

Review of the world patent information for May'2016 on the topic “biotechnology of cheeses: cheese, cheese preparations and making thereof”

Information on the topic selected from all over the world

Method for production of fermented milk product with natural vitamin k2 (versions) and cultured milk product obtained using said method

RU 2583873 (Russia)

Int. Cl. (International patent classification) A23C 9/12, A23C 9/158, A23C 19/076

Application: 2014153722, 30.12.2014

Date of publication: 10.05.2016

Inventors: Perminov Sergej Igorevich, Leonova Elena Nikolaevna, Tereshina Ekaterina Nikolaevna

Proprietor: AO “Vimm-Bill-Dann” (Russia)

Abstract

Field: Food industry.

Substance: Invention relates to food industry and can be used in producing fermented milk products enriched with natural vitamin K2. Method of producing fermented milk product involves preparing a mixture by successive normalization on protein and fat, homogenizing and pasteurising. Milk mixture cooled to souring temperature is mixed with leaven to the mixture, consisting of a mixture of Lactococcus Cremoris bacteria and Lactococcus Lactic or additionally probiotic cultures. Milk mixture is soured to pH 4.4-4.8, cooled to 10-12°C, soured mixture is saturated with air, maintained at least for 1 hour and fermented milk product is cooled to storage temperature. Also disclosed is a fermented milk product produced using said method. For production of curd soured milk mixture after holding is subjected to ultra filtration.

Effect: Method enables to produce a fermented milk product with at least 1.5/10 times more vitamin K2 content with high stability of quality and organoleptic properties.

Method for production of rennet cheese

RU 2583874 (Russia)

International patent classification A23C 19/00, A23C 19/072, A23C 19/064, A23C 19/14

Application: 2014153724, 30.12.2014

Date of publication: 10.05.2016

Inventors: Perminov Sergej Igorevich, Knjazev Sergej Nikolaevich,

Volume 4 Issue 6 - 2016

Olga N Musina

Siberian Research Institute of Cheese-Making, Russia

Correspondence: Olga N. Musina, Head of the Scientific Information' Analyses Department, Siberian Research Institute of Cheese-Making (Department of Russian Academy of Sciences), Russia, Tel +73852564612, Email musinaolga@gmail.com

Received: August 25, 2016 | **Published:** September 02, 2016

Somov Vitalij Sergeevich, KHarevich JULija Viktorovna

Proprietor: AO “Vimm-Bill-Dann” (Russia)

Abstract

Field: Food industry.

Substance: Method involves two successive pasteurizations of raw milk with holding between in, cooling pasteurized raw material to temperature of coagulation and introduction of a bacterial starter, calcium chloride and milk-clotting enzyme preparation. Mixture is held for formation of rennet clot, then cut, producing cheese grains and repeated heating. Method includes forming from cheese grains a cheese head, which is maintained for self-pressing, during which cheddaring of cheese head is carried out to a pH of 5.3-5.5. Cheese head is salted in brine from a mixture of sodium chloride and potassium and/or sodium nitrate, sterile air dried, packed in polymer film and delivered for ripening.

Effect: method allows accelerating process of production of cheese and enhancing its quality.

Cheese and production thereof

RU 2585213 (Russia)

International patent classification A23C 19/00, A23C 19/02, A23C 1/12, A23C 1/14

Application: 2013142354, 16.02.2012

Date of publication: 27.05.2016

Priority: 18.02.2011 FI 20115161

Inventors: Alltonen Terkhi, Nurmi Pirkko

Proprietor: VALIO LTD (Finland)

Abstract

Field: Food industry.

Substance: Invention relates to method for production of cheese or cheese product, involving following steps: obtaining initial milk material; initial milk material microfiltration, wherein microfiltration is carried out by means of one or more steps diafiltration to obtain concentrate of casein in form of diafiltrated retentate and ratio of total concentration at stages of microfiltration/diafiltrated is more than 4; acidification casein concentrate for producing acidified concentrate casein; concentration of acidified casein concentrate to produce completely concentrated cheese semi-finished product; processing of completely concentrated cheese semi-finished product in cheese or cheese product.

Effect: method considerably reduces viscosity concentrate cheese semi-product and provides possibility of simple concentrate cheese semi-finished product in cheese product under normal operating conditions.

Dairy product and process

- 1) A method for preparing processed cheese comprising: (a) providing a dairy liquid composition or a gelled dairy composition or both, comprising casein; (b) cooking the composition or the combination of compositions with emulsifying salts to obtain an emulsion, and (c) cooling the cooked composition to obtain a processed cheese; wherein the emulsifying salts comprise by weight 10 - 100% of potassium salts.
- 2) The method according to claim 1 wherein the emulsifying salts comprise potassium citrate.
- 3) The method according to claim 1 or claim 2 wherein the emulsifying salts comprise trisodium citrate.
- 4) The method according to any one of claims 1 to 3 wherein the emulsifying salts comprise tripotassium citrate and trisodium citrate.
- 5) The method according to claim 4 wherein the emulsifying salts consist of potassium citrate and sodium citrate.
- 6) The method according to claim 5 wherein the emulsifying salts consist of tripotassium citrate and trisodium citrate.
- 7) A method according to any one of claims 1 to 6 wherein the emulsifying salts comprise or consist of tripotassium citrate and
 - a. less than about 40% w/w trisodium citrate;
 - b. less than about 35% w/w trisodium citrate;
 - c. less than about 30% w/w trisodium citrate;
 - d. less than about 25% w/w trisodium citrate;
 - e. less than about 20% w/w trisodium citrate;
 - f. less than about 15% w/w trisodium citrate;
 - g. less than about 10% w/w trisodium citrate;
- 8) A method for preparing processed cheese comprising: (a) providing a dairy liquid composition or a gelled dairy composition or both, (b) cooking the composition or the combination of compositions with an emulsifying system to obtain an emulsion, and (c) cooling the cooked composition to obtain a processed cheese; wherein the emulsifying system comprises, consists essentially of, or consists of:
 - a. by weight 10-100% of potassium salts; or
 - b. by weight 0-100% of sodium salts; or
 - c. any combination of i) and ii); and
 - d. By weight 10-100% one or more milk protein source.
- 9) The method according to claim 8 wherein the milk protein source is functionalised for emulsification.
- 10) The method according to claim 8 or claim 9 wherein the milk protein source comprises casein.
- 11) The method according to claim 10 wherein at least part of the casein has a proportion of its divalent ions replaced with sodium or potassium ions.
- 12) The method according to claim 11 wherein the proportion of divalent ions replaced with sodium or potassium ions is at least 5%.
- 13) The method according to any one of claims 8 to 12 wherein the emulsifying system comprises, consists essentially of, or consists of by weight 20- 70% of potassium salts and by weight 20 - 70% one or more milk protein source.
- 14) The method according to any one of claims 8 to 13 wherein the emulsifying system comprises less than about 40% by weight of sodium salts.
- 15) The method according to claim 14 wherein the emulsifying system comprises less than about 20% by weight of sodium salts.
- 16) The method according to any one of claims 8 to 15 wherein the dairy liquid composition is a retentate produced by processing milk using membrane technology, ultrafiltration, or diafiltration.
- 17) The method according to any one of claims 8 to 16 wherein the composition to be cooked includes cheese or ultrafiltration cheese.
- 18) A method for preparing processed cheese comprising: (a) providing a dairy liquid composition or a gelled dairy composition or both, comprising casein; (b) cooking the composition or the combination of compositions with an emulsifying system to obtain an emulsion, and (c) cooling the cooked composition to obtain a processed cheese; wherein the emulsifying system comprises at least one milk protein source, for example a milk protein concentrate, and at least one emulsifying salt.
- 19) The method according to claim 18 wherein the emulsifying system comprises from about 1% to about 15% w/w of the processed cheese, for example from about 3% to about 5.5% w/w of the processed cheese.

