

FLAVOUR ENHANCEMENT

This disclosure relates to umami flavour and to a method for its enhancement.

5 Umami is a flavour sensation generally associated with Asian cuisine. In addition, improved umami taste helps make low salt products more palatable. Umami flavour has traditionally been achieved by the addition of monosodium glutamate (MSG) to foodstuffs. However, the presence of MSG in foodstuffs is not universally welcome, and there is an interest in the achievement of umami taste with lower proportions of MSG than is normally
10 the case.

It has now been found that it is possible to achieve umami taste with a reduced proportion of MSG. There is therefore provided a method of providing umami taste to a consumable composition, comprising the addition to the composition of monosodium glutamate, in
15 which the proportion of monosodium glutamate that would normally be used is reduced and replaced with a compensatory proportion of γ -amino butyric acid.

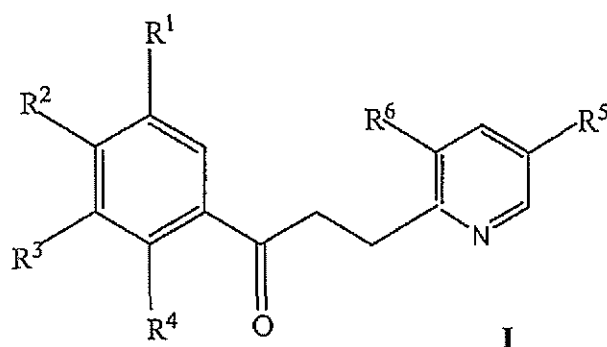
γ -amino butyric acid (hereinafter "GABA") is a known compound commonly found in many foods. It has been mentioned as a taste improver in a number of applications, for
20 example, Japanese Patent 4128893 and Kōkai 2008-113565. GABA has no umami flavour of its own, so it was surprising to find that, in combination with MSG, it considerably enhances umami effect to such an extent that the proportion of the former can be considerably reduced.

25 By "reduced proportion of MSG" is meant a proportion of MSG that is lower than that which would normally be needed to provide a desired quality or quantity of umami flavour. By "compensatory proportion" is meant the quantity of GABA needed, in conjunction with the MSG, to provide the desired quality or quantity of umami flavour. This generally lies within the range of 0.8-1.2 moles GABA per mole of MSG, the best results being achieved
30 with equimolar proportions. However, it is possible for a flavourist to achieve particular effects by formulating outside these guidelines.

The proportions of MSG and GABA used in a consumable composition will naturally depend on the nature of the use and the desired flavour, and the skilled person can easily determine the relevant proportions for any case by means of routine, non-inventive experimentation. However, the levels of MSG required are considerably reduced. In normal
5 use, a consumable product may contain up to 300 ppm of MSG. When used with a compensatory proportion of GABA, the amounts of GABA and MSG required can be as low as 5ppm of each, a total of 10ppm, while giving the same umami flavour as the 300ppm MSG alone. As a general guideline, the proportion of GABA can be from 5-100ppm, particularly from 10-50ppm. Again, in order to achieve particular effects, a
10 flavourist may formulate outside these guidelines.

The enhancing of umami flavour may be applied to any composition in which umami flavour is desired. There is therefore also provided a consumable composition having an umami flavour, comprising a product base and an umami flavour-providing proportion of
15 MSG and GABA. By "product base" is meant the combination of all the usual art-recognised ingredients other than MSG and GABA required for the particular consumable composition.

In addition to the art-recognised ingredients hereinabove mentioned, there may also be
20 added other ingredients that confer umami flavour. While not benefiting from the surprising MSG+GABA effect hereinabove described, these ingredients may be used to alter the subjective quality of the umami flavour attained, and therefore provide a variety of different umami taste sensations. This work is well within the skill of the art and the skilled flavourist may create a wide palette of pleasing effects. Particular examples of other umami
25 compounds that are useful in this application are compounds (including salts thereof) according to Formula I



in which

R^1 is selected from H, methyl and ethyl;

R^2 is selected from H, OH, fluorine, C_1 - C_4 linear or branched alkyl, C_1 - C_6 alkoxy wherein
 5 the alkyl group is linear or branched, or comprises or consists of a C_3 - C_5 cycloalkyl moiety;

