Claims

[Claim 1]

A method for producing a textured protein material that is freeze-dried, the method comprising:

(A) introducing a raw material including a protein raw material into an extruder, adding water to attain a water content of from 60 to 80 wt.% with respect to a total amount of the water and the raw material including the protein raw material, kneading and heating under pressure the resulting mixture, cooling the kneaded mixture in a cooling die installed at an outlet of the extruder and including a hole having a length of a longest portion of 10 mm or greater, and extruding the mixture through the cooling die to obtain an unpuffed textured product;

(B) cutting the unpuffed textured product obtained in (A) into a rectangular parallelepiped shape including sides from 5 to 12 mm, or cutting the unpuffed textured product obtained in (A) into a flat shape having a thickness from 0.1 to 5 mm, a length from 1 to 80 mm in an extrusion direction, and a width from 1 to 50 mm; and

(C) freezing the unpuffed textured product obtained in (B) at -5 to -25°C and freeze-drying the unpuffed textured product.

[Claim 2]

The method for producing a textured protein material according to claim 1, wherein, in step (A), a content of the protein raw material in the raw material is from 40 to 95 wt.% in terms of solid content.

[Claim 3]

The method for producing a textured protein material according to claim 1 or 2, wherein the protein raw material is a plant protein material.

~~[Claim 4]~~

~~The method for producing a textured protein material according to claim 2, wherein the protein raw material is a plant protein material.~~

[Claim ~~5~~ 4]

The method for producing a textured protein material according to claim ~~4~~ 3, wherein the plant protein material is a reduced-fat soybean protein material satisfying the following requirements (a) and (b):

(a) a protein content based on solid content is 40 wt.% or greater, and

(b) a lipid content of the soybean protein material, which is a content of an extract by a chloroform/methanol mixed solvent, is less than 40 wt.% with respect to the protein content.

[Claim ~~6~~ 5]

The method for producing a textured protein material according to any one of claims 1-4, wherein, in step (A), the raw material further includes a dietary fiber in an amount from 1 to 10 wt.% in terms of solid content.

[Claim ~~7~~ 6]

The method for producing a textured protein material according to any one of claims 1-5, wherein, in step (A), the raw material further includes a starch in an amount from 1 to 5 wt.% in terms of solid content.

~~[Claim 8]~~

~~The method for producing a textured protein material according to claim 1, wherein, in step (A), the raw material further includes a dietary fiber in an amount from 1 to 10 wt.% and a starch in an amount from 1 to 5 wt.% in terms of solid content.~~

~~[Claim 9]~~

~~The method for producing a textured protein material according to claim 5, wherein, in step (A), the raw material further includes a dietary fiber in an amount from 1 to 10 wt.% in terms of solid content.~~

~~[Claim 10]~~

~~The method for producing a textured protein material according to claim 5, wherein, in step (A), the raw material further includes a starch in an amount from 1 to 5 wt.% in terms of solid content.~~

~~[Claim 11]~~

~~The method for producing a textured protein material according to claim 5, wherein, in step (A), the raw material further includes a dietary fiber in an amount from 1 to 10 wt.% and a starch in an amount from 1 to 5 wt.% in terms of solid content.~~

[Claim ~~12~~ 7]

The method for producing a textured protein material according to any one of claims 1-6, wherein, in step (A), the raw material further includes an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.

~~[Claim 13]~~

~~The method for producing a textured protein material according to claim 7, wherein, in step (A), the raw material further includes an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

~~[Claim 14]~~

~~The method for producing a textured protein material according to claim 8, wherein, in step (A), the raw material further includes an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

~~[Claim 15]~~

~~The method for producing a textured protein material according to claim 9, wherein, in step (A), the raw material further includes an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

~~[Claim 16]~~

~~The method for producing a textured protein material according to claim 10, wherein, in step (A), the raw material further includes an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

~~[Claim 17]~~

~~The method for producing a textured protein material according to claim 11, wherein, in step (A), the raw material further includes an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

[Claim ~~18~~ 8]

The method for producing a textured protein material according to any one of claims 1-7, wherein the textured protein material is used for instant food.