- 20) The method according to claim 19 wherein the emulsifying system comprises
 - a. from about 3% to about 6% w/w;
 - b. from about 3% to about 5.5% w/w;
 - c. from about 3% to about 5% w/w;
 - d. from about 3% to about 4.5% w/w;
 - e. from about 3% to about 4% w/w; or
 - f. from about 3.5% to about 4% w/w; of the processed cheese.
- 21) The method according to any one of claims 8 to 20 wherein the emulsifying system
- 22) Comprises, consists essentially of, or consists of at least one milk protein source and at least one emulsifying salt, and wherein the at least one potassium emulsifying salt comprises at least 10% by weight of the emulsifying system.
- 23) The method according to claim 22 wherein the at least one emulsifying salt comprises at least about 20% by weight of the emulsifying system.
- 24) The method according to any one of claims 18 to 22 wherein the milk protein source is a calcium-reduced milk protein source.
- 25) The method according to any one of claims 18 to 20 or 23 wherein the milk protein source comprises between 0.1% and 99.9% of the emulsifying system.
- 26) The method according to claim 23 or claim 24 wherein the calcium-reduced milk protein source is NZMP™ Milk Protein Concentrate 4864 or NZMP™ Milk Protein Concentrate 4764. The method according to any one of claims 1 to 25 wherein the emulsifying system comprises any one of:
 - a. by weight 20-75% of potassium salts;
 - b. by weight 20-70% of potassium salts;
 - c. by weight 30-70% of potassium salts;
 - d. by weight 30-60% of potassium salts;
 - e. by weight 35-60% of potassium salts;
 - f. by weight 40-60% of potassium salts;
 - g. by weight 45-60% of potassium salts;
 - h. by weight 45-55% of potassium salts; or
 - i. by weight about 50% of potassium salts; and any one of
 - j. by weight 20-75% of a milk protein source;
 - k. by weight 20-70% of a milk protein source;
 - l. by weight 30-70% of a milk protein source;
 - m. by weight 30-60% of a milk protein source;
 - n. by weight 35-60% of a milk protein source;
 - o. by weight 40-60% of a milk protein source;
 - p. by weight 45-60% of a milk protein source;
 - q. by weight 45-55% of a milk protein source; or
 - r. by weight about 50% of a milk protein source.
- 27) The method according to any one of claims 1 to 26 including any combination of i) to ix) and x) to xviii) of claim 26 above, wherein the emulsifying system comprises less than about 25% by weight sodium emulsifying salts.
- 28) The method according to claim 27 above wherein the emulsifying system comprises
 - a. less than about 20% by weight sodium emulsifying salts;
 - b. less than about 15% by weight sodium emulsifying salts;
 - c. less than about 10% by weight sodium emulsifying salts;
 - d. less than about 5% by weight emulsifying sodium salts, or
 - e. less than about 1% w/w sodium emulsifying salts.
- 29) The method according to any one of claims 18 to 28 wherein the emulsifying salt is a potassium salt.
- 30) The method according to any one of claims 18 to 29 wherein the emulsifying salt comprising part of the emulsifying system is a citrate salt.
- 31) The method according to claim 30 wherein the emulsifying salt is tripotassium citrate.
- 32) An emulsifying system for processed cheese, wherein the emulsifying system comprises, consists essentially of, or consists of a milk protein source and at least one potassium emulsifying salt, wherein the at least one potassium emulsifying salt comprises at least 10% by weight of the emulsifying system.
- 33) The emulsifying system of claim 32 wherein the at least one potassium emulsifying salt comprises
 - a. at least about 25% by weight of the emulsifying system; or
 - b. at least about 30% by weight : of the emulsifying system; or
 - c. at least about 35% by weight of the emulsifying system; or
 - d. at least about 40% by weight of the emulsifying system; or
 - e. at least about 45% by weight of the emulsifying system; or
 - f. at least about 50% by weight of the emulsifying system; or
 - g. at least about 55% by weight of the emulsifying system; or
 - h. at least about 60% by weight of the emulsifying system.
- 34) The emulsifying system of claim 32 or claim 33 wherein the potassium emulsifying salt is a potassium citrate, such as tripotassium citrate.
- 35) The emulsifying system of any one of claims 32 to 34 wherein the milk protein source comprises
 - a. at least about 25% by weight of the emulsifying system; or
 - b. at least about 30% by weight of the emulsifying system; or
 - c. at least about 35% by weight of the emulsifying system; or
 - d. at least about 40% by weight of the emulsifying system; or
 - e. at least about 45% by weight of the emulsifying system; or
 - f. at least about 50% by weight of the emulsifying system; or
 - g. at least about 55% by weight of the emulsifying system; or

- h. at least about 60% by weight of the emulsifying system.
- 36) A processed cheese or a processed cheese product, wherein the processed cheese or product comprises: (a) by weight 0.1-6% of an emulsifying system; or (b) by weight 0.1-6% of emulsifying salts; wherein the emulsifying system comprises, consists essentially of, or consists of:
- by weight 10-100% of potassium salts; or
 - by weight 0-100% of sodium salts; or
 - any combination of i) and ii); and
 - by weight 10-100% one or more milk protein source; or wherein the emulsifying salts comprise by weight 10-100% of potassium salts.
- 37) A processed cheese produced by a method of any one of claims 1 to 31 or comprising an emulsifying system of any one of claims 32 to 35.
- 38) The processed cheese or a processed cheese product according to claims 36 or 37 wherein the processed cheese comprises
- less than 1% w/w sodium emulsifying salts,
 - less than about 0.9% w/w sodium emulsifying salts,
 - less than about 0.8% w/w sodium emulsifying salts,
 - less than about 0.7% w/w sodium emulsifying salts,
 - less than about 0.6% w/w sodium emulsifying salts,
 - less than about 0.5% w/w sodium emulsifying salts,
 - less than about 0.4% w/w sodium emulsifying salts,
 - less than about 0.3% w/w sodium emulsifying salts,
 - less than about 0.2% w/w sodium emulsifying salts,
 - less than about 0.1% w/w sodium emulsifying salts, or
 - less than about 0.05% w/w sodium emulsifying salts.
- 39) The processed cheese or a processed cheese product according to any one of claims 36 to 38 wherein the processed cheese comprises no added sodium emulsifying salts.
- 40) The processed cheese or a processed cheese product according to any one of claims 36 to 38 wherein the processed cheese comprises any one of the emulsifying systems presented herein in the Examples.
- 41) The emulsifying system of any one of claims 32 to 35 or the processed cheese or processed cheese product according to any one of claims 36 to 40 wherein the emulsifying system consists essentially of, or consists of a milk protein concentrate and tripotassium citrate. The emulsifying system of any one of claims 32 to 35 or the processed cheese or processed cheese product according to any one of claims 36 to 40 wherein the emulsifying system consists essentially of, or consists of a NZMP™ milk protein concentrate 4864 or NZMP™ milk protein concentrate 4764 and tripotassium citrate.

A coagulation tunnel system

DK2838371 (Denmark)

International patent classification A01J 25/00, A23C 19/02, A23C 19/024, A23C 19/028

Application: 20130718026T, 17.04.2013

Date of publication: 30.05.2016

Priority: 20120070195, 18.04.2012

Inventors: Hendrickson Jørgen

Proprietor: Hendrickson Niels Christian (Denmark), Jh Consulting V Jørgen Hendrickson (Denmark)

Claims

- A coagulation tunnel having a closed housing (21) comprising:- an inlet (1) for inletting containers containing substance to coagulate into the coagulation tunnel and an outlet (3) for outletting the containers from the tunnel after the substance has coagulated, and enclosing a conveyer belt (2) for conveying containers from the inlet (1) to the outlet (3) while the substance contained in the containers coagulates, air distribution means (8) for distributing air, preferably being sterile air, in the tunnel, cleaning liquid spraying means (9) arranged above the conveyer belt (2) and being adapted to spray a cleaning liquid onto the interior surface of the closed housing (21) and the conveyer belt (2), wherein a part of the closed housing (21) forms a trough under the conveyer belt (2) for collecting the sprayed cleaning liquid.
- A coagulation tunnel according to claim 1, wherein the air distribution means comprising one or more blowers (4) arranged inside the closed housing (21) for recirculating air internally in the tunnel.
- A coagulation tunnel according to claim 1 or 2, wherein the air distribution means comprising a unit (5) for heating and/or cooling the air being distributed by the air distribution means.
- A coagulation tunnel according to any of the preceding claims, wherein the air distribution means comprising a coarse strainer (6) for straining the air being distributed by the air distribution means.
- A coagulation tunnel according to any of the preceding claims, wherein the air distribution means comprising a filter (7), preferably a sterilizing filter.
- A coagulation tunnel according to any of the preceding claims, wherein the air distribution means comprising an elongated member, preferably in the form of a bag (8), extending longitudinal above the conveyer belt (2), said elongated member being formed from an air penetrable material or the elongated member is a hollow tube provided with penetrations so that air fed into the elongated member at one end thereof flows through the surface or penetrations of the member and towards the upper surface of the conveyer belt (2).
- A coagulation tunnel according to any of the preceding claims, wherein the trough comprising a drain pipe for draining cleaning liquid from the trough.
- A coagulation tunnel according to any of the preceding claims, wherein the coagulation tunnel is divided into two separate sections by a wall element (15) comprising a closable door (10) and wherein one section comprising elements of the air distribution means moving the air through the air distribution means, and the other section comprising: the conveyer belt (2), the elements of the air distribution means (8) distributing air, preferably being sterile air, in the tunnel, cleaning liquid

spraying means (9). A coagulation tunnel according to any of the preceding claims, further comprising a transfer unit for transferring containers from the inlet to the conveyer belt and from the conveyer belt (2) to the outlet.

- ix. A coagulation tunnel according to claim 9, wherein the transfer units (17, 18, 20) are arranged in the wall of the closed housing (21), and comprising a moveable rod (18) being controlled so as to perform a reciprocating movement to push containers in a horizontal direction and a rotating movement to make way for containers entering or leaving the tunnel, and wherein the actuation means, such as electrical or pneumatic motor(s), of the transfer units is/are arranged outside the closed housing (21).

A coagulation tunnel according to claim 10, wherein the transfer units are arranged in the wall in such a manner that upward pointing surfaces of the arrangement are inclined to allow cleaning liquid to flow off the surfaces and into the trough.

