

DESCRIPTION

TITLE OF THE INVENTION

CHOUX PASTRY AND METHOD FOR PRODUCING THE SAME

Technical Field

[0001]

The present invention relates to a choux pastry having an excellent soft and chewy texture (rice cake-like texture: waxy texture like a rice-cake just made), a large capacity, and a thin shell thickness, a method for producing the same, and a choux pastry dough and a flour mix for the choux pastry. The choux pastry herein is a "puff pastry" produced by puffing and cooking a choux pastry dough and also called a "choux shell".

Background Art

[0002]

A cream puff, produced by filling a choux pastry (choux case) with cream, can be easily eaten and is one of the foods favored all over the world. Conventionally, a choux pastry (choux shell), which constitutes the outer shell of a cream puff and the like, has been produced basically by a method including boiling a mixture of water and oils and fats, adding flour to the mixture and allowing the mixture to gelatinize, gradually adding egg to adjust the hardness appropriately, squeezing the dough on a baking sheet, and placing the sheet into the oven to thereby bake the dough. However, homogenizing the shape, size, and good texture of baked products has depended

entirely on the experience and intuition of experts, and sophisticated skill is necessary to obtain satisfactory choux pastries. In compensation for this, various raw materials to be used and production methods have been recently suggested. Choux pastries having a crispy texture were preferred traditionally. In these days, more and more consumers prefer a soft and chewy texture (rice cake-like texture), and choux pastries having a rice cake-like texture have been required.

[0003]

Patent document 1 describes, as a bakery product having a rice cake-like texture, a sesame dumpling-like doughnut produced by using a raw material flour comprising 50 to 80 parts by mass of an ungelatinized starch, 6 to 25 parts by mass of a pregelatinized starch, 7 to 30 parts by mass of wheat flour, and 7 to 25 parts by mass of a saccharide. Although the doughnut is mentioned to have a rice cake-like texture, in the case where hydroxypropylated tapioca starch, which is described as a preferable starch, is used in a choux pastry dough, the capacity of the choux pastry is increased insufficiently and the choux shell tends to be thick. When the choux pastry is used to make a cream puff, a problem exists in which the choux shell is difficult to bite off, the cream inside is likely to pop out while being bitten off, and thus the cream puff is difficult to eat.

[0004]

Patent document 2 describes a method for producing a pastry dough comprising an oil-in-water emulsion and a modified starch, wherein the contact temperature of the

oil-in-water emulsion and the modified starch containing a pregelatinized starch is adjusted to a temperature of (the melting point of the oil phase of the oil-in-water emulsion + 5°C) or less and wherein the pastry dough has a rice cake-like texture. Baking the pastry dough provides a cavity, but the cavity is small and the shell becomes thick. Thus, the dough is not suitable for choux pastries.

[0005]

Patent document 3 discloses a choux pastry having a rice cake-like texture and comprising a large cavity, wherein the pastry comprises 5 to 30% by weight of waxy rice flour and 30 to 95% by weight of tapioca modified starch in 100 parts by weight of the flour used for the choux pastry dough. For the choux pastry described in the patent document, it is necessary to adjust the temperature of the flour on mixing to a specific temperature (80 to 90°C). The production step is troublesome because the production of the choux pastry requires conducting a heating step twice and the like. Accordingly, the production is not easy by this method.

[0006]

Meanwhile, in choux pastry production, methods for providing a choux pastry dough having a satisfactory puffing ability are desired. Patent document 4 discloses, as such a method, a method including using a mix comprising 75 to 50 parts by weight of a pregelatinized starch, 25 to 50 parts by weight of unpregelatinized wheat starch, 1 to 10 parts by weight of casein sodium, and 2 to 25 parts by weight of whole egg powder, and Patent document 5 discloses a method including using a choux-

shell flour mix comprising 100 parts by weight of a starch mixture of a pregelatinized crosslinked starch and an uncrosslinked pregelatinized starch and 0.1 to 20 parts by weight of casein. However, these methods do not provide choux pastries having a rice cake-like texture, and are not necessarily satisfactory in respect of productivity and ease of eating.

[0007]

Meanwhile, there is also disclosed a method for providing a puffed food product having a satisfactory puffing ability by using amylopectin starch and the like. For example, Patent document 6 discloses a method for providing a puffed food product having an improved puffing property by providing a composition containing amylopectin starch, heating at least a portion of the composition to a temperature higher than the glass transition temperature of the composition, and cooling the composition to a temperature of the glass transition temperature or less. Patent document 7 discloses a method for preparing a dough for providing a puffed food product in a hollow structure, by using a starchy raw material composed of at least one selected from a starch or a grain flour having an amylose content of 25% by weight or less, pregelatinized products, acetylated products, and etherized products thereof. However, the puffed food products described in the patent documents are methods for providing puffed food products having a satisfactory puffing ability, but neither of the products exhibits a rice cake-like texture. It is not possible to apply the methods of the disclosures as

methods for producing a choux pastry having a rice cake-like texture.

