

This invention relates to a process for the production of a flavouring agent.

It is known that flavouring agents suitable, for example, for dehydrated sauces or soups can be produced by reaction of a free amino acid source, such as a vegetable protein hydrolyzate or a yeast autolyzate, with a reducing sugar.

FR 2 321 581, for example, describes a process for the production of a flavouring agent with a taste reminiscent of meat, in which a mixture containing a yeast protein degradation product, a monosaccharide and a substance containing sulfur in the form of sulfide is reacted by heating.

FR 2 245 295 describes the production of a flavouring composition with a beef flavour by heating a mixture of ribose or ribose-5-phosphate with solid constituents of animal blood plasma at 60 to 250°C until the mixture acquires the flavour of cooked beef.

The object of the present invention is to provide a process for the production of a flavouring agent which eliminates the need to use large quantities of protein hydrolyzates or yeast extracts by using an aromatic herb as such.

In a first embodiment, the present invention relates to a process in which a mixture containing a sugar, a lovage extract which provides part of the amino acids and an amino acid source which provides the rest of the amino acids is prepared, the mixture is heat treated by cooking and the cooked mixture is concentrated.

In a second embodiment, the invention relates to a process in which a mixture containing a sugar, a salt, a starting material of lovage in the form of pulp, ground fresh leaves or dried and ground leaves, which provides part of the amino acids, and an amino acid

source which provides the rest of the amino acids is prepared and the mixture is heat-treated by cooking.

One advantage of these processes is that they enable a product having a new and natural characteristic flavour to be obtained. Another advantage of these processes is that they are simple and can be carried out using principal starting materials capable of being locally produced.

The processes according to the invention for the production of a flavouring agent can be carried out semi-continuously or, in a preferred embodiment, continuously.

They enable a product to be obtained in the form of a liquid, a paste or a powder.

Lovage is a herbaceous plant of the umbellifer family of which the use as an aromatic herb is fairly common in traditional cooking. In the processes according to the present invention, lovage may be used in the form of an extract, a pulp, ground fresh leaves or ground dried leaves.

To prepare a lovage extract suitable for carrying out one process according to the invention, freshly gathered lovage may be washed with cold water and then left to drain for 15 to 60 minutes, the leaves may be cut into pieces of medium size with an apparent density of the order of 500 to 700 gl^{-1} favourable to optimal extraction and the cut leaves may be pressed, for example in a mechanical press or a screw press. A liquid material, or extract, and a solid material, or pulp, may be obtained in this way.

The extract obtained may be pasteurized, for example by heating for 30 to 60 seconds at 75 to 85°C, to inactivate any enzymes and microorganisms which it might contain.

The pasteurized extract may then be clarified,

for example by adding 1% by weight celite to the lovage extract and mixing for 1 to 15 minutes before separation, for example by centrifugation, enzymatic treatment or filtration. A lovage extract having a dry matter content of 3 to 7% by weight may be obtained in this way.

The lovage pulp resulting from the separation of the extract may have a dry matter content of 20 to 30% by weight.

In another process according to the invention, lovage may be used in the form of this pulp, in the form of cut and ground fresh leaves or even in the form of fresh leaves which have been cut, dried, for example by heating for 5 to 12 hours at 80 to 90°C, and then ground.

A sugar suitable for carrying out the processes according to the invention may be, for example, a monosaccharide or a disaccharide. It is preferred to use sucrose which may have a moisture content of less than 1.5% by weight.

An amino acid source which may be used to carry out the processes according to the invention may be, for example, a vegetable protein hydrolyzate, a yeast extract, a simple compound, such as sodium glutamate, or a vegetable extract rich in proteins, such as a potato extract or an onion extract.

In one particular embodiment of one process according to the invention, a mixture is prepared which contains 100 parts by weight lovage extract having a dry matter content of 3 to 7% by weight, 5 to 20 parts by weight sucrose and 3 to 15 parts by weight sodium glutamate. The mixture may be kneaded for 5 to 30 minutes, for example in a stirrer rotating at 25 to 30 revolutions per minute, to obtain a homogeneous and completely dissolved mixture. The mixture may then be

heat-treated by cooking for 1 to 5 hours and preferably for 2 to 3 hours at a temperature of 80 to 100°C and preferably at a temperature of 85 to 90°C. The mixture may be uniformly stirred throughout the heat treatment or during only part of the heat treatment to avoid any caramelization and any modification of the flavours.