- x. A coagulation tunnel according to claim 9, wherein the transfer unit for transferring containers from the conveyer belt (2) to the outlet comprising; - a slide (22) extending slanted from an upper side of the coagulation tunnel conveyor belt (2) and to the outlet, and - a pushing device (23), wherein the outlet is installed at a lower horizontal level than the upper side of the Coagulation tunnel conveyor belt (2).
- xi. A coagulation tunnel according to any of the preceding claims, wherein the coagulation tunnel comprising an inlet conveyor for conveying containers from the inlet (1) and towards the coagulation tunnel conveyor belt (2), the inlet conveyor comprising; - two conveyor belts being arranged parallel to each other with a distance in between to provide a space between the two conveyor belts, and the conveyer tunnel comprising; - a transfer device adapted to move a gripping means from a position below the two conveyor belts, through the space between the two conveyor belts and to a position above two conveyor belts.
- xii. A coagulation tunnel according to claim 13, wherein each of the two conveyor belts of the inlet conveyor comprising stainless steel chain.
- xiii. A coagulation tunnel according to any of the preceding claims further comprising UV sterilising means, such as one or more UV lamps, arranged to sterilise air to be distributed or being distributed in the coagulation tunnel.

Process for producing cream cheese

ES2568978 (Spain)

International patent classification A23C 19/045, A23C 19/05, A23C 19/076, A23C 19/09, A23C 9/142, A23J 1/20, A23J 3/10

Application: 20130162334T, 04.04.2013

Date of publication: 05.05.2016

Priority: 20120163565, 10.04.2012

Inventors: Wolfschoon-Pombo Dr Alan Frederick; Demmer Dr Thomas; Milosavljevic Katerina; Spiegel Thomas L; Hammer Christian

Proprietor: KRAFT FOODS R.&D. INC. (USA)

Abstract

The present invention relates to a process for producing cream cheese using a specific combination of milk and milk fractions. It further relates to cream cheese which is characterized by a unique combination of levels of minerals, lactose and protein and which may be obtained by the process of the invention.

Cheese and method for its manufacturing

US2016120198 (USA)

International patent classification A23C 19/064, A23C 19/09

Application: 201414897507, 09.06.2014

Date of publication: 05.05.2016

Priority: 20130005634, 10.06.2013

Inventors: Martikainen Emmi; Smit Gerrit

Proprietor: VALIO LTD (Finland)

Claims

- i. A method of making cheese having a ratio of K/Na of more than 0.2 to 4.0 wherein cheese is salted with a salting agent comprising milk minerals and NaCl.
- ii. The method of claim 1 wherein the ratio of K/Na is more than 0.8, more specifically 0.8 to 1.2 or 0.52 to 3.2.
- iii. The method of claim 1 wherein K content of cheese is more than 0.08%, specifically more than 0.2%, more specifically more than 0.3%.
- iv. The method of claim 1 wherein milk minerals and NaCl are each provided as a separate salting agent.
- v. The method of claim 1 wherein milk minerals are provided as a milk mineral concentrate obtained by a process wherein milk is subjected to ultra filtration to provide an ultra filtration permeate, the ultra filtration permeate is subjected to nanofiltration to provide a nanofiltration permeate, the nanofiltration permeate is subjected to reverse osmosis to provide a reverse osmosis retentate as the milk mineral concentrate.
- vi. The method of claim 5 wherein the dry matter content of the milk mineral concentrate is about 9% to about 40%, specifically about 16%.
- vii. The method of claim 1 wherein the concentration of NaCl is in the range of about 16% to saturated, specifically about 18%.
- viii. The method of claim 1 wherein cheese is salted with milk minerals and NaCl or a combination thereof in at least one salting step in any order.
- ix. The method of claim 1 wherein cheese is subjected to brine salting, surface salting or a combination thereof.
- x. The method of claim 1 wherein cheese is first salted with milk minerals followed by salting with NaCl.
- xi. The method of claim 1 wherein cheese is first salted with NaCl followed by salting with milk minerals.
- xii. The method of claim 1 wherein cheese is first salted with milk minerals, then with NaCl followed by further salting with milk minerals.

- xiii. The method of claim 9 wherein the brine salting with milk minerals is carried out for about 0.5 to about 96hours.
- xiv. The method of claim 1 wherein a NaCl content of cheese is more than 0.81% to 5.0%, specifically more than 0.81% to 1.3%, more specifically 1.3%.
- xv. The method of claim 1 wherein the cheese is ripened cheese.
- xvi. Ripened cheese having a ratio of K/Na of 0.39 to 4.0, specifically more than 0.8, more specifically 0.8to 1.2, and a K content of more than 0.08%.
- xvii. Ripened cheese of claim 16 wherein the K content of cheese is more than 0.2%, specifically more than 0.3%.
- xviii. Ripened cheese of claim 16 wherein a NaCl content of cheese is more than 0.81% to 5.0%, specifically more than 0.81% to 1.3%, more specifically 1.3%.
- xix. Cheese having a ratio of K/Na of more than 0.2 to 4.0, which is salted with a salting agent comprising milk minerals and NaCl.

Regenerated cheese and preparation method there of

CN105558073 (China)

International patent classification A23C 19/09, A23C 19/093, A23C 19/10

Application: 20151940946, 16.12.2015

Date of publication: 11.05.2016

Inventors: Wang Tiejun; Shi Hanqin; Hui Jianming

Proprietor: NEW HOPE SHUANGXI DAIRY (SUZHOU) CO LTD

Abstract

The invention provides a formula of regenerated cheese. The main formula comprises the following components: 28%-64% of high-fat animal milk, 5%-10% of a fermenting agent, 5%-10% of chymosin, 10%-20% of resisting dextrin, 0.2%-1.0% of lecithin, 0.05%-0.30% of gamma-aminobutyric acid, 0.05%-0.30% of theanine, 0.05%-0.30% of a stabilizer, 0.05%-0.30% of a bacteriostatic agent and 15%-30% of water. The invention further provides a corresponding preparation method of the formula. With the adoption of the specific formula design and the corresponding preparation method, the added gamma-aminobutyric acid and theanine do not influence the smooth feeling of the regenerated cheese and also have the effect of relaxing; the regenerated cheese prepared by the formula covers unique bad flavors of the gamma-aminobutyric acid and the theanine, and the original taste and flavor of the regenerated cheese are not influenced; and the gamma-aminobutyric acid and the theanine can give the effects of relieving tension pressure, relaxing and the like to the regenerated cheese, and the regenerated cheese is very suitable for young white-collar workers with great working pressure and rapid pace of life.

Cream cheese and preparation method there of

CN105558072 (China)

International patent classification A23C 19/032, A23C 19/09

Application: 20151940879, 16.12.2015

Date of publication: 11.05.2016

Inventors: Wang Tiejun; Shi Hanqin; Hui Jianming

Proprietor: NEW HOPE SHUANGXI DAIRY (SUZHOU) CO LTD

Abstract

The invention provides a cream cheese formula. The cream cheese is prepared from the following main formula components: 28%-64% of high-fat animal milk, 5%-10% of a leavening agent, 5%-10% of chymosin, 10%-20% of sucrose, 0.2%-1.0% of lecithin, 0.05%-0.30% of gamma-aminobutyric acid, 0.05%-0.30% of theanine, 0.05%-0.30% of a stabilizer, 0.05%-0.30% of a bacteriostatic agent and 15%-30% of water. The invention further provides a preparation method corresponding to the formula. Through a specific formula design and the corresponding preparation method, the silky feeling of the cream cheese is not affected by added gamma-aminobutyric acid and theanine; the relaxing effect can also be given into a play; unique poor flavors of the gamma-aminobutyric acid and the theanine are covered by the cream cheese prepared by the formula; the taste and the flavor of the cream cheese are not affected; the cream cheese can be endowed with the efficacies of relieving tension and relaxing mood by the gamma-aminobutyric acid and the theanine; and cream cheese is especially suitable for young white-collar workers with large work pressure and fast pace of life.

Grain cheese and preparation method there of

CN105532905 (China)

International patent classification A23C 19/032, A23C 19/09

Application: 20151940755, 16.12.2015

Date of publication: 04.05.2016

Inventors: Wang Tiejun; Shi Hanqin; Hui Jianming

Proprietor: NEW HOPE SHUANGXI DAIRY (SUZHOU) CO LTD

Abstract

The invention provides a grain cheese formula. The grain cheese formula mainly comprises the following components in percentage: 28-64% of high fat animal milk, 5%-10% of a fermenting agent, 5%-10% of chymosin, 10-20% of cane sugar, 0.2-1.0% of lecithin, 0.05-0.30% of gamma-aminobutyric acid, 0.05-0.30% of theanine, 0.05-0.30% of a stabilizing agent, 0.05-0.30% of a bacteriostat and 15-30% of grains. The invention further provides a preparation method corresponding to the formula. Through specific formula design and the corresponding preparation method, the gamma-aminobutyric acid and the theanine which are added do not influence the smooth feeling of the grain cheese, and the effect of enabling the mood to be relaxed can also be achieved; according to the grain cheese made by adopting the formula, poor flavor of the gamma-aminobutyric acid and the theanine is concealed, and the mouth feel and the taste of the grain cheese are not influenced; the gamma-aminobutyric acid and the theanine are added, so that the grain cheese has the efficacies of gentling stress, relaxing mood and the like, and is especially suitable for young white collar worker crowds with large working pressure and high living rhythm.

