and the intermediate products may need to be stored for some time. Additionally, the materials used and the reaction containers need to be sterilised separately which can result in unwanted thermal stresses. Conventional methods therefore have a number of drawbacks. They are time-consuming, important volatile flavour components (e.g. H_2S) may be lost, materials are more likely to be exposed to non-sterile conditions, and greater equipment investment and maintenance is required.

The applicant has now found a method of preparing semi-finished seasoning products that can be carried out in a single reaction vessel and therefore avoids all or some of the disadvantages of conventional methods.

It is therefore an object of a preferred embodiment of the invention to provide a method for preparing a food seasoning product that at least goes part way to overcoming one or more of the above disadvantages, or at least to provide a useful alternative.

SUMMARY OF THE INVENTION

In a first aspect of the invention, there is provided a method for preparing a food seasoning product comprising a solid state fermentation step, an hydrolysis step and a thermal reaction step, wherein the fermentation step, the hydrolysis step and the thermal reaction step are carried out in the same reaction vessel.

The fermentation step, hydrolysis step and thermal reaction step may be carried out in sequence or simultaneously.

The method preferably includes a milling step after the solid state fermentation step to reduce the size of particles before the hydrolysis step. The size of the particles is preferably reduced to less than about 1 mm in diameter.

It is preferred that the pressure in the reaction vessel is maintained in the range 0 to 1.2 bar (gauge pressure).

The reaction vessel and materials introduced into the reaction vessel for preparing the food seasoning product are preferably sterilised together.

In preferred embodiments of the invention, the temperature, humidity and stirring rate for preparing the food seasoning product are controlled using a computer system.

In a second aspect, there is provided a seasoning product obtainable by the method according to the invention.

~~there is provided an apparatus for preparing a food seasoning product, the apparatus comprising:~~

~~a) a reaction vessel having a feed inlet capable of being opened and closed for introducing reaction materials into the reaction vessel, and a steam~~

~~inlet capable of being opened and closed for introducing steam into the reaction vessel;~~

~~b) a milling unit for milling reaction materials after the fermentation step;~~

~~c) a stirrer located inside the reaction vessel for stirring reaction materials in the reaction vessel;~~

~~d) a sealing device for sealing the reaction vessel;~~

~~e) a gas exhaust outlet for exhausting gas from the reaction vessel and controlling pressure in the reaction vessel;~~

~~f) an outlet;~~

~~g) a temperature control device for controlling temperature in the reaction vessel; and~~

~~h) a temperature and/or humidity measuring device for measuring temperature and/or humidity in the reaction vessel.~~

Preferably the temperature control device is a jacket surrounding an outer wall surface of the reaction vessel, the jacket having a heating medium inlet capable of being opened and closed and a heating medium outlet capable of being opened and closed, wherein the jacket is used for controlling the temperature in the reaction vessel by circulating the heating medium through the jacket.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows an apparatus for implementing the method of the invention.

DETAILED DESCRIPTION

The invention relates to a method for preparing a food seasoning product comprising a solid state fermentation step, an hydrolysis step and a thermal reaction step, wherein the solid state fermentation step, the hydrolysis step and the thermal reaction step are carried out in the same reaction vessel of a reaction apparatus. The solid state fermentation step and the hydrolysis step may be conducted either in sequence or simultaneously.

The starting materials for preparing the seasoning product are introduced into the reaction vessel, and the materials are sterilised at the same time that the reaction container itself is sterilised.

Since the hydrolysis step cannot be efficiently carried out on large pieces of solid fermentation material, it is important to mill the solid after the fermentation step to particles of a size suitable for the hydrolysis step. The particles are preferably milled to around 1 mm or less in diameter. Thus, a key element of the invention enabling all three method steps to be carried out in a single reaction vessel is the incorporation of a milling unit so that the solid can be milled *in situ* within the reaction vessel. Without this milling unit, the solid material would have to be removed from the reaction vessel after the

CLAIMS

1. A method for preparing a food seasoning product comprising a solid state fermentation step, a hydrolysis step and a thermal reaction step, wherein the fermentation step, the hydrolysis step and the thermal reaction step are carried out in the same reaction vessel.

2. A method as claimed in claim 1, wherein the solid state fermentation step, hydrolysis step and thermal reaction step are carried out in sequence.

3. A method as claimed in claim 1, wherein the solid state fermentation step, hydrolysis step and thermal reaction step are carried out simultaneously.

4. A method as claimed in any one of claims 1 to 3, wherein the pressure in the reaction vessel is in the range 0 to 1.2 bar (gauge pressure).

5. A method as claimed in any one of claims 1 to 4, wherein the solid state fermentation step is carried out on a reaction mixture having a moisture content in the range 15 % to 75 % w/w.~~, preferably 30 % to 70 % w/w~~

6. A method as claimed in claim 5 wherein the moisture content is in the range of 30% to 70% w/w.

~~6.~~7. A method as claimed in any one of claims 1 to ~~5~~6, including a milling step after the solid state fermentation step to reduce the size of particles before the hydrolysis step.

~~7.~~8. A method as claimed in claim ~~6~~7, wherein the size of the particles is reduced to less than about 1 mm in diameter.

~~8.~~9. A method as claimed in any one of claims 1 to ~~7~~8, wherein the reaction vessel and materials introduced into the reaction vessel for preparing the food seasoning product are sterilised together.

~~9.~~10. A method as claimed in any one of claims 1 to ~~8~~9, wherein temperature, humidity and stirring rate for preparing the food seasoning product are controlled using a computer system.

11. Seasoning product obtained by the method according to one of the claims 1 to 10.

~~10. An apparatus for preparing a food seasoning product according to any one of claims 1 to 9, the apparatus comprising:~~

~~a) a reaction vessel having a feed inlet capable of being opened and closed for introducing reaction materials into the reaction vessel, and a steam inlet capable of being opened and closed for introducing steam into the reaction vessel;~~

~~b) a milling unit for milling reaction materials after the fermentation step;~~

~~c) a stirrer located inside the reaction vessel for stirring reaction materials in the reaction vessel;~~

~~d) a sealing device for sealing the reaction vessel;~~

~~e) a gas exhaust outlet for exhausting gas from the reaction vessel and controlling pressure in the reaction vessel;~~

~~f) an outlet;~~

~~g) a temperature control device for controlling temperature in the reaction vessel; and~~

~~h) a temperature and/or humidity measuring device for measuring temperature and/or humidity in the reaction vessel.~~

~~11. An apparatus as claimed in claim 10, wherein temperature, humidity and stirring rate in the reaction vessel are controlled by a computer system.~~

~~12. An apparatus as claimed in claim 10 or claim 11, wherein the reaction vessel has an air inlet capable of being opened and closed for introducing air into the reaction vessel.~~

~~13. An apparatus as claimed in any one of claims 10 to 12, wherein the reaction vessel has a pressure gauge for measuring pressure in the reaction vessel.~~

~~14. An apparatus as claimed in any one of claims 10 to 13, wherein the temperature control device is a jacket surrounding an outer wall surface of the reaction vessel, the jacket having a heating medium inlet capable of being opened and closed and a heating medium outlet capable of being opened and closed, wherein the jacket is used for controlling the temperature in the reaction vessel by circulating the heating medium through the jacket.~~

~~15. An apparatus as claimed in claim 14, wherein the jacket surrounds an outer wall surface of the reaction vessel in a spiral shape.~~