The cooked mixture may be concentrated, for example by evaporation at atmospheric pressure or under reduced pressure, to a dry matter content of the order of 75 to 85% by weight. To this end, the cooked mixture may be preheated to a temperature of 60 to 70°C and then concentrated by evaporation at that temperature for 40 to 60 minutes under a pressure of the order of 100 to 250 mbar. The cooked mixture may also be concentrated at atmospheric pressure during the heat treatment.

A salt may be added to the concentrated mixture. A salt which may be used in the processes according to the invention may be, for example, a salt traditionally used in foods. This salt may be, for example, sodium chloride having a moisture content of preferably less than 3% by weight. It is preferred to use a solid salt in the form of small grains between 0.3 and 0.5 mm in size which enables the mixture to be handled more easily and any subsequent dehydration to be carried out more rapidly and more homogeneously. For example, 0 to 2 parts by weight sodium chloride may be added per part by weight concentrated mixture.

This addition may be made at a temperature of 40 to 65°C and the mixture obtained may be kneaded for 15 to 30 minutes with a stirrer rotating at 15 to 30 revolutions per minute so that it has a suitable viscosity, preferably in the range from 2,000 to 4,000 mPas (2,000 - 4,000 cp).

This paste, i.e. the concentrated and optionally salted mixture, may be used in this form in which it has

a dry matter content of approximately 90 to 92% by weight for a salt-containing paste or approximately 75 to 90% for a salt-free paste and a water activity of approximately 0.25 to 0.50.

5 The salt-containing paste may also be dehydrated to a dry matter content of approximately 97 to 98% by weight and then ground. The paste may be dehydrated, for example, by heating for 1 to 3 hours at a temperature of 55 to 80°C under a pressure of 10 to 150 mbar.
10 A powder-form flavouring agent is obtained in this way after grinding.

 To obtain a flavouring agent in liquid form, 0.6 to 1 part by weight water and, optionally, 0 to 2 parts by weight salt may be added to 1 part by weight of the
15 concentrated mixture and the liquid mixture obtained may be stirred and then filtered. A liquid flavouring agent having a dry matter content of approximately 40 to 55% by weight is obtained in this way.

 In another particular embodiment of one process
20 according to the invention, a mixture is prepared which contains 100 parts by weight lovage pulp having a dry matter content of 20 to 30% by weight, 20 to 40 parts by weight sucrose, 10 to 30 parts by weight sodium glutamate and 30 to 100 parts by weight sodium chloride.

25 In another particular embodiment, a mixture is prepared which contains 100 parts by weight ground fresh lovage leaves having a dry matter content of 10 to 15% by weight, 10 to 20 parts by weight sucrose, 5 to 15 parts by weight sodium glutamate and 15 to 50 parts by
30 weight sodium chloride.

 In another particular embodiment, a mixture is prepared which contains 100 parts by weight dried and ground lovage leaves having a dry matter content of 90 to 96% by weight, 120 to 130 parts by weight sucrose, 75
35 to 80 parts by weight sodium glutamate and 140 to 200

parts by weight sodium chloride.

Water may optionally be added to these various mixtures to obtain a mixture which kneads more easily and which preferably has a dry matter content of the order of 30 to 60% by weight. For example, 10 to 30 parts by weight water may be added to the mixture containing lovage pulp, 5 to 15 parts by weight water may be added to the mixture containing the ground fresh leaves and 70 to 100 parts by weight water may be added to the mixture containing the dried and ground leaves. The mixture obtained may be kneaded for 10 to 60 minutes, for example in a stirrer rotating at 15 to 30 revolutions per minute, to obtain a homogeneous mixture.

The kneaded mixture is then heat-treated by cooking, for example for 20 to 60 minutes at a temperature of 80 to 100°C. The mixture may be stirred constantly throughout the heat treatment or during part of the heat treatment. After cooking, the mixture may be rapidly cooled so that a temperature of 30 to 35°C is obtained after 10 to 20 minutes.

The cooked mixture may then be dehydrated, for example by evaporation under reduced pressure, more particularly for 8 to 15 hours at a temperature of 65 to 75°C under a pressure of 10 to 20 mbar.

The dehydrated mixture may also be dried at atmospheric pressure in the same apparatus as used for the heat treatment.

A product having a dry matter content of 96 to 98% by weight is obtained in this way and may be subsequently ground to obtain a flavouring agent in powder form.

The invention is illustrated in more detail by the following Examples.

