[0005] In WO 2020/240095 A1, an oat fraction, which may be a residual fraction from oat milk production, is suggested for use in texturised food products. However, further uses for the residual fraction from oat milk production and for any other oat fractions having a low starch content would be needed.

[0006] Hydrolyzed vegetable protein (HVP) products are typically used as flavour enhancers in processed foods, They are obtained by acid hydrolysis or enzymatic hydrolysis of vegetable proteins, such as corn, wheat, pea, soya and rice proteins. The enzymatic hydrolysis process often employs a mixture of endoproteases and exoproteases. However, enzymatic hydrolysis may not always be efficient enough in achieving levels of free glutamate needed for achieving the desired flavour or may be associated with problems in microbiological quality.

[0007] US 9259018 B2 discloses a composition comprising a partially hydrolysed cereal protein, in particular wheat gluten. The composition can be used to produce protein supplemented food products for human consumption. US 8828462 B2 relates to a method for preparing a proteinaceous vegetable flavour enhancer by two-stage enzymatic hydrolysis starting from a vegetable material, in particular wheat gluten or soya protein. The method yields a solubilized vegetable material, which can be used for flavouring or as a food additive. WO 2020/120737 A1 relates to a method for producing a flavour composition comprising free glutamate by contacting wheat gluten with a protease, with an exopeptidase and with a glutaminase to produce the flavour composition.

[0008] However, there exists a need for a method for preparing oat-based condiments, sauces and seasonings, which avoids the above-mentioned drawbacks and allows for efficient enzymatic hydrolysis of oat raw material. The method should also allow production of oat-based condiments with favourable flavour profile and avoid bacterial contamination and/or putrefaction. In particular, it would be advantageous to provide a method that employs oat raw material with a low starch content, such as the by-product from oat milk production.

SUMMARY

[0009] The invention is defined by the features of the independent claims. Some specific embodiments are defined in the dependent claims.

[0010] The present invention is based on the concept of using oat raw material having a starch content of 5% or less and a protein content of at least 24%, based on dry matter, for preparing oat-based savoury condiments by a process comprising pH adjustment, heat treatment, enzymatic treatment and at least one of high-pressure homogenization, microfluidization and wet milling. The enzymatic treatment employs at least one endopeptidase, at least one exopeptidase and glutaminase.

[0011] According to a first aspect of the present disclosure, there is provided a method for preparing oat-based condiments, the method comprising or consisting essentially of the steps of:

a) providing oat raw material having a starch content of 5% or less and a protein content of at least 24%, based on dry matter;
b) preparing an aqueous oat suspension of the oat raw material and, if necessary, adjusting the solids content of the aqueous oat suspension to 5–40%,;
c) subjecting the aqueous oat suspension to heat treatment;
d) subjecting the heat treated aqueous oat suspension to at least one of high-pressure homogenization, microfluidization and wet milling;
e) cooling or allowing the aqueous oat suspension to cool to a temperature of 40-60 °C;
f) treating the aqueous oat suspension with enzymes comprising i) at least one endopeptidase, ii) at least one exopeptidase, and iii) glutaminase (EC 3.5.1.2);
g) inactivating the enzymes to obtain an enzyme-treated oat-based mass;
h) recovering the obtained oat-based mass for use as such or after seasoning as an oat-based savoury condiment; or
i) separating the obtained oat-based mass to a liquid part and to a solids part for use as oat-based condiments;

wherein the method comprises before enzyme treatment

- a step of adjusting the pH of the aqueous oat suspension to pH 4.0-6.2, or
- a step of adjusting the pH of the aqueous oat suspension to pH 4.0-6.7 and optionally adding a salt in an amount of 3-30% by weight of the oat suspension.

[0012] According to a second aspect of the present disclosure, there is provided the use of the enzyme-treated oat-based mass obtained by the method of the disclosure as a savoury condiment or in the production of savoury condiments or other food products.

[0013] Aspects of the invention comprise oat-based condiments obtainable by the method of the present disclosure.

[0014] Considerable advantages are obtained by the invention. First, the method of the disclosure yields oat-based savoury condiments with umami-like odour and taste and good microbiological quality. In addition, the oat-based savoury condiments obtained by the method of the disclosure are stable and provide a smooth mouthfeel.

[0015] Further, in a preferred example the invention employs a less utilized or even discarded residue of oat milk production in the preparation of value-added products. One of the advantages of using at least one of high-pressure homogenization, microfluidization and wet milling, together with enzyme treatment, is that, if so desired, the whole by-product from oat milk production may be used in the production of oat-based condiments, without separation of solids.

[0016] Further features and advantages of the present technology will appear from the following description of some embodiments.

EMBODIMENTS

[0017] The present invention is based on the concept of using oat raw material having a starch content of 5% or less, based on dry matter, for preparing oat-based savoury condiments by a process comprising pH adjustment, heat treatment, enzymatic treatment and at least one of high-pressure homogenization, microfluidization and wet milling. Typically, the enzymatic treatment employs at least one endopeptidase, at least one exopeptidase and glutaminase.

[0018] “Condiments” include savoury seasonings, spices, sauces or preparations that are added to food, typically after cooking, to impart a specific flavour, to enhance the flavour, or to complement the dish. Condiments may be added during cooking to add flavour or texture, prior to serving, or may be served separately from the food and added to taste by the diner. In the present context, condiments typically include but are not limited to savoury sauces, pastes and the like.