Milk clotting aspartic protease enzyme composition

US2016143308 (USA)

International patent classification A23C 19/032, C12N 9/64

Application: 201414902946, 11.07.2014

Date of publication: 26.05.2016

Priority: 2013 0 177 064, 18.07.2013, EP20130177064 20130718; WO2014EP64913 20140711

Inventors: Lund Martin; Jacobsen Jonas; Van Den Brink Johannes Maarten

Proprietor: CHR HANSEN AS (DK)

Claims

- 1) A liquid milk clotting aspartic protease enzyme composition comprising
 - a. Milk clotting aspartic protease enzyme at a strength of from 25 IMCU/g of the composition to 30000 IMCU/g of the composition;
 - b. Polymer in a concentration from 1 ppm to 10000 ppm (w/w), and
 - c. A salt in a concentration from 1 to 350 g/kg; and wherein the pH of the composition is from 2 to 8 and wherein the polymer is a polymer having following characteristics (a), (b) and (c):
 - i. the polymer is a polymer of at least one monomer selected from the group of monomers consisting of: ethylene oxide, vinylpyrrolidone, vinyl alcohol, vinyl acetate, acrylonitrile, acrylate and methacrylate; and
 - ii. the polymer is a polymer with a molecular mass from 200 g/mol to 50000 g/mol; and
 - iii. the polymer is a polymer with a repeating monomer/element number (so-called "n" number) from n=5 to n=1250; and
 - iv. optionally the polymer having the characteristics (a), (b) and (c) above may be a substituted polymer comprising one or more substituent compound(s) different from the monomers of characteristic (a) and if the polymer is a substituted polymer the molecular mass of the substituted polymer as such is within the range of characteristic (b) and the molecular mass of the substituent compound(s) is less than the molecular mass of the polymer part of the substituted polymer.
- 2) The liquid milk clotting aspartic protease enzyme composition of claim 1, wherein the polymer concentration in item (ii) is in a concentration from 1ppm to 5000ppm (w/w).
- 3) The liquid milk clotting aspartic protease enzyme composition of claim 2, wherein the polymer concentration in item (ii) is in a concentration from 1ppm to 3000ppm (w/w).
- 4) A dried granulated milk clotting aspartic protease enzyme composition comprising:
 - a. milk clotting aspartic protease enzyme at a strength of from 25 IMCU/g of the composition to 30000 IMCU/g of the composition;
 - b. polymer in a concentration from 1ppm to 10000ppm (w/w), and
 - c. A salt; And wherein the pH of the composition suspended in water is from 2 to 8; and wherein the polymer is a polymer having the characteristics (a), (b) and (c) and optionally (D) of claim 1.
- 5) The dried granulated milk clotting aspartic protease enzyme composition of claim 4, wherein the polymer concentration in item (ii) is in a concentration from 1ppm to 5000ppm (w/w).
- 6) The dried granulated milk clotting aspartic protease enzyme composition of claim 5, wherein the polymer concentration in item (ii) is in a concentration from 1ppm to 3000ppm (w/w).
- 7) A method for storage of a milk clotting aspartic protease enzyme, wherein the method comprises following steps:
 - a. providing a milk clotting aspartic protease enzyme composition of any of claims 1 to 6; and
 - b. Storage of the composition at a period from 90days to 2000days at a temperature from -10° C. to 50°C.
- 8) A method for making a food or feed product comprising adding an effective amount of a milk clotting aspartic protease enzyme composition of any of claims 1 to 6 to the food or feed ingredient(s) and carrying out further manufacturing steps to obtain the food or feed product, and wherein the product is a milk based product and wherein the method comprises adding an effective amount of the milk clotting aspartic protease enzyme composition of any of claims 1 to 6 to milk and carrying out further manufacturing steps to obtain the milk based product; and wherein the milk is sheep milk, goat milk, buffalo milk, yak milk, lama milk, camel milk or cow milk; and wherein the milk based product is a fermented milk product, a quark or a cheese.
- 9) The method of claim 8, wherein a milk clotting aspartic protease enzyme composition first have been stored according to the method for storage of a milk clotting aspartic protease enzyme of claim 7 and thereafter added to the food or feed ingredient(s) according to claim 8.
- 10) A process for isolating a milk clotting aspartic protease enzyme of interest from an aqueous medium comprising such an enzyme of interest, wherein the method comprises the steps of:
 - a. obtaining an aqueous sample consisting of a number of components including the aspartic protease;
 - b. adding polymer in a concentration from 1 ppm to 10000 ppm to the aqueous sample of step (i) to get a polymer containing sample; and
 - c. isolating the aspartic protease from the polymer containing sample of step (ii) and thereby obtaining the isolated milk clotting aspartic protease enzyme of interest; wherein the polymer is a polymer having the characteristics (a), (b) and (c) and optionally (D) of claim 1.
- 11) The process of claim 10, with the proviso that the process is not a process, wherein PEG and inorganic salt are added to the aqueous sample of step (i) so as to form a liquid-liquid (aqueous) two phase system and then recover/isolate the aspartic protease from the PEG phase.
- 12) The process of claim 10, wherein the isolating step (iii) comprises the following steps:
 - a. applying the polymer containing sample of step (ii) onto a solid phase comprising a solid base matrix containing ligands which comprise a hydrophobic part in order to obtain adsorption of the aspartic protease of interest to the ligand; and
 - b. eluting the aspartic protease of interest from the solid phase

in order to recover the aspartic protease and thereby obtaining the purified isolated milk clotting aspartic protease enzyme of interest.

13) The process of claim 10, wherein the steps (i) to (iii) of claim 10 comprises:

- a. the aqueous sample consisting of a number of components including the aspartic protease of step (i) of claim 10 is applied onto a solid phase comprising a solid base matrix containing ligands which comprise a hydrophobic part in order to obtain adsorption of the aspartic protease of interest to the ligand;
- b. the addition of the polymer in step (ii) of claim 10 is addition to the elution buffer; and
- c. the isolating step (iii) of claim 10 comprises eluting the aspartic protease of interest from the solid phase in order to recover the aspartic protease and thereby obtaining the purified isolated milk clotting aspartic protease enzyme of interest.

14) The milk clotting aspartic protease enzyme composition of any of claims 1 to 6 or the process for isolating a milk clotting aspartic protease enzyme of any of claims 10 to 13,

wherein the milk clotting aspartic protease enzyme is *Camelius dromedarius* chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Camel_chymosin") or a variant of *Camelius dromedarius* chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the camel chymosin polypeptide amino acid sequence shown in FIG. 5 herein; or wherein milk clotting aspartic protease enzyme is bovine pepsin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Cow_pepsin") or a variant of bovine pepsin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the bovine pepsin polypeptide amino acid sequence shown in FIG. 5 herein.

15) The milk clotting aspartic protease enzyme composition of any of claims 1 to 6 or claim 14 or the process for isolating a milk clotting aspartic protease enzyme of any of claims 10 to 14, wherein the polymer is Polyethylene glycol (PEG) Polyvinylpyrrolidone, Polyvinyl alcohol, Polyvinyl acetate, Polyacrylonitrile, Polyacrylate, Polymethacrylate, polysorbate or Brij35.

16) The milk clotting aspartic protease enzyme composition of claim 15 or the process for isolating a milk clotting aspartic protease enzyme of claim 15, wherein the polymer is Polyethylene glycol (PEG), polysorbate 20 or Brij35 and wherein PEG has a molecular mass from 5000 g/mol to 15000 g/mol.

17) The milk clotting aspartic protease enzyme composition of any of claims 1 to 6 or any of claims 14 to 16, wherein the enzyme strength in item (i) is a strength of from 100 IMCU/g of the composition to 10000 IMCU/g of the composition; and wherein the polymer concentration in item (ii) is in a concentration from 100ppm to 3000ppm (w/w); and wherein the salt is selected from the group of NaCl, KCl, Na₂S₀₄, (NH₄)₂S₀₄, K₂H₂P₀₄, KH₂P₀₄, Na₂H₂P₀₄ or NaH₂P₀₄ or a combination thereof; and wherein the specific activity of the milk clotting aspartic protease enzyme is higher than 300 IMCU/mg total milk clotting aspartic protease enzyme protein, wherein the milk clotting aspartic protease enzyme is *Camelius dromedarius* chymosin comprising the polypeptide

amino acid sequence shown in FIG. 5 herein (termed "Camel_chymosin") or a variant of *Camelius dromedarius* chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the camel chymosin polypeptide amino acid sequence shown in FIG. 5 herein; or wherein the specific activity of the milk clotting aspartic protease enzyme is higher than 150 IMCU/mg total milk clotting aspartic protease enzyme protein, wherein the milk clotting aspartic protease enzyme is bovine chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Cow_chymosin") or a variant of bovine chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the bovine chymosin polypeptide amino acid sequence shown in FIG. 5 herein; and wherein if the composition is a liquid composition then the liquid composition has a total weight of from 10g to 10000 kg; and wherein if the composition is a dried granulated composition then the dried granulated composition has a total weight of from 0.5g to 50kg.

