eliminated immediately by texture breakage by chewing, increased moisture by saliva, increased temperature by body temperature, and the like.

Citation List

Patent Literature

Patent Literature 1: Japanese Patent Laid-Open No. 52-7465

Patent Literature 2: Japanese Patent Application No. 9-294538

Patent Literature 3: Japanese Patent Laid-Open No. 8-308492

Patent Literature 4: Japanese Patent Laid-Open No. 2001-149008

Patent Literature 5: Japanese Patent Laid-Open No. 2002-369654

Patent Literature 6: Japanese Patent Publication No. 57-55380

Patent Literature 7: International Publication No. WO 2010/008056 A1

Patent Literature 8: Japanese Patent Laid-Open No. 2011-182656

Summary ~~of Invention~~

Technical Problem

The processed cheeses obtained by the methods in Patent Literatures 1 to 3 have heat resistance, but suffer from problems of degradation in the flavor and texture due to addition of albumin and glucomannan, or of egg allergy caused by egg white. Additionally, the methods according to Patent Literatures 4 to 6 require a special step during or after the thermal emulsification. This is not preferable from the viewpoint of production efficiency and causes a problem of hardening the texture of a processed cheese to be obtained even if the cheese has heat resistance.

Thus, the processed cheese manufactured with the conventional techniques, despite having heat resistance, suffers from problems of degradation in the flavor, egg allergy, and hardened textures, and problems of requiring a step other than ordinary thermal emulsification and of having poor production efficiency.

Moreover, good "meltability in the mouth" of processed cheese, and "stickiness," which is an unfavorable mouthfeel of processed cheese, are recognized as conflicting feelings. No processed cheese having good meltability in the mouth as well as reduced "stickiness" has yet been developed.

The present inventors have believed that improvement in terms of reduction in "stickiness" of a processed cheese can be achieved by positively imparting a mouthfeel, that is, good "meltability in the mouth," to a processed cheese and have decided to engage in technological development toward reduction in "stickiness" and impartation of "meltability in the mouth."

Thus, it is ~~a first object of the present invention is~~an object of the embodiments disclosed herein to provide a processed cheese and a manufacturing method therefor, wherein the processed cheese has excellent heat resistance, a good flavor, and a soft texture and can be manufactured by a simple method without including a special step.

It is ~~a second object of the present invention is~~also an object of the embodiments disclosed herein to provide a processed cheese, a manufacturing method therefor, and a method for improving meltability in the mouth of a processed cheese, wherein the processed cheese has reduced "stickiness," which has been conventionally recognized as an unfavorable mouthfeel of processed cheese, improved "meltability in the mouth," which is a mouthfeel now preferred in the entire food industry, and a brittle mouthfeel characteristic.

Solution to Problem

The present inventors have found, as a result of intensive studies on factors influencing on the heat resistance of processed cheese, a processed cheese having excellent heat resistance obtained by adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more as an emulsifying salt, and a manufacturing method therefor thereby having completed the present ~~invention~~disclosure.

The present inventors have also found that combining the condensed phosphate aforementioned with another specific emulsifying salt can reduce "stickiness," which is an unfavorable mouthfeel of processed cheese, can improve "meltability in the mouth," which is a preferred mouthfeel, and also can improve the mouthfeel of the cheese, thereby having completed the present ~~invention~~disclosure.

Furthermore, the present inventors have found that use of the condensed phosphate aforementioned and a natural cheese having a maturity of 30% or more as a raw-material cheese can reduce "stickiness," without combined use of any other emulsifying salt, can improve "meltability in the mouth," which is a preferred mouthfeel, and can improve the mouthfeel of the cheese, thereby having completed the present ~~invention~~disclosure.

That is, the present ~~invention~~ disclosure is as follows:

(1) In a first aspect, there is provided ~~A~~a processed cheese comprising a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more.

(2) The processed cheese according to (1), wherein 0.5 to 5.0% by weight of the condensed phosphate is added to natural cheeses.

(3) The processed cheese according to (1) or (2) aforementioned, wherein the cheese is shaped into cubes having a side of 10 mm, and has heat resistance of 80% or more when autoclaved at 121°C for 15 minutes;

wherein the heat resistance is calculated in accordance with the following expression:

Heat resistance [%] = (height of processed cheese after heating [mm] / height of processed cheese before heating [mm]) × 100.