[0008]

As described above, various methods have been disclosed as methods for producing a choux pastry in recent years. With the current trend of consumers preferring a soft and chewy texture (rice cake-like texture), choux pastries having a rice cake-like texture are also required. In this situation, provided is no method yet capable of easily producing a choux pastry having an excellent rice cake-like texture, having a large capacity, and being easy to eat because of its thin choux shell.

Prior Art Documents

Patent Documents

[0009]

Patent Document 1: Japanese unexamined Patent Application Publication No. 2004-254520

Patent Document 2: Japanese unexamined Patent Application Publication No. 2008-263944

Patent Document 3: Japanese unexamined Patent Application Publication No. 2013-123382

Patent Document 4: Japanese unexamined Patent Application Publication No. 06-038666

Patent Document 5: Japanese unexamined Patent Application Publication No. 08-275721

Patent Document 6: Japanese unexamined Patent Application Publication (Translation of PCT Application) No. 2002-538799

Summary of the Invention

Object to be Solved by the Invention

[0010]

It is an object of the present invention to provide a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell, a method for producing the same, a choux pastry dough for producing the choux pastry, and a flour mix for preparing the choux pastry dough. It is a further object of the present invention to provide a choux pastry dough which enables easy production of a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell, and a flour mix for the choux pastry dough.

Means to Solve the Object

[0011]

The present inventors have extensively studied starchy raw materials used for production of choux pastries, their blending and the like to solve the objects described above and have found that a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell can be produced by preparing a flour mix for a choux pastry dough by using a starchy raw material in which (A) a starch containing 80% by mass or more of amylopectin and (B) a pregelatinized starch are blended in specific amounts, wherein at least 8 parts by mass or more of the starch having an amylopectin content

of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for the choux pastry; or by preparing a flour mix for a choux pastry dough by using a starchy raw material in which (A) a starch containing 80% by mass or more of amylopectin, (B) a pregelatinized starch, and (C) a grain flour are blended in specific amounts, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for the choux pastry; and preparing a choux pastry dough by using the flour mix for a choux pastry dough to produce a choux pastry, thereby having completed the present invention.

[0012]

That is, the present invention consists in a choux pastry produced: by using a choux pastry dough prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or by using a choux pastry dough prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B < 100$ parts by mass, and (C) a grain

flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

[0013]

The present invention has made it possible to provide a choux pastry having an excellent rice cake-like texture as well as having a large capacity, having a thin choux shell, and being easy to eat by blending (A) a starch having an amylopectin content of 80% by mass or more, (B) a pregelatinized starch, and additionally (C) a grain flour in a specific blend proportion, as the starchy raw material for choux pastry production. The present invention has also made it possible to produce a choux pastry having an excellent rice cake-like texture, having a large capacity, having a thin choux shell, and being easy to eat by using a flour mix for a choux pastry dough prepared from the starchy raw material for choux pastry production and a choux pastry dough prepared from the flour mix for a choux pastry dough.

[0014]

In the starchy raw material for choux pastry production of the present invention, it is possible to employ an amount of the starch having an amylopectin content of 80% by mass or more of (A) to be blended of preferably 80 parts by mass to 92 parts by mass based on

100 parts by mass of the starchy raw material comprised in the choux pastry. Also in the starchy raw material for choux pastry production of the present invention, it is possible to employ an amount of the starch having an amylopectin content of 80% by mass or more of (A) to be blended of 80 parts by mass to 90 parts by mass, an amount of the pregelatinized starch of (B) to be blended of 10 to 20 parts by mass, and an amount of the grain flour of (C) to be blended of 10 parts by mass or less based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

[0015]

In the starchy raw material for choux pastry production of the present invention, waxy tapioca starch can be used as the starch having an amylopectin content of 80% by mass or more. As the pregelatinized starch, a pregelatinized crosslinked starch can be used.

[0016]

The present invention involves an embodiment of a method for producing a choux pastry comprising: preparing a dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or

preparing a dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; and using the dough as the choux pastry dough to thereby produce the pastry dough.

[0017]

Also the present invention involves an embodiment of a choux pastry dough for choux pastry production, wherein the dough is prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by

mass and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production, based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

[0018]

Furthermore, the present invention involves an embodiment of a flour mix for a choux pastry dough, wherein the flour mix is prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or by blending a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw

material for choux pastry dough production, based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

[0019]

The present invention also involves an embodiment of a cream puff produced by filling the choux pastry of the present invention with cream.