Example 1

10 kg freshly gathered lovage having a dry matter content of 17% by weight are washed with cold water and then left to drain for 25 minutes.

5 The lovage is cut to obtain an apparent density of the order of 585 g per litre and the cut lovage is then pressed in a screw press rotating at 40 revolutions per minute. 8.5 kg of a green liquid having a pH of 5.4 to 6.5 are obtained. The liquid is pasteurized for 45
10 seconds at 80°C. 90 g celite are added and any solids are separated by filtration from the liquid materials. The liquid materials are recovered and 7.7 kg liquid lovage extract having a dry matter content of 4% by weight are obtained.

15 These 7.7 kg of liquid lovage extract are mixed with 1.1 kg sucrose and 0.66 kg sodium glutamate. The mixture is stirred at 30 revolutions per minute for 20 minutes. It is then heated to a temperature of 85 to 90°C and kept at that temperature for 4 hours with
20 constant stirring.

The cooked mixture is then concentrated in a circulation evaporator for 45 minutes at 65°C under a pressure of 145 mbar.

25 2.5 kg concentrated mixture having a dry matter content of 80% by weight are obtained.

 2.97 kg sodium chloride in the form of fine grains are added at 50°C to these 2.5 kg of concentrated mixture. The concentrated and salted mixture is kneaded for 30 minutes in a mixer rotating at 30 revolutions per
30 minute to obtain a homogeneous paste.

 5.2 kg paste having a dry matter content of 90% by weight are obtained. The paste may optionally be dehydrated by heating for 3 hours at 70°C under a pressure of 20 mbar and then ground to obtain 4.7 kg of
35 a flavouring agent in powder form having a dry matter

content of 97% by weight.

Example 2

5 10 kg lovage washed and cut as in Example 1 are pressed in a screw press rotating at 40 revolutions per minute. 8.5 kg lovage liquid and 2.5 kg lovage pulp having a dry matter content of 25% by weight are obtained.

10 A mixture containing 2.5 kg lovage pulp, 550 ml water, 0.4 kg sodium glutamate, 0.8 kg sucrose and 2.0 kg sodium chloride is prepared. The mixture is stirred with a rotary stirrer rotating at 30 revolutions per minute for 40 minutes.

15 The mixture is then heated to a temperature of 90°C and kept at that temperature for 30 minutes with constant stirring.

20 The mixture is then rapidly cooled, dried by evaporation for 13 hours at 70°C under a pressure of 20 mbar and ground. 3.5 kg flavouring agent in powder form having a dry matter content of 97% by weight are obtained.

Example 3

25 A mixture containing 2.0 kg of the liquid lovage extract obtained in accordance with Example 1, 0.35 kg glucose, 1.7 kg sucrose and 6.0 kg pulped onions is prepared. The mixture, which has a dry matter content of 46% by weight, is stirred with a rotary stirrer rotating at 30 revolutions per minute for 20 minutes.

30 The mixture is then heated to 90°C and stirred at that temperature for 1 hour.

35 The mixture is then cooled and dried by evaporation at 70°C under a pressure of 20 mbar to obtain 4.7 kg flavouring agent having a dry matter content of approximately 96 - 97% by weight.

**CLAIMS**

1. A process for the production of a flavouring agent, in which a mixture containing a sugar, a lovage extract which provides part of the amino acids and an amino acid source which provides the rest of the amino acids is prepared, the mixture is heat treated by cooking and the cooked mixture is concentrated.
2. A process for the production of a flavouring agent, in which a mixture containing a sugar, a salt, a starting material of lovage in the form of pulp, ground fresh leaves or dried and ground leaves, which provides part of the amino acids, and an amino acid source which provides the rest of the amino acids is prepared and the mixture is heat-treated by cooking.
3. A process as claimed in claim 1 or 2, characterized in that the amino acid source is selected from the group consisting of a vegetable protein hydrolyzate, a yeast extract, sodium glutamate and a vegetable extract rich in proteins.
4. A process as claimed in claim 1, characterized in that a salt is added to the concentrated mixture.
5. A process as claimed in claim 4, characterized in that the concentrated and salted mixture is dehydrated by heating for 1 to 3 hours at 55 to 80°C under a pressure of 10 to 150 mbar.
6. A process as claimed in claim 2, characterized in that the cooked mixture is dehydrated by heating for 8 to 15 hours at 65 to 75°C under a pressure of 10 to 20 mbar.