material (JP-A-2017-135996, JP-A-2017-200478, and JP-A-2019-165640). In the formulation of such raw materials, the intensity of a salty taste and unintended taste was optimized by empirically changing the ratio of each component without any guidance. The present inventors have found that the salty taste enhancement ratio of a taste composition based on a salt substitute comprising chloride ions is proportional to a molar ratio of chloride ions/sodium ions in the presence of an anion of an organic acid or inorganic acid except for hydrochloric acid as a salty taste enhancer and have achieved the present invention. By focusing on the molar ratio, the intensity of an anion effect can be systematically adjusted while controlling sodium ion concentration in foods or beverages. As a result, a composition that provides a salty taste intensity comparable to or greater than that of table salt can be efficiently optimized. The present invention provides a taste composition that achieves the enhancement of the salty taste at a low cost and easily by selecting readily available materials that exhibit or enhance a salty taste from a list of food additives as an example and optimizing a composition with the above method.

SOLUTION TO PROBLEM

[0014]

The present invention provides a taste composition for enhancing a salty taste of foods or beverages, comprising:

ammonium chloride;

one or more sodium salts of an organic acid and/or one or more sodium salts of an inorganic acid except for hydrochloric acid; and

sodium chloride,

CLAIMS:

1. A taste composition for enhancing a salty taste of foods or beverages, comprising:

ammonium chloride;

one or more sodium salts of an organic acid and/or one or more sodium salts of an inorganic acid except for hydrochloric acid; and

sodium chloride,

wherein a molar ratio of chloride ions/sodium ions is about 1.30 to about 2.30;

wherein the one or more sodium salts of the organic acid are selected from the group consisting of a sodium salt of a carboxylic acid, amino acid, nucleotide, and vitamin or vitamin derivative;

wherein the amino acid is aspartic acid;

wherein the one or more sodium salts of an inorganic acid except for hydrochloric acid are selected from the group consisting of a sodium salt of a phosphorus-containing inorganic acid, sulfur-containing inorganic acid, nitrogen-containing inorganic acid, and selenium-containing inorganic acid; and

wherein the term "about" means that a numerical value is within 10% of a specified numerical value.

2. The taste composition according to claim 1, wherein a molar ratio of ammonium chloride/sodium chloride is about 0.2 to about 6.0.

3. The taste composition according to claim 1 or 2, wherein the taste composition is solid and comprises about 10 wt% to about 30 wt% of sodium ions.

4. The taste composition according to claim 3, wherein the taste composition is used as an alternative to table salt.

5. The taste composition according to claim 1 or 2, wherein the taste composition is liquid and comprises about 40 mM to about 3.0 M of sodium ion.

6. The taste composition according to claim 5, wherein the taste composition has a pH of about 5.0 to about 8.6.

7. Salt-reduced seasoning comprising the taste composition according to any one of claims 1 to 6 in an amount of about 0.5 wt% to about 95 wt% instead of table salt.

8. The salt-reduced seasoning according to claim 7, wherein the salt-reduced seasoning is selected from the group consisting of soy sauce, ponzu sauce, miso, noodle soup base, cooking sake, sweet cooking rice wine, sauce, broth, dressing, mayonnaise, tomato ketchup, Worcestershire sauce, pork cutlet sauce, instant pickles seasoning, chili bean sauce, gochujang, weiper, shantung, oyster sauce, chicken stock, spice, and combined seasonings.

9. Salt-reduced foods or beverages comprising the taste composition according to any one of claims 1 to 6 in an amount of about 0.01 wt% to about 50 wt% instead of table salt.

10. The salt-reduced foods or beverages according to claim 9, wherein the salt-reduced foods or beverages are selected from the group consisting of curry roux, stew roux, hashed beef roux, sauce including pasta sauce, demi-glace sauce, white sauce, gratin sauce, hamburger steak sauce, or pizza sauce, soup including ramen soup or hot pot soup, instant foods including instant noodle, miso soup or soup, retort foods including curry, stew, soup or rice bowl seasonings, frozen food, freeze dried foods, deli seasonings, seasoned rice base, sushi base, Furikake, seasoning for Ochazuke, canning, canned beef, bottling, deli bread, pizza, Japanese pickles, salted plum, food boiled in soy sauce, salted fish, processed seaweed products including salted kelp, cheese, raw ham, smoked meat including ham, bacon, sausage, beef jerky, karpas, or salami, seasoned meat for yakiniku, steamed chicken, char siu, seasoned fish including salt-grilled fish, Saikyozuke, mirin marinated fish pickles, fish cooked in miso, Teriyaki, Kabayaki, or pickled fish, salted salmon roe, spicy pollack roe, dried young sardines, dried fish, fish paste product including Chikuwa, Kamaboko, Hanpen, Satsuma-age, or imitation crab meat, appetizers including dry foods or nuts, snacks, Japanese confectionery, rice crackers, soft drinks, kelp tea, cooked food, delicatessen, confectionery, pet food and combination thereof.

11. A method for producing salt-reduced seasoning, comprising adding the taste composition according to any one of claims 1 to 6 to seasoning materials.

12. A method for producing salt-reduced foods or beverages, comprising adding the taste composition according to any one of claims 1 to 6 or the salt-reduced seasoning according to claim 7 to food or beverage materials or foods or beverages.

13. A method for enhancing the salty taste of foods or beverages, comprising adding the taste composition according to any one of claims 1 to 6 or the salt-reduced seasoning according to claim 7 to food or beverage materials or foods or beverages.

14. The taste composition according to any one of claims 1 to 6, wherein the taste composition is for a subject having cardiovascular disease or renal dysfunction or a healthy subject.

15. The taste composition according to any one of claims 1 to 6, wherein the taste composition is for a subject having hypertension or prehypertension.