18) The process for isolating a milk clotting aspartic protease enzyme of any of claims 10 to 16, wherein the polymer is added in step (ii) in a polymer concentration of from 100ppm to 4000ppm (w/w); and wherein the in step (iii) obtained isolated milk clotting aspartic protease enzyme has a purity of at least 60% w/w of total protein (i.e. 60% w/w of total protein in the isolated composition is the isolated clotting aspartic protease enzyme); and wherein the polymer is Polyethylene glycol (PEG) Polyvinylpyrrolidone, Polyvinyl alcohol, Polyvinyl acetate, Polyacrylonitrile, Polyacrylate, Polymethacrylate or Brij35; and wherein when the polymer is Polyethylene glycol (PEG) Polyvinylpyrrolidone, Polyvinyl alcohol, Polyvinyl acetate, Polyacrylonitrile, Polyacrylate or Polymethacrylate-the polymer is a polymer with a molecular mass from 2000 g/mol to 30000 g/mol; and wherein the in step (iii) isolated milk clotting aspartic protease enzyme is an enzyme which: has a specific activity of the milk clotting aspartic protease enzyme higher than 300 IMCU/mg total milk clotting aspartic protease enzyme protein, more preferably is the specific activity milk clotting aspartic protease enzyme higher than 350 IMCU/mg total milk clotting aspartic protease enzyme protein, wherein the milk clotting aspartic protease enzyme is *Camelius dromedarius* chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Camel_chymosin") or a variant of *Camelius dromedarius* chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the camel chymosin polypeptide amino acid sequence shown in FIG. 5 herein; or has a specific activity of the milk clotting aspartic protease enzyme higher than 150 IMCU/mg total milk clotting aspartic protease enzyme protein, more preferably is the specific activity milk clotting aspartic protease enzyme higher than 165 IMCU/mg total milk clotting aspartic protease enzyme protein, wherein the milk clotting aspartic protease enzyme is bovine chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Cow_chymosin") or a variant of bovine chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the bovine chymosin polypeptide amino acid sequence shown in FIG. 5

herein; and wherein the aqueous sample consisting of a number of components including the aspartic protease of step (i) is obtained by recombinant production of the milk clotting aspartic protease enzyme in a production host cell (e.g. a eukaryotic production host cell such as *Aspergillus* cell); and wherein the process for isolating a milk clotting aspartic protease enzyme of interest is made by use of at least one purification technique selected from the group consisting of: chromatography, column chromatography, bed adsorption, expanded bed adsorption (EBA), batch adsorption, membrane adsorption and ion-exchange chromatography (IEC).

19) The process for isolating a milk clotting aspartic protease enzyme of any of claims 12 to 16 or claim 18, wherein the polymer is added in step (ii) in a polymer concentration from 100 ppm to 4000 ppm (w/w); and wherein the in step (iii) obtained isolated milk clotting aspartic protease enzyme has a purity of at least 60% w/w of total protein (i.e. 60% w/w of total protein in the isolated composition is the isolated clotting aspartic protease enzyme); and wherein the polymer is Polyethylene glycol (PEG) with a molecular mass from 5000g/mol to 15000g/mol or Brij35; and wherein the in step (iii) isolated milk clotting aspartic protease enzyme is an enzyme which: has a specific activity of the milk clotting aspartic protease enzyme higher than 300 IMCU/mg total milk clotting aspartic protease enzyme protein, more preferably is the specific activity milk clotting aspartic protease enzyme higher than 350 IMCU/mg total milk clotting aspartic protease enzyme protein, wherein the milk clotting aspartic protease enzyme is *Camelius dromedarius* chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Camel_chymosin") or a variant of *Camelius dromedarius* chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the camel chymosin polypeptide amino acid sequence shown in FIG. 5 herein; or has a specific activity of the milk clotting aspartic protease enzyme higher than 150 IMCU/mg total milk clotting aspartic protease enzyme protein, more preferably is the specific activity milk clotting aspartic protease enzyme higher than 165 IMCU/mg total milk clotting aspartic protease enzyme protein, wherein the milk clotting aspartic protease enzyme is bovine chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Cow_chymosin") or a variant of bovine chymosin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the bovine chymosin polypeptide amino acid sequence shown in FIG. 5 herein; and wherein the aqueous sample consisting of a number of components including the aspartic protease of step (i) is obtained by recombinant production of the milk clotting aspartic protease enzyme in a production host cell (e.g. a eukaryotic production host cell such as *Aspergillus* cell); and wherein the process for isolating a milk clotting aspartic protease enzyme of interest is made by use of at least one purification technique selected from the group consisting of: chromatography, column chromatography, bed adsorption, expanded bed adsorption (EBA), batch adsorption, membrane adsorption and ion-exchange chromatography (IEC); and wherein the hydrophobic part of the ligand is a benzyl group; and wherein the milk clotting aspartic protease enzyme is *Camelius dromedarius* chymosin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Camel_chymosin") or a variant of *Camelius dromedarius* chymosin,

wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the camel chymosin polypeptide amino acid sequence shown in FIG. 5 herein; or wherein milk clotting aspartic protease enzyme is bovine pepsin comprising the polypeptide amino acid sequence shown in FIG. 5 herein (termed "Cow pepsin") or a variant of bovine pepsin, wherein the variant comprises a polypeptide sequence which has at least 90% (preferably at least 95%, more preferably at least 99%) sequence identity with the bovine pepsin polypeptide amino acid sequence shown in FIG. 5 herein.

Method for the manufacture of a cream cheese

JP2016067352 (Japan)

International patent classification A23C 19/076

Application: 20150167631, 27.08.2015

Date of publication: 09.05.2016

Priority: GB20140017254 20140930

Proprietor: KRAFT FOODS R.& D., INC. (USA)

Claims

- 1) A method for the manufacture of a cream cheese, the method comprising: providing a milk- and cream-containing dairy composition; fermenting the milk- and cream-containing dairy composition to form a mixture of curd and whey; forming a concentrated mixture by removing at least an aqueous portion from the mixture of curds and whey; forming a cream cheese from the concentrated mixture; the method further comprising obtaining a retentate by ultrafiltrating and/or microfiltrating a mixture of skimmed milk and an acidic aqueous by-product of a cheese-making process, and:
 - a. Supplementing the milk- and cream-containing dairy composition with at least a portion of the retentate; and/or
 - b. Supplementing the concentrated mixture with at least a portion of the retentate.
- 2) The method according to claim 1, wherein the aqueous portion comprises whey, and/or wherein the acidic aqueous by-product of a cheese-making process is an acid whey.
- 3) The method according to claim 1 or claim 2, wherein the method comprises the step of a) supplementing the milk- and cream-containing dairy composition with at least a portion of the retentate, and where in
 - a. The milk- and cream-containing dairy composition has a ratio of milk to cream of from 1:2 to 2:1, preferably of about 1:1; and/or
 - b. The cream cheese has a total solids content of from 30 to 45wt%, preferably from 32 to 38wt%; and/or
 - c. The cream cheese has a fat content of from 15 to 30wt%, preferably from 20 to 25wt%.
- 4) The method according to claim 1 or claim

- 2, wherein the method comprises the step of
- b) Supplementing the concentrated mixture with at least a portion of the retentate, and wherein
- a. The milk- and cream-containing dairy composition has a ratio of milk to cream of from 7:1 to 10:1, preferably of from 8:1 to 9:1; and/or
 - b. The cream cheese has a total solids content of from 20 to 35wt%, preferably from 24 to 28wt%; and/or
 - c. The cream cheese has a fat content of from 8 to 20wt%, preferably from 10 to 15wt%.
- 5) The method according to any of the preceding claims, wherein the method comprises the step of b) supplementing the concentrated mixture with at least a portion of the retentate, wherein said at least a portion of the retentate is fermented.
- 6) The method according to any of the preceding claims, wherein the milk- and cream-containing dairy composition is pasteurized and/or homogenised prior to the step of fermenting the milk- and cream-containing dairy composition.
- 7) The method according to any of the preceding claims, wherein the step of removing at least an aqueous portion from the mixture of curds and acid whey comprises subjecting the mixture of curds and whey to centrifugation or membrane filtration.
- 8) The method according to any of the preceding claims, wherein the step of forming a cream cheese from the concentrated mixture comprises pasteurizing and/or homogenizing and/or texturing the concentrated mixture.
- 9) The method according to any of the preceding claims, wherein the step of texturing the concentrated mixture is carried out for a period of 10-80minutes, preferably 15-70minutes, more preferably from 30-60minutes and most preferably from 40-50minutes, and/or wherein the step of texturing the concentrated mixture is carried out at a temperature of 70-85°C, preferably 73-80°C and more preferably about 75°C.
- 10) The method according to any of the preceding claims, wherein, in the step of forming a cream cheese from the concentrated mixture, stabilizers and/or salt are added to the concentrated mixture, preferably wherein the stabilizers are selected from the group consisting of carob bean gum, carrageenan, locust bean gum, alginate, xanthan, gelatin, gum Arabic, agar-agar, pectin, cellulose gum, carboxy methyl cellulose, and mixtures of two or more thereof.
- 11) The method according to any of the preceding claims, wherein at least a portion of the acidic aqueous by-product of a cheese manufacturing process is the aqueous portion obtained from the step of forming a concentrated mixture.
- 12) The method according to any of the preceding claims, wherein the mixture of skimmed milk and an acidic aqueous by-product of a cheese manufacturing process has a ratio of skimmed milk to acidic aqueous by-product of from 1:1 to 10:1, preferably from 2:1 to 3:1, more preferably about 7:3.
- 13) The method according to any of the preceding claims, wherein the mixture of skimmed milk and an acidic aqueous by-product of a cheese manufacturing process has a pH of from 5.5 to 6.5, more preferably from 5.8 to 6.2, and still more preferably about 6.0.
- 14) The method according to any of the preceding claims, wherein a solids content of the retentate is increased relative to the solids content prior to ultrafiltration and/or microfiltration by from 100% to 400%, preferably by from 200% to 300%, more preferably by from 330 to 370%, and most preferably by about 350%.
- 15) The method according to any of the preceding claims, wherein the method further comprises packaging the cream cheese.
- 16) A method for the manufacture of a cream cheese, the method comprising: providing a milk- and cream-containing dairy composition; fermenting the milk- and cream-containing dairy composition to form a mixture of curds and whey; forming a cream cheese from the mixture of curds and whey; the method further comprising obtaining a retentate by ultra filtering and/or microfiltration a mixture of skimmed milk and an acidic aqueous by-product of a cheese-making process, and supplementing the milk- and cream-containing dairy composition with at least a portion of the retentate.
- 17) A cream cheese obtainable by the method of any of the preceding claims.