[0020]

That is, the present invention specifically comprises the following embodiments of the invention:

[1] A choux pastry produced by preparing a choux pastry dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B \leq 100$ parts by mass, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

[2] The choux pastry according to [1], wherein the choux pastry is produced by preparing a choux pastry dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B < 100$ parts by mass and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based

on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

[3] The choux pastry according to [1] or [2], wherein the amount of the starch having an amylopectin content of 80% by mass or more of (A) to be blended is 80 parts by mass to 92 parts by mass based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

[4] The choux pastry according to [2] or [3], wherein the amount of the starch having an amylopectin content of 80% by mass or more of (A) to be blended is 80 parts by mass to 90 parts by mass, the amount of the pregelatinized starch of (B) to be blended is 10 to 20 parts by mass, and the amount of the grain flour of (C) to be blended is 10 parts by mass or less, based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

[5] The choux pastry according to any one of [1] to [4], wherein the starch having an amylopectin content of 80% by mass or more is waxy tapioca starch.

[6] The choux pastry according to any one of [1] to [5], wherein the pregelatinized starch is a pregelatinized crosslinked starch.

[7] A method for producing a choux pastry comprising: preparing a dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, based on

100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; and using the dough as the choux pastry dough to produce the choux pastry.

[8] The method for producing a choux pastry according to [7], comprising: preparing a dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass, and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; and using the dough as the choux pastry dough to produce the choux pastry.

[9] A choux pastry dough for choux pastry production, wherein the dough is prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or

more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

[10] A flour mix for a choux pastry dough, wherein the flour mix is prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or by blending a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the

starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry dough production.

[11] A cream puff produced by filling the choux pastry according to any one of [1] to [6] with cream.

Effect of the Invention

[0021]

The present invention can provide a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell, and provides a choux pastry exhibiting a satisfactory appearance and being easy to eat while having a rice cake-like texture and having a higher product value than that of conventional ones. The present invention also provides a choux pastry dough and a flour mix for a choux pastry dough which enable easy production of a choux pastry exhibiting a satisfactory appearance and being easy to eat while having a rice cake-like texture. The present invention requires no heating step when the raw material flour is mixed on production of a choux pastry, and enables easy and stable production of a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell. Thus the present invention provides a method for producing a choux pastry which is excellent also in respect of productivity.

Mode of Carrying Out the Invention

[0022]

The present invention comprises producing and providing a choux pastry which has an excellent rice cake-like texture, a large capacity, and a thin choux shell, wherein the choux pastry is produced: by using a choux pastry dough prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; or by using a choux pastry dough prepared by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B < 100$ parts by mass, and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

[0023]

The choux pastry in the present invention, which is also referred to as a choux case, is a pastry prepared by

baking a choux pastry dough to be puffed up like a dome. The choux pastry is formed by a choux shell and has a cavity inside.

[0024]

Examples of the starch having an amylopectin content of 80% by mass or more, the ingredient (A), used in the present invention include waxy tapioca starch, waxy corn starch, waxy potato starch, waxy rice starch, waxy wheat starch, tapioca starch, and modified starches thereof. One of the features of the choux pastry of the present invention is that the choux pastry comprises 70 parts by mass or more of a starch having an amylopectin content of 80% by mass or more, as the ingredient (A) based on 100 parts by mass of the starchy raw material and the ingredient (A) comprises at least 8 parts by mass or more of waxy tapioca starch. As the ingredient (A), waxy tapioca starch can be singly used, or one or more starches having an amylopectin content of 80% by mass or more can be additionally combined with waxy tapioca starch. The one or more starches having an amylopectin content of 80% by mass or more to be combined with waxy tapioca starch are preferably waxy corn starch and tapioca starch.

[0025]

The starch having an amylopectin content of 80% by mass or more used in the present invention is ungelatinized starch, which can be subjected to one or more process treatments selected from bleaching, hydroxypropylation, acetylation, crosslinking, oxidization, and acid dipping, as required. Hydroxypropylation herein refers to a treatment to allow propylene oxide to react

with starch, and acetylation refers to a treatment to allow acetic anhydride, a vinyl acetate monomer or the like to react with starch. Both the treatments can be performed in accordance with a routine method. Crosslinking refers to a treatment to add a crosslinking agent such as a metaphosphate and phosphorous oxychloride to starch to thereby allow them to react and the like. This treatment can be performed in accordance with a routine method. Oxidation refers to a treatment to allow Na hypochlorite to react with starch, and acid dipping refers to a treatment to allow sulfuric acid to react with starch. Both the treatments can be performed in accordance with a routine method.

[0026]

Waxy tapioca starch, which is one ingredient (A) of the present invention, refers to a starch made from waxy tapioca and composed of substantially 100% of amylopectin. As the waxy tapioca starch, waxy tapioca starch manufactured, from waxy tapioca potatoes obtained from Thai Tapioca Deveiopment Institute (Thailand) as a raw material, by Siam Quality Starch Co., Ltd. (Thailand) can be utilized.