~~[Claim 19]~~

~~The method for producing a textured protein material according to claim 5, wherein the textured protein material is used for instant food.~~

~~[Claim 20]~~

~~The method for producing a textured protein material according to claim 6, wherein the textured protein material is used for instant food.~~

~~[Claim 21]~~

~~The method for producing a textured protein material according to claim 7, wherein the textured protein material is used for instant food.~~

~~[Claim 22]~~

~~The method for producing a textured protein material according to claim 8, wherein the textured protein material is used for instant food.~~

~~[Claim 23]~~

~~The method for producing a textured protein material according to claim 9, wherein the textured protein material is used for instant food.~~

~~[Claim 24]~~

~~The method for producing a textured protein material according to claim 10, wherein the textured protein material is used for instant food.~~

~~[Claim 25]~~

~~The method for producing a textured protein material according to claim 11, wherein the textured protein material is used for instant food.~~

~~[Claim 26]~~

~~The method for producing a textured protein material according to claim 12, wherein the textured protein material is used for instant food.~~

~~[Claim 27]~~

~~The method for producing a textured protein material according to claim 13, wherein the textured protein material is used for instant food.~~

~~[Claim 28]~~

~~The method for producing a textured protein material according to claim 14, wherein the textured protein material is used for instant food.~~

~~[Claim 29]~~

~~The method for producing a textured protein material according to claim 15, wherein the textured protein material is used for instant food.~~

~~[Claim 30]~~

~~The method for producing a textured protein material according to claim 16, wherein the textured protein material is used for instant food.~~

~~[Claim 31]~~

~~The method for producing a textured protein material according to claim 17, wherein the textured protein material is used for instant food.~~

[Claim ~~32~~ 9]

A textured protein material that is freeze-dried, the textured protein material comprising a protein raw material in an amount from 40 to 95 wt.% in terms of solid content and having a shape satisfying the following (1) or (2):

(1) a rectangular parallelepiped shape including sides from 5 to 12 mm, or

(2) a flat shape having a thickness from 0.1 to 5 mm, a length from 1 to 80 mm in an extrusion direction, and a width from 1 to 50 mm.

[Claim ~~33~~ 10]

The textured protein material according to claim ~~32~~ 9, wherein the protein raw material is a plant protein material.

[Claim ~~34~~ 11]

The textured protein material according to claim ~~33~~ 9 or 10, wherein the plant protein material is a reduced-fat soybean protein material satisfying the following requirements (a) and (b):

(a) a protein content based on dry matter is 40 wt.% or greater, and

(b) a lipid content of the soybean protein material, which is a content of an extract by a chloroform/methanol mixed solvent, is less than 40 wt.% with respect to the protein content.

[Claim ~~35~~ 12]

The textured protein material according to any one of claims ~~34~~ 9-11, further comprising a dietary fiber in an amount from 1 to 10 wt.% in terms of solid content.

[Claim ~~36~~ 13]

The textured protein material according to any one of claims ~~34~~ 9-12, further comprising a starch in an amount from 1 to 5 wt.% in terms of solid content.

~~[Claim 37]~~

~~The textured protein material according to claim 34, further comprising a dietary fiber in an amount from 1 to 10 wt.% and a starch in an amount from 1 to 5 wt.% in terms of solid content.~~

[Claim ~~38~~ 14]

The textured protein material according to any one of claims ~~35~~ 9-13, further comprising an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.

~~[Claim 39]~~

~~The textured protein material according to claim 36, further comprising an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

~~[Claim 40]~~

~~The textured protein material according to claim 37, further comprising an oil and fat in an amount from 0.1 to 15 wt.% in terms of solid content.~~

[Claim ~~41~~ 15]

The textured protein material according to any one of claims ~~32~~ 9-14, wherein the textured protein material is used for instant food.

~~[Claim 42]~~

~~The textured protein material according to claim 34, wherein the textured protein material is used for instant food.~~

[Claim ~~43~~ 16]

A meat substitute comprising:

the textured protein material described in any one of claims ~~32~~ 9-14.

~~[Claim 44]~~

~~A meat substitute comprising:~~

~~the textured protein material described in claim 34.~~

[Claim ~~45~~ 17]

An instant food ingredient comprising:

the textured protein material described in any one of claims ~~32~~ 9-14.

~~[Claim 46]~~

~~An instant food ingredient comprising:~~

~~the textured protein material described in claim 34.~~