Interferon production-inducing agent containing lactic acid bacteria

JP2016073314 (Japan)

International patent classification A23C 19/032, A23C 9/123, A23L 33/10, A61K 35/744, A61P 31/12, A61P 37/04

Application: 20100293810, 28.12.2010

Date of publication: 12.05.2016

Priority: JP20100293810 20101228.

Proprietor: KIRIN HOLDINGS K.K. (JP)

Claims

- 1) An agent for inducing IFN production comprising, as an active ingredient, lactic acid bacteria capable of activating plasmacytoid dendrite cells (pDCs) and inducing IFN production or a cultured or processed product thereof.
- 2) The agent for inducing IFN production according to claim 1, wherein the processed product of lactic acid bacteria is a fraction containing nucleic acids.
- 3) The agent for inducing IFN production according to claim 1 or 2, wherein IFN is type I IFN or type III IFN.
- 4) The agent for inducing IFN production according to any one of claims 1 to 3, wherein IFN is at least one member selected from the group consisting of IFN- α , IFN- β , and IFN- λ .
- 5) The agent for inducing IFN production according to any one of claims 1 to 4, wherein, when the agent is orally administered, the lactic acid bacteria capable of activating plasmacytoid dendritic cells (pDCs) and inducing IFN production are highly tolerant to the gastric juice or intestinal juice and are capable of reaching the intestinal canal alive.
- 6) The agent for inducing IFN production according to claim 5, wherein the lactic acid bacteria capable of activating plasmacytoid dendritic cells (pDCs) and inducing IFN production are *Lactococcus lactis* JCM5805.

- 7) An immuno potentiating agent comprising the agent for inducing IFN production according to any one of claims 1 to 6.
- 8) An agent for prevention or treatment of virus infection comprising the agent for inducing IFN production according to any one of claims 1 to 6.
- 9) The immuno potentiating agent according to claim 7, which is an oral preparation.
- 10) The agent for prevention or treatment of virus infection according to claim 8, which is an oral preparation.
- 11) A food or drink product comprising the agent for inducing IFN production according to any one of claims 1 to 6.
- 12) The food or drink product according to claim 11, which is a dairy product containing cheese or yogurt.
- 13) A method of screening for lactic acid bacteria capable of activating plasmacytoid dendritic cells (pDCs) and inducing IFN production comprising culturing the lactic acid bacteria with bone marrow-derived plasmacytoid dendritic cells (pDCs) and detecting activation of plasmacytoid dendritic cells (pDCs) and induction of IFN production,

Wherein, when plasmacytoid dendritic cells (pDCs) are activated and IFN production is induced, the lactic acid bacteria are determined to be capable of activating plasmacytoid dendritic cells (pDCs) and inducing IFN production.

- 14) A host microorganism for a recombinant vaccine comprising the agent for inducing IFN production according to any one of claims 1 to 6.

Filled cheese product

JP2016077290 (Japan)

International patent classification A23C 19/09

Application: 2015 0 179 353, 11.09.2015

Date of publication: 16.05.2016

Priority: GB20140018075 20141013

Proprietor: GENERAL (US) MILLS, INC.

Claims

- 1) An individually packaged cream-cheese laminate comprising first and second outer cream-cheese layers and a filling layer interposed there between.
- 2) The cream-cheese laminate according to claim 1, wherein the filling layer comprises a second cream-cheese, processed cheese, pesto, tomato sauce, salad cream, mayonnaise, mustard, marmalade, jam, jelly, chocolate, Marmite®, or a mixture of two or more thereof.
- 3) The cream-cheese laminate according to claim 1 or claim 2, wherein the cream-cheese comprises one or more stabilizers selected from the group consisting of gelatin, xanthan gum, carrageenan, locust bean gum, citrate and mixtures of two or more thereof.
- 4) The cream-cheese laminate according to claim 3, wherein the stabilizers are present in an amount of from 1 to 5wt%, preferably from 2 to 4wt%, more preferably from 2.5 to 3.5wt% by weight of the cream-cheese.
- 5) The cream-cheese laminate according to any of the preceding claims, wherein the cream-cheese has a solids content of 35 to 60wt%, preferably from 40 to 55wt%, more preferably from 44 to 50wt%, and/or wherein the cream-cheese has a protein content of from 6 to 20wt%, preferably from 10 to 18wt%, more preferably from 10 to 15wt%, based on the weight of the cream-cheese.
- 6) The cream-cheese laminate according to any of the preceding claims, wherein a middle of the laminate has a thickness of 6mm or less, preferably 5mm or less, still more preferably 4mm or less, and preferably at least 2mm.
- 7) The cream-cheese laminate according to any of the preceding claims, wherein the filling layer is of a constant thickness, preferably wherein said thickness is 4mm or less, more preferably 3mm or less, still more preferably 2mm or less, and preferably at least 1mm.
- 8) The cream-cheese laminate according to any of the preceding claims, having a mass of 45g or less, preferably 40g or less, and preferably at least 25g.
- 9) The cream-cheese laminate according to any of the preceding claims, wherein the filling layer is fully enclosed by the first and second outer cream-cheese layers.
- 10) The cream-cheese laminate according to any of the preceding claims, wherein the first and second cream-cheese layers are merged to form a single layer around the periphery of the laminate, wherein the thickness of said single layer is less than the thickness of a middle of the laminate.
- 11) The cream-cheese laminate according to any of the preceding claims, wherein the cream-cheese laminate consists of the first and second outer cream-cheese layer and the filling layer.
- 12) A package comprising a plurality of the individually packaged cream-cheese laminates of any of the preceding claims.
- 13) A method for the manufacture of the cream-cheese laminate of any of the preceding claims, the method comprising providing a cream-cheese, and co-extruding the cream-cheese with a filling to produce a cream-cheese laminate.
- 14) The method according to claim 13, wherein the step of co extruding is conducted at a temperature of 70 °C or above.
- 15) The method according to claim 13 or claim 14, wherein the step of co extruding is conducted directly onto the packaging material to package the cream-cheese laminate.
- 16) The method according to any of claims 13 to 15, wherein the cream-cheese has been supplemented with milk protein concentrate and one or more stabilizers selected from the group consisting of gelatin, xanthan gum, carrageenan, locust bean gum, citrate and mixtures of two or more thereof.
- 17) The method according to any of claims 13 to 16, wherein the cream-cheese is supplemented with milk protein concentrate in an amount of from 2 to 10wt%, preferably from 3 to 8wt%, more preferably from 4 to 6wt%, based on the weight of the cream-cheese.

Cheese maker

JP 2016086812 (Japan)

International patent classification A01J 25/11, A23C 19/06

Application: 2015 0 165 692, 25.08.2015

Date of publication: 23.05.2016

Priority: 2014 0 153 028, 05.11.2014

Abstract

A cheese manufacturing apparatus according to the present invention comprises a body including a milk serum storage space having the upper part opened inside; an aging container in which yogurt is put in through the upper part of a raw material aging space having the upper and lower parts opened; and a filtering mesh combined with the lower end of the aging container in a mesh shape, passing only milk serum of yogurt stored in the raw material aging space through the storage space to produce cheese in the raw material aging space.

Method of producing natural cheese

JP 2016 093 198 (Japan)

International patent classification A23C 19/06

Application: 2007 0 250 963, 27.09.2007

Date of publication: 26.05.2016

Proprietor: MEIJI DAIRIES CORP. (JP)

Abstract

To provide a method of producing a natural cheese whereby the maturation time and the flavor (in particular, the body taste) can be efficiently controlled or adjusted by a simple procedure. In the process of producing a natural cheese, a member selected from among a lactic acid bacterium, disrupted cells of a lactic acid bacterium and a microbial origin protease or an arbitrary combination thereof is added to a cheese curd remaining after discharging whey (namely, the cheese curd before maturation) and/or the cheese (namely, the cheese at the early stage of maturation), followed by maturation.