[0027]

The choux pastry of the present invention contains a pregelatinized starch as the ingredient (B). A pregelatinized starch refers to a starch in powder form obtained by drying and, as required, pulverizing a gelatinized (pregelatinized) starch. The technique for pregelatinizing a starch is publicly-known, and examples of the technique include a method including heating starch

in the presence of moisture using a drum dryer, an extruder, or a spray dryer and the like.

[0028]

Types of the raw material of the pregelatinized starch used in the present invention are not particularly limited. Examples include wheat starch, potato starch, tapioca starch, corn starch, rice starch, sago starch, sweet potato starch, and various waxy starches. One pregelatinized starch can be used singly or two or more pregelatinized starches can be used in combination. Of these, the raw material of the pregelatinized starch used in the present invention is preferably potato starch, tapioca starch, and waxy starch thereof. The pregelatinized starch used in the present invention can be a pregelatinized modified starch prepared by subjecting a raw-material starch to at least one process treatment selected from hydroxypropylation, acetylation, crosslinking, oxidization, and acid dipping in advance as required followed by subjecting the modified starch to pregelatinization. The pregelatinized modified starch used in the present invention is preferably a pregelatinized crosslinked starch and more preferably a pregelatinized hydroxypropylated crosslinked starch.

[0029]

The degree of swelling in cold water of the pregelatinized starch used in the present invention is not particularly limited, but is preferably 10 to 90 and more preferably 50 to 80 in respect that a proper viscosity can be imparted on production of a choux pastry dough. The degree of swelling in cold water can be measured under the

following conditions. Two grams of a pregelatinized starch sample is homogeneously dispersed in 100 ml of water. This solution is poured into a 100 ml graduated cylinder and left to stand for 24 hours. The volume of the deposited layer of the starch is read out, and the value (ml) is taken as the degree of swelling in cold water.

[0030]

In the choux pastry of the present invention, in addition to (A) the starch having an amylopectin content of 80% by mass or more and (B) the pregelatinized starch as a starchy raw material, (C) a grain flour can be blended as a starchy raw material. The amount of (C) the grain flour to be blended is in the range of 22 parts by mass or less based on 100 parts by mass of the starchy raw material. Example of the grain flour include wheat flour (soft flour, all-purpose flour, semi-strong flour, strong flour, super strong flour, and wheat flour made in Japan), whole-wheat flour, bran, rye, rice, corn, barley, Japanese millet, foxtail millet, common millet, germinated brown rice, black rice, red rice, soybean, adzuki bean, amaranthus, and quinoa. As the starchy raw material used in the present invention, in addition to (A) the starch having an amylopectin content of 80% by mass or more and (B) the pregelatinized starch, a starch other than the starch and/or a grain flour can be used as a starchy raw material, but (C) the grain flour is preferably used as a starchy raw material other than the starch (A) and the starch (B), from the viewpoint that a flavor derived from the grain flour can be imparted. An example of a

particularly preferable grain flour can include wheat flour.

[0031]

A choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell can be produced by blending 70 parts by mass or more and 92 parts by mass or less of a starch having an amylopectin content of 80% by mass or more and 8 parts by mass or more and 20 parts by mass or less of a pregelatinized starch based on 100 parts by mass of the starchy raw material obtained as above such that 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more is waxy tapioca starch. The blend proportion of the starch having an amylopectin content of 80% by mass or more is more preferably 80 parts by mass or more and 92 parts by mass or less, still more preferably 80 parts by mass or more and 90 parts by mass or less. The blend proportion of the pregelatinized starch is more preferably 10 parts by mass or more and 20 parts by mass or less, still more preferably 10 parts by mass or more and 15 parts by mass or less. The blend proportion of the waxy tapioca starch which is blended as the starch having an amylopectin content of 80% by mass or more is more preferably 10 parts by mass or more, still more preferably 20 parts by mass or more. A choux pastry having a more preferable rice cake-like texture, a more preferable capacity of the choux pastry, and a more preferable thickness of the choux shell can be produced by setting the blend proportion of each starchy raw material as described above.

[0032]

For production of the choux pastry of the present invention, in addition to the starchy raw material, yeast, baking powder, salt, water, and other auxiliary materials can be added as required. A choux pastry dough is prepared from the raw materials described above and is subjected to heat treatment such as baking, frying, or steaming to thereby produce the choux pastry of the present invention.