(4) In a second aspect, there is provided ~~A~~a method for manufacturing a processed cheese, wherein a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more is added.

(5) The method for manufacturing a processed cheese according to (4) aforementioned, wherein 0.5 to 5.0% by weight of the condensed phosphate is added to natural cheeses.

(6) In a third aspect, there is provided ~~A~~a method for manufacturing a processed cheese having excellent heat resistance by adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more.

(7) In a fourth aspect, there is provided ~~A~~a processed cheese characterized by comprising a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more and at least one emulsifying salt selected from water-soluble polyphosphates, diphosphates, monophosphates, and citrates.

(8) In a fifth aspect, there is provided ~~A~~a processed cheese characterized by comprising a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more and a natural cheese having a maturity index of 30% or more.

(9) In a sixth aspect, there is provided ~~A~~a method for manufacturing a processed cheese comprising:

a step of adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more, at least one emulsifying salt selected from water-soluble polyphosphates, diphosphates, monophosphates, and citrates, and a natural cheese;

a step of mixing and emulsifying the added raw materials to prepare cheese curd; and

a step of cooling the prepared cheese curd.

(10) In a seventh aspect, there is provided ~~A~~a method for manufacturing a processed cheese comprising:

a step of adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more and a natural cheese having a maturity index of 30% or more as a raw material;

a step of mixing and emulsifying the added raw materials to prepare cheese curd; and

a step of cooling the prepared cheese curd.

(11) The method for manufacturing a processed cheese according to (9) or (10) aforementioned, wherein 1.0 to 3.0% by weight of the condensed phosphate is added to natural cheeses.

(12) The method for manufacturing a processed cheese according to any of (9) to (11) aforementioned, wherein oxidized starch is further added as a raw material.

(13) The method for manufacturing a processed cheese according to (12) aforementioned, wherein the amount of the added oxidized starch is 0.5 to 20% by weight to natural cheeses.

(14) In an eighth aspect, there is provided ~~A~~a method for improving meltability in the mouth of a processed cheese, wherein the cheese is manufactured by adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more and at least one emulsifying salt selected from water-soluble polyphosphates, diphosphates, monophosphates, and citrates as raw materials of the processed cheese.

(15) In a ninth aspect, there is provided ~~A~~a method for improving meltability in the mouth of a processed cheese, wherein the cheese is manufactured by adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more and a natural cheese having a maturity index of 30% or more as raw materials of the processed cheese.

Advantageous Effects ~~of Invention~~

According to ~~a first aspect~~an embodiment of the present ~~invention~~disclosure, a processed cheese having excellent heat resistance, a good flavor, and a soft texture and a manufacturing method therefor can be obtained by adding a condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more without including a special step.

According to ~~a second aspect of the present invention~~another embodiment of the present disclosure, a processed cheese having an improved mouthfeel, a manufacturing method therefor, and a method for improving meltability in the mouth of a processed cheese can be obtained by adding at least one emulsifying salt selected from water-soluble polyphosphates, diphosphates, monophosphates, and citrates or a natural cheese having a maturity index of 30% or more, in addition to the aforementioned condensed phosphate of which a 1.0% aqueous solution adjusted to pH 6.0 has a turbidity of 2.0 or more, wherein the processed cheese exhibits reduced "stickiness" in the mouth when eaten, which has been conventionally recognized as an unfavorable mouthfeel of processed cheese as well as improved "meltability in the mouth," which is a preferred mouthfeel.

Brief Description of Drawings

[Figure 1] Figure 1 is a graph showing evaluation results of heat resistance of processed cheeses manufactured by conventional methods (comparative products 1 to 6).

[Figure 2] Figure 2 is a graph showing evaluation results of heat resistance of processed cheeses manufactured by a method of the present invention (Example products 1, 2, and 3).

[Figure 3] Figure 3 is graphs showing results of Example 8 and Test Example 9 in Comparative Example 1.

Description of Embodiments

A method to obtain a processed cheese of the present invention will be specifically described hereinbelow.

Examples of the natural cheese used as a raw material of a processed cheese of the present invention include, but are not particularly limited to, Cheddar cheese,