Cheese having sheep-like and/or goaty flavour attributes

EP3016521 (The European patent office)

International patent classification A23C 19/00

Application: 2013 0 174 881, 03.07.2013

Date of publication: 11.05.2016

Priority: EP20130174881 20130703; EP20130174885 20130703; WO2013NL50865 20131203; EP20130803283 20131203.

Proprietors: CSK FOOD ENRICHMENT B.V. (NL)

Claims

- 1) A method for producing (a.) a white brined cheese or (b.) a cheese having one or more flavour characteristics of a sheep cheese and/or of a goat cheese, said method comprising mixing milk with a coagulant, a starter culture, an exogenous carboxylic ester hydrolase or more preferably a lipolytic yeast strain, and an ethanol producing micro-organism which is preferably capable of metabolizing lactose; wherein the milk comprises one or more milk types selected from the group consisting of bovine milk having a fat content, goat's milk having a fat

content and ewe's milk having a fat content, and wherein the ethanol-producing micro-organism is preferably an ethanol producing yeast strain.

- 2) The method according to claim 1, wherein the milk is predominantly provided as bovine milk having a fat content.
 - 3) The method according to any one of the preceding claims, wherein no exogenous carboxylic ester hydrolase is mixed with the milk.
 - 4) The method according to any one of the preceding claims, wherein the milk has a lactose content of between 0.5-10 wt.% relative to the weight of the milk, and wherein the ethanol producing micro-organism is capable of metabolizing lactose.
 - 5) The method according to any one of the preceding claims, wherein ethanol producing micro-organism is an ethanol producing yeast strain and wherein the lipolytic yeast strain and the ethanol producing yeast strain are different yeast strains.
 - 6) The method according to any one of the preceding claims, which method further comprises ripening the cheese.
 - 7) Use of an exogenous carboxylic ester hydrolase or preferably a lipolytic yeast strain and an ethanol producing micro-organism which is preferably capable of metabolising lactose, (a) in a method for producing a cheese made at least partially of bovine milk having a fat content, for generating in said cheese one or more flavour characteristics of a sheep cheese or a goat cheese, or (b) in a method for producing a cheese made of milk comprising goat's milk having a fat content and/or ewe's milk having a fat content, for accelerating the ripening of said cheese and/or for enhancing at least one of its goaty or sheep-like flavour characteristics;
 - 8) Wherein the ethanol producing micro-organism is preferably an ethanol producing yeast strain.
 - 9) The use according to claim 7 wherein the milk has a lactose content of between 0.5-10 wt.% relative to the weight of the milk, and wherein the ethanol producing microorganism is capable of metabolising lactose.
 - 10) The use according to any one of claims 7-8, wherein no added exogenous carboxylic ester hydrolase is employed.
 - 11) The use according to any one of claims 7-9, wherein the cheese is a white brined cheese.
 - 12) A frozen or dried yeast culture composition having a weight of at least 10 g, preferably contained in a closed container comprising
 - a. An exogenous carboxylic ester hydrolase; and
 - b. An ethanol producing micro-organism, preferably an ethanol producing yeast strain, which is preferably capable of metabolising lactose;
- Or
- i. a lipolytic yeast strain and
 - ii. An ethanol producing micro-organism, preferably an ethanol producing yeast strain, which is preferably capable of metabolizing lactose.
- 13) The yeast culture composition according to claim 11, wherein components (i.) and (ii.) are provided in such amounts and/

or having such activities that the yeast culture composition is suitable for generating, in a cheese made exclusively of bovine milk having a lactose content and a fat content, one or more flavour characteristics of a sheep cheese or a goat cheese.

- 14) The yeast culture composition according to claim 11 or 12, which comprises no added exogenous carboxylic ester, hydrolase.

The yeast culture composition according to any one of claims 10-13 which comprises a lipolytic yeast strain and an ethanol producing yeast strain, wherein each of the lipolytic yeast strain and the ethanol producing yeast strain are present in an amount of 1.10×10^9 cfu or higher, more preferably in an amount of 1.10×10^9 cfu or higher, per gram of the yeast culture composition,

wherein a ratio r can be defined as the total number of colony forming units of the lipolytic yeast strain divided by the total number of colony forming units of the ethanol producing yeast strain, wherein said ratio r is greater than 1:6, more preferably greater than 1:4, most preferably greater than 1:2, and wherein said ratio r preferably is lower than 10:1, more preferably lower than 6:1, more preferably lower than 4:1, most preferably lower than 2:1.

- 15) The method according to any one of claims 1-6, the use according to any one of claims 7- 10 or yeast culture composition according to any one of claims 11-14, wherein the lipolytic yeast strain is a strain of Yarrow is lipolytic, preferably a strain of Yarrowia lipolytic deposited with BCCM/IHEM under accession number IHEM 26011 and/or the ethanol producing micro-organism or yeast strain is a strain of Kluyveromyces which is preferably selected from the group consisting of Kluyveromyces lactic and Kluyveromyces marxianus, preferably the ethanol producing strain is a strain of Kluyveromyces lactic, preferably the ethanol producing strain is a strain of Kluyveromyces lactic which has been deposited with BCCM/IHEM under accession number IHEM 26012.

- 16) A cheese having one or more flavour characteristics of a sheep cheese and/or of a goat cheese obtainable by the method according to any one of claims 1-6.

- 17) A white brined cheese obtainable by the method according to any one of claims 1-6.

A method and a system for producing semi-hard cheese

EP 3017299 (The European patent office)

International patent classification A23C 19/02, A23C 19/06, G01N 33/04

Application: 2014 0 736 370, 03.07.2014

Date of publication: 11.05.2016

Priority: SE20130050831 20130703; WO2014EP64147 20140703

Proprietor: TETRA LAVAL HOLDINGS & FINANCE (CH)

Claims

- i. A method comprising determining a concentration of curd particles in a curd and whey mixture, dosing a volume of curd and whey mixture into a mould provided with openings for letting whey through, but retaining curd particles, wherein said dosing is adapted such that said volume of curd and whey mixture comprises a preset volume of curd particles by taking

into account said concentration of curd particles, measuring a volume of curd and whey mixture retained in said mould and/or a volume of whey let through said openings in said mould, and providing information on said volume of curd and whey mixture retained in said mould and/or said volume of whey let through said openings in said mould for adjusting said concentration of curd particles in said curd and whey mixture.

- ii. The method according to claim 1, further comprising applying an initial pressure on said curd and whey mixture after dosing said volume of curd and whey mixture in said mould, but before measuring said volume of curd and whey mixture retained in said mould and/or said volume of whey let through said openings in said mould.
- iii. The method according to claim 2, wherein said step of applying said initial pressure is performed for a first period of time, wherein said first period of time is ended when a drop in pressed out whey per time unit fulfilling reference conditions is detected.
- iv. The method according to any of the preceding claims, further comprising applying a subsequent pressure on said curd and whey mixture in said mould.
- v. The method according to any of the preceding claims, further comprising adjusting temperature of said curd and whey mixture based on said information on said volume of curd and whey mixture retained in said mould and/or said volume of whey let through said openings in said mould.
- vi. The method according to any of preceding claims, further comprising determining a curd particle size distribution in said curd and whey mixture, providing information on said curd particle size distribution, and adjusting temperature of said curd and whey mixture based on said on said information on said size distribution.
- vii. The method according to claim 5 or 6, wherein said temperature of said curd and whey mixture is adjusted before being dosed into said mould.
- viii. The method according to claim 5 to 7, wherein said temperature is lowered.
- ix. The method according to claim 8, wherein said temperature of said curd and whey mixture is lowered by holding said curd and whey mixture in said mould for a period of time before applying an initial pressure.
- x. The method according to claim 8, wherein said temperature of said curd and whey mixture is lowered by evaporating moisture from said curd and whey mixture before applying an initial pressure.
11. An apparatus comprising
- xi. a first device for determining a concentration of curd particles in a curd and whey mixture, a second device for dosing curd and whey mixture into a mould, a third device for measuring a volume of curd and whey mixture retained in said mould and/or a volume of whey let through said openings in said mould, and
- xii. a fourth device for providing information on said volume of curd and whey mixture retained in said mould and/or said volume of whey let through said openings in said mould to said first device for adjusting said concentration of curd particles in said curd and whey mixture.