[0033]

Incidentally, auxiliary materials are auxiliary materials commonly used for producing a choux pastry dough or auxiliary materials used depending on desired qualities and the like. Specific examples include eggs such as whole egg, egg white, egg yolk, dried whole egg, dried egg white, and dried egg yolk, saccharides such as sugar, brown sugar, glucose, isomerized sugar, rare sugar, isomerized sugar containing rare sugar (for example, Rare Sugar Sweet manufactured by Matsutani Chemical Industry Co., Ltd.), oligosaccharide, dextrin, and reduced starch hydrolyzates, milk products such as powdered fat-free milk, whole milk powder, and milk, oils and fats such as shortening, margarine, butter, powdered oils and fats, and emulsified oils and fats, emulsifiers such as glycerin fatty acid ester, sucrose fatty acid ester, and calcium stearoyl lactate, spices such as cinnamon and basil, foreign liquors such as brandy and rum, dried fruit such as raisin and dried cherry, nuts such as almond and peanut, enzymes such as α -amylase, β -amylase, glucooxidase, protease, lipase, xylanase, hemicellulase, and glucose oxidase, flavors (for example, vanilla essence),

artificial sweeteners (for example, as aspartame), dietary fibers such as pectin, guar gum hydrolyzates, agarose, glucomannan, polydextrose, sodium alginate, cellulose, hemicellulose, lignin, chitin, chitosan, indigestible dextrin, and citrus fiber, and thickening agents such as active gluten, cocoa powder, xanthan gum, guar gum, and gellan gum.

[0034]

In the present invention, the ingredient (A), the ingredient (B), and, as required, the ingredient (C) described above can be premixed and provided as a flour mix. In this case, manufacturers do not have to mix starchy raw materials and can simplify the production procedure for the choux pastry. In this case, the flour mix can comprise baking powder, salt, auxiliary raw materials, and the like as required.

[0035]

Methods for producing a choux pastry includes a method including mixing raw materials in a heating state (heat-mixing step) and a method including mixing raw materials in a non-heating state. The heat-mixing step refers to a step including premixing, for example, water, oils and fats, and optionally salt, sugar, adding powders such as a starchy raw material into the boiled premix, and stirring the mixture. Thereafter, egg, a leavening agent and the like are added and stirred to produce a choux pastry dough. In the present invention, as the method for producing a choux pastry dough, both of the method including the heat-mixing step and the method without the heat-mixing step can produce the intended choux pastry.

In the present invention, a preferred choux pastry can be produced even if the heat-mixing step is not implemented, and thus, the method for producing a choux pastry not including the heat-mixing step is preferred. The present invention is superior to conventional techniques in respect that the present invention can easily produce a choux pastry having a satisfactory puffing ability, having an excellent rice cake-like texture, and furthermore, being easy to eat. Additionally, the production method of the present invention can be applied to frozen products for distributing choux pastries refrigerated after production, and to frozen doughs employed for streamlining of the production step of choux pastry doughs and for the purpose of distribution in recent years.

[0036]

Examples of products to which the choux pastry or choux pastry dough of the present invention can be applied include cream puffs, eclairs, French crullers, deep-fried choux pastries, or pie choux and cookie choux, which are products produced by combination with other dough. Examples of doughs to be squeezed similar to the choux pastry dough include Pobiria and Pão de queijo. It is possible to allow the products to have an increased capacity as well as a rice cake-like texture.

[0037]

The present invention will be described specifically with reference to the following Examples and Comparative Examples, but the scope of the present invention is not to be construed as limited to the following Examples.

Examples

[0038]

[Evaluation Method]

[0039]

(Measurement of Thickness of Choux Shell)

A choux pastry was cut such that the cutting plane passes through the vertex of the choux pastry and is perpendicular to the bottom of the choux pastry. The thickness of the shell each at the top and the bottom of the cutting plane of the choux pastry was measured with a vernier caliper. The average of the measurement values of the two points at the top and the bottom was taken as the thickness of the choux shell. When the shell thickness exceeds 7 mm in the choux shell of a choux pastry having a rice cake-like texture, a cream puff produced by placing cream in the choux pastry becomes difficult to eat because the cream inside becomes likely to pop out while the shell is bitten off. Thus, the shell thickness is preferably 7 mm or less in the choux shell of the choux pastry having a rice cake-like texture. Alternatively, when the shell thickness is 5 mm or less, a cream puff becomes easier to eat and preferable even with a choux pastry having a rice cake-like texture. Based on the above, the shell thickness was evaluated as follows.

[0040]

<Determination criteria>

◎: 5 mm or less

○: more than 5 mm and 7 mm or less

×: more than 7 mm

[0041]

(Measurement of Capacity of Choux shell)

The capacity of the choux shell was measured with an automatic volumeter (3D Laser Volume Measurement Selnac-win VM2100, ASTEX Co., Ltd.). The capacity was evaluated as follows based on the capacity of the choux pastry produced by using the blend 1-4 described in Table 3, which employs tapioca starch conventionally used as a starch providing a rice cake-like texture.