R^3 is selected from H, methoxy, methyl and ethyl;

or R^2 and R^3 together form a bridging moiety $-O-CH_2-O-$ between the phenyl carbon atoms to which they are connected;

R^4 is selected from OH and methoxy; and

10 R^5 and R^6 are independently selected from H and methyl;

R^1 , R^2 , R^3 , R^4 , R^5 and R^6 being selected such that,

(i) when R^2 and R^3 together form a bridging moiety $-O-CH_2-O-$ between the phenyl carbon atoms to which they are connected, R^1 , R^5 , R^6 are H, and R^4 is OH; and

(ii) when R^4 is OH and R^1 - R^3 are H, at least one of R^5 , R^6 is methyl.

15 Such compounds are described in UK patent application No. 0913804 and International Application No. PCT/EP2010/059916. Other non-limiting examples of umami flavour-conferring and -enhancing compounds include those described in EP 1642886, WO 2005/015158, EP 1312268, WO 2003/088768, EP 1291342 and WO 2006/003107.

20 Such other umami ingredients are typically added to a consumable composition at a concentration of between 0.01-100ppm.

By "consumable composition" is meant any composition that is taken into the mouth for ultimate spitting out or ingestion. The composition may be in any physical form, solid,
 25 liquid or gaseous. Non-limiting examples include all food products, food additives, nutraceuticals, pharmaceuticals and any product placed in the mouth including (but not limited to) chewing gum, oral care products, and oral hygiene products including but not

limited to, cereal products, rice products, tapioca products, sago products, baker's products, biscuit products, pastry products, bread products, confectionery products, dessert products, gums, chewing gums, flavor or flavor-coated food/beverage containers, yeast products, baking-powder, salt and spice products, snack foods, savoury products, mustard products, vinegar products, sauces (condiments), soups, seasonings, ready-to-eat meals, gravies, nuts & nut products, tobacco products, cigars, cigarettes, processed foods, vegetable products, meat and meat products, egg products, milk and dairy products, yoghurts, cheese products, butter and butter substitute products, milk substitute products, soy products, edible oils and fat products, medicaments, beverages, carbonated beverages, alcoholic drinks such as beers, wines and spirits, non-alcoholic drinks such as soft drinks, including forms requiring reconstitution including, without limitation, beverage powder, milk based beverage powder, sugar-free beverage powder, beverage syrup, beverage concentrate, coffee and tea, food extracts, plant extracts, meat extracts, condiments, gelatins, pharmaceutical and non-pharmaceutical gums, tablets, lozenges, drops, emulsions, elixirs, syrups and other preparations for making beverages, and combinations thereof.

The disclosure is further described with reference to the following non-limiting examples, which depict particular embodiments.

20 Example 1

A model savoury solution containing

Sodium chloride 6000 ppm

25 Monosodium glutamate (MSG) 300 ppm and

1/1 Mixture of inosine monophosphate (IMP) and guanosine monophosphate (GMP) 150 ppm

was used as the reference.

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This solution was compared with a solution containing:

Salt 6000 ppm

MSG 300 ppm

1/1 Mixture of inosine monophosphate (IMP) and guanosine monophosphate (GMP) 150 ppm

Aspartic acid 15 ppm

5 Arginine 10 ppm and

Gamma amino butyric acid (GABA) 20 ppm.

The two solutions were compared by a small group of experienced tasters (3 male, 1 female). All members of the group preferred the second solution and described it as 'more
10 umami', 'succulent', 'rich', 'more savoury' and 'lingering'.

Example 2

A model savoury solution containing 5000 ppm table salt, 150 ppm MSG and 75 ppm
15 IMP/GMP was used as a base.

Another solution was prepared containing 10 ppm GABA.

In a third solution, 10 ppm GABA was added to the base solution.

The solutions were compared by a small group of experienced tasters (3 male, 1 female).

The base solution was described as salty and umami. The GABA solution was tasteless. All
20 members of the group preferred the third solution over the first one and judged to be noticeably different from the base. The taste was described as fuller and longer lasting umami.

Example 3

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A commercially-available chicken bouillon was prepared (reference) (salt content 0.5 %).