- xiii. The apparatus according to claim 11, further comprising a fifth device for applying an initial pressure on said curd and whey mixture.
- xiv. The apparatus according to claim 11 or 12, further comprising a sixth device for adjusting temperature of said curd and whey mixture based on said information provided by said fourth device on said volume of mixture of curd and whey retained in said mould and/or said volume of whey let through said openings in said mould.
- xv. The apparatus according to claim 13, wherein said first device is configured to measure a curd particle size distribution in said curd and whey mixture, said fourth device is configured to provide information on said curd particle size distribution, and said sixth device is configured to adjust temperature of said curd and whey mixture based on said information on said curd particle size distribution.
- xvi. A controller comprising computer program code adapted to perform receiving information on a volume of curd and whey mixture retained in a mould and/or a volume of whey let through openings in said mould, determining a concentration of curd particles by taking into account said information, determining a volume of curd and whey mixture to be dosed into said mould based on said concentration in order to achieve a preset volume of curd and whey mixture retained in said mould, and transferring information on said volume of curd and whey mixture to be dosed into said mould to a dosing device.
- xvii. A computer program comprising computer program code adapted to perform receiving information on a volume of curd and whey mixture retained in a mould and/or a volume of whey let through openings in said mould, determining a concentration of curd particles by taking into account said information, determining a volume of curd and whey mixture to be dosed into said mould based on said concentration in order to achieve a preset volume of curd and whey mixture retained in said volume, and transferring information on amount of curd and whey mixture to be dosed into said mould to a dosing device, when said computer program is run on a computer.
- of the resulting composition under high pressure; wherein a step of fermentation of milk is performed during step a) or after step a) or after step b).
- ii. The process according to claim 1, wherein said fermented dairy product is a cream cheese or yoghurt.
3. The process according to claim 1 or 2, wherein step b) is a step b') of nanofiltration.
- iii. The process according to claim 3, wherein said step b') is performed at a pressure comprised between about 25 bars and about 35 bars, preferably between about 30 bars and about 35 bars, more preferably at a pressure of about 30 bars.
- iv. The process according to claim 1 or 2, wherein step b) is a step b'') of reverse osmosis.
- v. The process according to claim 5, wherein step b'') is performed at a pressure comprised between about 15 to about 34 bars, preferably between about 18 to about 30 bars more preferably between about 24 bars and about 30 bars, even more preferably about 30 bars.
- vi. The process according to any one of claim 1 to 6, wherein said milk is selected in the group consisting of whole milk, partially or totally skimmed milk, and skimmed milk powder.
- vii. A fermented dairy product obtainable according to the process according to any one of claims 1 to 7.
- viii. A fermented dairy product according to claim 8 substantially exempt of any added sugars or artificial sweeteners.

Process of manufacturing milk curd and cheese by direct chemical acidification

WO 2016071766 (The patent cooperation Treaty)

International patent classification M1K A23C 19/05

Application: 2015 IB 02 267, 06.11.2015

Date of publication: 12.05.2016

Priority: 2014 0 245 769, 06.11.2014

Proprietor: UNIVERSIDAD NACIONAL DE COLOMBIA (COLOMBIA)

Claims

- 1) A process for preparing milk curd comprises the following steps:
- Milk skimming;
 - Heating;
 - Temperature drop;
 - Coagulation using ascorbic acid;
 - Residence; and
 - Separation of the curd.
- 2) A process according to Claim 1, wherein the milk is selected from the group consisting of bovine milk, goat milk, buffalo milk and mixtures thereof.
- 3) A process according to Claim 1, wherein during the skimming the fat is separated until milk reaches a fat content less of 0.5% p/p.

Process for preparing a fermented dairy product with reduced amount of lactose and improved nutritional and organoleptic properties

EP 3021677 (The European patent office)

International patent classification A23C 19/032, A23C 19/076, A23C 9/12, A23C 9/142;

Application: 2013 0 763 114, 17.07.2013

Date of publication: 25.05.2016

Priority: WO20131B01645 20130717

Proprietor: GERVAIS (FR) DANONE S.A.

Claims

- Process for preparing a fermented dairy product, comprising the following steps: a) hydrolysis of lactose contained in milk; b) proteins and sugars concentrations through a process of filtration

- 4) A process according to Claim 1, wherein the milk is taken in the heating step to a temperature between 90.0 °C and 100.0°C.
- 5) A process according to Claim 1, wherein in the step of lowering the temperature, it is reduced by 25% with respect to the heating temperature of the milk.
- 6) A process according to Claim 1, wherein ascorbic acid or a salt thereof is used as coagulating agent.
- 7) A process according to Claim 6, wherein the amount of ascorbic acid added is between 0.5% and 10.0% by weight relative to the total weight of mixture.
- 8) A process according to Claim 1, wherein in the step of residence the mixture is left to stand for a period of time between 1 and 30minutes.
- 9) A process according to claim 1, wherein the separation of curd is performed by draining the whey with a sieve which retains the curd.
- 10) A process for preparing cheese comprising to subject the curd obtained by the process of any of the Claims 1 to 9 to further steps of salting, molding and / or pressing.
- 11) A process according to Claim 10, wherein in the step of salting, salt is added to the curd in an amount between 0.01% and 10.0% by weight relative to the total weight of curd.
- 12) A process according to Claim 10, wherein in the molding step the salted curd is placed in a mold with a defined geometric shape.
- 13) A process according to claim 10, wherein in the pressing step is carried out a pneumatic press at a pressure between 130 and 170 KPa for 20 to 60minutes.
- 14) Milk curd obtained by the process according to any of claims 1 to 9.
- 15) Milk curd obtained by the process according to any of claims 1 to 9, characterized by containing between 0.01% and 5.0% residual vitamin C.
- 16) A cheese obtained by the process according to any of claims 1 to 13.
- 17) A cheese obtained by the process according to any of claims 1 to 13, characterized by having a lifetime between 60 and 180days, cooled to 4°C.
- 18) A cheese obtained by the process according to any of Claims 10 to 13, characterized for being a cream cheese, a double cream cheese, fresh cheese, Parmesan cheese, edam cheese or ricotta cheese.
- 19) A cheese obtained by the process according to any of Claims 10 to 13, characterized by containing between 0.01% and 5.0% residual vitamin C.
- 20) A method for preparing milk curds comprising:
 - a. heating raw milk to a temperature sufficient to pasteurize the milk;
 - b. cooling the milk;
 - c. adding a fruit acid to the milk in an amount sufficient to achieve a pH in the range of 3.5 to 5.5 and
 - d. incubating the milk and acid mixture;Wherein the acid coagulates the milk to form a composition comprising milk curds.
- 21) The method of claim 20, comprising heating the raw milk to a temperature of at least 92°C.
- 22) The method of claim 20, comprising cooling the milk to a temperature between approximately 75°C and 92°C.
- 23) The method of claim 20, comprising cooling the milk to a temperature selected from the group consisting of approximately 75°C, 77.5°C, 88°C, and 92°C.
- 24) The method of claim 20, wherein the fruit acid comprises an acid or a salt thereof selected from the group consisting of ascorbic acid, citric acid, lactic acid, malic acid, steric acid, tartaric acid, and combinations thereof.
- 25) The method of claim 24, wherein the acid is ascorbic acid or a salt thereof.
- 26) The method of claim 25, wherein the amount of ascorbic acid added is between 0.5% and 10.0% by weight relative to the total weight of the mixture.
- 27) The method of claim 20, wherein the amount of acid added is between 0.5% and 10.0% by weight relative to the total weight of the mixture.
- 28) The method of claim 20, wherein the amount of acid added is between 0.5% and 3.0% by weight relative to the total weight of the mixture.
- 29) The method of claim 20, wherein the pH of the milk and acid mixture is approximately 5.
- 30) The method of claim 20, wherein the pH of the milk and acid mixture is selected from the group consisting of 3.7, 3.8, 4.9, 5.1, and 5.25.
- 31) The method of claim 20, wherein the incubation time is at least 0.5minute.
- 32) The method of claim 20, wherein the incubation time is less than 30minutes.
- 33) The method of claim 20, wherein the acid coagulates the milk to form a mixture comprising milk curds and whey and the method further comprises separating the curds from the whey.
- 34) The method of any of claims 20 to 33, further comprising salting the curds.
- 35) The method of any of claims 20 to 33, further comprising molding the curds.
- 36) The method of any of claims 20 to 33, further comprising pressing the curds.
- 37) The method of claim 34, wherein the salt is added to the curds in an amount between 0.01% and 10.0% by weight relative to the total weight of curds.
- 38) The method of claim 34, wherein the salt is added to the curds in an amount between 1% and 1.5% by weight relative to the total weight of curds.
- 39) The method of claim 36, comprising pressing the curds at a pressure between 130 and 200 KPa for 20 to 60minutes.

- 40) The method of claim 36, comprising pressing the curds at a pressure between 150 and 200 Kpa for 20 to 60minutes.
- 41) The method of claim 20, wherein the milk is selected from the group consisting of bovine milk, goat milk, buffalo milk and mixtures thereof.
- 42) Milk curd obtained by the method according to any one of claims 20 to 41.
- 43) Milk curd obtained by the method according to any of claims 20 to 41, characterized by containing between 0.01% and 5.0% residual vitamin C.
- 44) Milk curd obtained by the method according to any of claims 20-41, characterized by containing between 0.2% and 0.25% residual vitamin C.
- 45) A cheese obtained by the method according to any of claims 20 to 41.
- 46) A cheese obtained by the method according to any of claims 20 to 41, characterized by having a lifetime between 60 and 180days, cooled to 4°C.
- 47) A cheese obtained by the method according to any of claims 20 to 41 that is selected from the group consisting of cream cheese, a type of mozzarella, fresh white cheese, a type of Parmesan cheese, a type of Edam cheese and ricotta cheese.
- 48) A cheese obtained by the method according to any of claims 20 to 41, characterized by containing between 0.01% and 5.0% residual vitamin C.
- 49) A cheese obtained by the method according to any of claims 20-41, characterized by containing between 0.2% and 0.25% residual vitamin C.

Acknowledgements

None.

Conflict of interest

Author declares that there is no conflict of interest.