[0042]

<Determination criteria>

⊙: 70 cm³ or more

○: 52 cm³ or more and less than 70 cm³

×: less than 52 cm³

[0043]

(Evaluation of Texture of Choux Pastry)

The texture of the choux pastry was evaluated by 10 well-trained examiners. Each examiner was asked to evaluate the rice cake-like texture based on five grades: for example, the rice cake-like texture of a choux pastry produced by using wheat flour singly as the starchy raw material was graded as 1, and the case of a strong rice cake-like texture was graded as 5. The average of the scores of the rice cake-like texture of the 10 examiners was used as the rice cake-like texture value of the choux pastry, which was evaluated as follows.

[0044]

<Determination criteria>

⊙: 4 or more

○: 3 or more and less than 4

×: less than 3

[0045]

[Consideration of Choux Pastry 1]

[0046]

(Production of Choux Pastry)

The starchy raw materials described in the blend 1-1 to blend 1-7 in Table 2 were provided. Each starchy raw material, liquid margarine, and dextrin were mixed in the proportion described in Table 1. To the mixture, whole egg and water were added, and the resulting mixture was sufficiently stirred to prepare each choux pastry dough. The choux pastry dough was placed in a squeeze bag, squeezed onto a baking sheet such that the amount of the dough reached 10 g. After misted, the dough was baked for 17 minutes in an oven preheated to 180°C at the upper flame and 190°C at the lower flame to obtain choux shells. The choux shells taken out of the oven were retained at 20°C for 40 minutes and subjected to various choux pastry measurements.

[0047]

[Table 1]

Blend table	Blend proportion (g)
Starchy raw material	100
Dextrin	25
Liquid margarine	50
Whole egg	60
Water	100

[0048]

[Table 2]

Composition	Blend 1-1	Blend 1-2	Blend 1-3	Blend 1-4	Blend 1-5	Blend 1-6	Blend 1-7
Pregelatinized starch*1	10	10	10	10	10	10	10
Waxy tapioca starch	90	-	-	-	-	-	-
Hydroxypropylated crosslinked waxy tapioca starch	-	90	-	-	-	-	-
Tapioca starch	-	-	90	-	-	-	-
Hydroxypropylated crosslinked tapioca starch	-	-	-	90	-	-	-
Waxy corn starch	-	-	-	-	90	-	-
Waxy potato starch	-	-	-	-	-	90	-
Waxy rice starch	-	-	-	-	-	-	90

*1: Pregelatinized hydroxypropylated crosslinked waxy potato starch

[0049]

(Results)

The results are shown in Table 3. When a combination of the pregelatinized starch and waxy tapioca starch or a combination of the pregelatinized starch and hydroxypropylated waxy tapioca starch was used as the starchy raw material, it was possible to produce preferable choux pastries having an excellent rice cake-like texture, a large capacity, and a thin choux shell. In this case, a heating step was not required on mixing raw material flours during production of the choux pastry dough, and it was possible to produce preferable choux pastries in a simple production step. In contrast, when waxy tapioca starch was not contained, it was not possible to produce preferable choux shells, as shown in Table 3.

[0050]

[Table 3]

	Example	Example	Comparative	Comparative	Comparative	Comparative	Comparative
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		1	2	Example 1	Example 2	Example 3	Example 4	Example 5
		Blend 1-1	Blend 1-2	Blend 1-3	Blend 1-4	Blend 1-5	Blend 1-6	Blend 1-7
Measurement values	Shell thickness mm	4	5	8	10	8	10	4
	Capacity cm ³	73.9	70.6	28.9	51.4	42.6	65.6	40.8
	Texture Score	4.9	5	3.5	4.5	2.5	2.3	3.4
Evaluation	Shell thickness	⊙	⊙	×	×	×	×	⊙
	Capacity	⊙	⊙	×	×	×	○	×
	Texture	⊙	⊙	○	⊙	×	×	○

[0051]

[Consideration of Choux Pastry 2 (Consideration of Amount of Waxy Tapioca Starch Blended)]

[0052]

(Production)

Choux pastries were produced in the same manner as in Consideration of Choux Pastry 1 except that the blends 2-1 to 2-4 shown in Table 4 were used as the starchy raw material.

[0053]

(Results)

The results are shown in Table 5. When 70 parts by mass or more of waxy tapioca starch was blended based on the 100 parts by mass of the starchy raw material in combination with the pregelatinized starch, it was possible to produce preferable choux pastries. When the content of the waxy tapioca starch was 60 parts by mass, it was not possible to produce preferable choux pastries in respect of the capacity and shell thickness of the

choux pastries, even in combination with the pregelatinized starch.