To one part of the bouillon 30 ppm of 1-(2-hydroxy-4-isobutoxyphenyl)-3-(pyridine-2-yl)propan-1-one was added (solution 1).

To another part 20 ppm of GABA was added (solution 2)

30 And to another part 30 ppm of 1-(2-hydroxy-4-isobutoxyphenyl)-3-(pyridine-2-yl)propan-1-one and 20 ppm of GABA was added (solution 3).

The solutions were compared by a small group of experienced tasters (3 male, 1 female).

The base bouillon was described as salty and umami. Solution 1, 2 and 3 were all described

as better than the reference and described as 'more taste enhancement', 'more umami'. All tasters agreed solution 3 was the best one, described as 'most fullness', 'most richness'.

Example 4

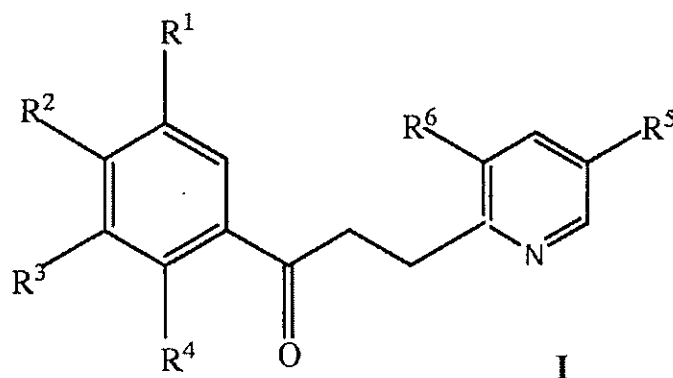
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A reference solution containing 5000 ppm table salt, 15 ppm MSG and 75 ppm IMP/GMP was prepared. To different parts of this solution 5, 10, 15, 20, and 25 ppm GABA was added. The solutions were tasted by a small group of experienced tasters (3 male, 1 female). The best umami enhancement was seen in the solutions containing 5, 10, and 15 ppm

10 GABA. 15 ppm of GABA was the favoured sample in comparison to the target.

Claims

1. A method of providing umami taste to a consumable composition, comprising the addition to the composition of monosodium glutamate, in which the proportion of monosodium glutamate that would normally be used is reduced and replaced with a compensatory proportion of γ -amino butyric acid (GABA).
2. A method according to claim 1, in which there are from 0.8-1.2 moles GABA per mole of MSG, preferably equimolar proportions of GABA and MSG.
3. A method according to claim 1, in which the proportion of GABA present in the composition is from 5-100ppm, particularly from 10-50ppm.
4. A consumable composition having an umami flavour, comprising a product base and an umami flavour-providing proportion of MSG and GABA in which there are from 0.8-1.2 moles GABA per mole of MSG, particularly equimolar proportions of GABA and MSG.
5. A consumable composition having a umami flavour, comprising a product base and a umami flavour-providing proportion of MSG and GABA, according to claim 4, in which the proportion of GABA present in the composition is from 5-100ppm, particularly from 10-50ppm.
6. A consumable composition according to claim 4 or claim 5 having an umami flavour, in which there is additionally present a compound (including salts thereof) according to Formula I



in which

R¹ is selected from H, methyl and ethyl;

R² is selected from H, OH, fluorine, C₁-C₄ linear or branched alkyl, C₁-C₆ alkoxy wherein the alkyl group is linear or branched, or comprises or consists of a C₃-C₅ cycloalkyl moiety;

R³ is selected from H, methoxy, methyl and ethyl;

or R² and R³ together form a bridging moiety -O-CH₂-O- between the phenyl carbon atoms to which they are connected;

R⁴ is selected from OH and methoxy; and

R⁵ and R⁶ are independently selected from H and methyl;

R¹, R², R³, R⁴, R⁵ and R⁶ being selected such that,

(i) when R² and R³ together form a bridging moiety -O-CH₂-O- between the phenyl carbon atoms to which they are connected, R¹, R⁵, R⁶ are H, and R⁴ is OH; and

(ii) when R⁴ is OH and R¹-R³ are H, at least one of R⁵, R⁶ is methyl.