[0054]

[Table 4]

	Blend 2-1	Blend 2-2	Blend 2-3	Blend 2-4
Pregelatinized starch*1	10	10	10	10
Waxy tapioca starch	80	80	70	60
Tapioca starch	10	-	-	-
Wheat flour	-	10	20	30

*1: Pregelatinized hydroxypropylated crosslinked waxy potato starch

[0055]

[Table 5]

		Example 3	Example 4	Example 5	Comparative Example 6
		Blend 2-1	Blend 2-2	Blend 2-3	Blend 2-4
Measurement values	Shell thickness mm	4	6	6	8
	Capacity cm ³	82.5	66.5	53.3	45.3
	Texture Score	4.6	4.2	3.8	3.3
Evaluation	Shell thickness	⊙	○	○	×
	Capacity	⊙	○	○	×
	Texture	⊙	⊙	○	○

[0056]

[Consideration of Choux Pastry 3 (Consideration of Ingredient (A))]

[0057]

(Production)

Choux pastries were produced in the same manner as in Consideration of Choux Pastry 1 except that the blends 3-1 to 3-9 shown in Table 6 were used as the starchy raw material.

[0058]

(Results)

When the content of the waxy tapioca starch as the ingredient (A) was 5 parts by mass, it was not possible to produce preferable choux pastries, even if 90 parts by mass of the starch having an amylopectin content of 80% by mass or more was blended. When the waxy tapioca starch and the starch having an amylopectin content of 80% by mass or more other than the waxy tapioca starch were combined as the ingredient (A), it was found that at least 8 parts by mass or more of the waxy tapioca starch was required in order to produce the choux pastries of objects of the present invention. Also as shown in Comparative Example 10, when the total content of the ingredient (A) was 55 parts by mass, it was not possible to obtain preferable choux pastries, even if 10 parts by mass of the waxy tapioca starch was contained.

[0059]

[Table 6]

	Blend 3-1	Blend 3-2	Blend 3-3	Blend 3-4	Blend 3-5	Blend 3-6	Blend 3-7	Blend 3-8	Blend 3-9
Pregelatinized starch ^{*1}	10	10	20	10	10	10	10	10	10
Waxy tapioca starch	4	5	5	8	10	10	10	15	20
Waxy corn starch	86	85	65	82	80	-	45	75	70
Hydroxypropylated tapioca starch	-	-	-	-	-	70	-	-	-
Wheat flour	-	-	10	-	-	10	35	-	-

*1: Pregelatinized hydroxypropylated crosslinked waxy potato starch

[0060]

[Table 7]

		Comparative Example 7	Comparative Example 8	Comparative Example 9	Example 6	Example 7	Example 8	Comparative Example 10	Example 9	Example 10
		Blend 3-1	Blend 3-2	Blend 3-3	Blend 3-4	Blend 3-5	Blend 3-6	Blend 3-7	Blend 3-8	Blend 3-9
Measurement values	Shell thickness mm	9.1	4.2	8.4	3.3	2.2	5.4	3.5	3	3
	Capacity cm ³	39.5	46.9	37	56.1	52.2	54.5	25.4	63.5	62.1
	Texture Score	2.8	2.8	2.4	3	3.2	4.2	2.6	3.5	3.7
Evaluation	Shell thickness	×	⊙	×	⊙	⊙	○	⊙	⊙	⊙
	Capacity	×	×	×	○	○	○	×	○	○
	Texture	×	×	×	○	○	⊙	×	○	○

[0061]

[Consideration of Choux Pastry 4 (Consideration of Ingredient (B))]

[0062]

(Production)

Choux pastries were produced in the same manner as in Consideration of Choux Pastry 1 except that the blends 4-1 to 4-8 shown in Table 8 were used as the starchy raw material.

[0063]

(Results)

At 8 parts by mass to 20 parts by mass of the pregelatinized starch as the ingredient (B), it was possible to produce preferable choux pastries of objects of the present invention. When choux pastries produced by using the blend 4-5 (the ingredient B is a pregelatinized hydroxypropylated crosslinked starch) and the blend 4-6 (the ingredient B is a pregelatinized crosslinked starch) as the starchy raw material were compared, it was possible

to produce preferable choux pastries having a thinner choux shell by using the pregelatinized hydroxypropylated crosslinked starch as the ingredient (B).

[0064]

[Table 8]

	Blend 4-1	Blend 4-2	Blend 4-3	Blend 4-4	Blend 4-5	Blend 4-6	Blend 4-7	Blend 4-8
Pregelatinized starch ^{*1}	5	8	8	10	10	-	20	25
Pregelatinized starch ^{*2}	-	-	-	-	-	10	-	-
Waxy tapioca starch	70	70	92	70	90	90	80	70
Wheat flour	25	22	-	20	-	-	-	5

*1: Pregelatinized hydroxypropylated crosslinked waxy potato starch

*2: Pregelatinized crosslinked potato starch phosphate

[0065]

[Table 9]

		Comparative Example 11	Example 11	Example 12	Example 13	Example 14	Example 15	Example 16	Comparative Example 12
		Blend 4-1	Blend 4-2	Blend 4-3	Blend 4-4	Blend 4-5	Blend 4-6	Blend 4-7	Blend 4-8
Measurement values	Shell thickness mm	Unmeasurable	5.9	7	3.5	4	6	6	5.8
	Capacity cm ³	Unmeasurable	56.2	76.5	54.5	73.9	85.2	69.1	35
	Texture Score	-	3.7	4.8	3.7	4.9	4.5	4.4	3.8
Evaluation	Shell thickness	×	○	○	⊙	⊙	○	○	○
	Volume	×	○	⊙	○	⊙	⊙	○	×
	Texture	-	○	⊙	○	⊙	⊙	⊙	○

[0066]

[Cream Puff]

Cream puffs were produced by using the choux pastries of Example 1 and Comparative Example 2. The cream puff produced by using the choux pastry of Example 1 had an excellent rice cake-like texture as well as was easy to eat because the cream inside was unlikely to pop out. In contrast, the cream puff produced by using the

choux pastry of Comparative Example 2 was difficult to eat because the cream inside popped out while the choux shell was bitten off.

Industrial Applicability

[0067]

The present invention can provide a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell, and provides a choux pastry exhibiting a satisfactory appearance and being easy to eat while having a rice cake-like texture, and having a higher product value than that of conventional ones. The present invention also provides a choux pastry dough and a flour mix for a choux pastry dough which enable easy production of a choux pastry exhibiting a satisfactory appearance and being easy to eat while having a rice cake-like texture. The present invention requires no heating step when the raw material flours are mixed on production of a choux pastry, and enables easy and stable production of a choux pastry having an excellent rice cake-like texture, a large capacity, and a thin choux shell. Thus the present invention provides a method for producing a choux pastry which is excellent also in respect of productivity.

CLAIMS

1. A choux pastry produced by preparing a choux pastry dough by using starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B \leq 100$ parts by mass, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as a starchy raw material for choux pastry production.

2. The choux pastry according to claim 1, wherein the choux pastry is produced by preparing a choux pastry dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are contained, provided that $A + B < 100$ parts by mass, and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

3. The choux pastry according to claim 1 or 2, wherein the amount of the starch having an amylopectin content of 80% by mass or more of (A) to be blended is 80 parts by mass to 92 parts by mass based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

4. The choux pastry according to claim 2 or 3, wherein the amount of the starch having an amylopectin content of 80% by mass or more of (A) to be blended is 80 parts by mass to 90 parts by mass, the amount of the pregelatinized starch of (B) to be blended is 10 to 20 parts by mass, and the amount of the grain flour of (C) to be blended is 10 parts by mass or less, based on 100 parts by mass of the starchy raw material comprised in the choux pastry.

5. The choux pastry according to any one of claims 1 to 4, wherein the starch having an amylopectin content of 80% by mass or more is waxy tapioca starch.

6. The choux pastry according to any one of claims 1 to 5, wherein the pregelatinized starch is a pregelatinized crosslinked starch.

7. A method for producing a choux pastry, comprising: preparing a dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, based on 100 parts by mass of the starchy raw material comprised in

the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as a starchy raw material for choux pastry production; and using the dough as a choux pastry dough to produce the choux pastry.

8. The method for producing a choux pastry according to claim 7, comprising: preparing a dough by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass, and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production; and using the dough as the choux pastry dough to produce the choux pastry.

9. A choux pastry dough for choux pastry production, wherein the dough is prepared: by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by

mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as a starchy raw material for choux pastry production; or by using a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B < 100$ parts by mass, and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is waxy tapioca starch, as the starchy raw material for choux pastry production.

10. A flour mix for a choux pastry dough, wherein the flour mix is prepared by blending a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of a starch having an amylopectin content of 80% by mass or more and (B) 8 to 20 parts by mass of a pregelatinized starch are blended, provided that $A + B \leq 100$ parts by mass, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is a waxy tapioca starch, as a starchy raw material for choux pastry production; or by blending a starchy raw material in which (A) 70 parts by mass to 92 parts by mass of the starch having an amylopectin content of 80% by mass or more and (B) 8 to 20

parts by mass of the pregelatinized starch are blended, provided that $A + B < 100$ parts by mass, and (C) a grain flour in an amount to be blended of 22 parts by mass or less is blended as the balance of the starchy raw material, based on 100 parts by mass of the starchy raw material comprised in the choux pastry, wherein at least 8 parts by mass or more of the starch having an amylopectin content of 80% by mass or more of the above (A) is a waxy tapioca starch, as a starchy raw material for choux pastry dough production.

11. A cream puff produced by filling the choux pastry according to any one of claims 1 to 6 with cream.