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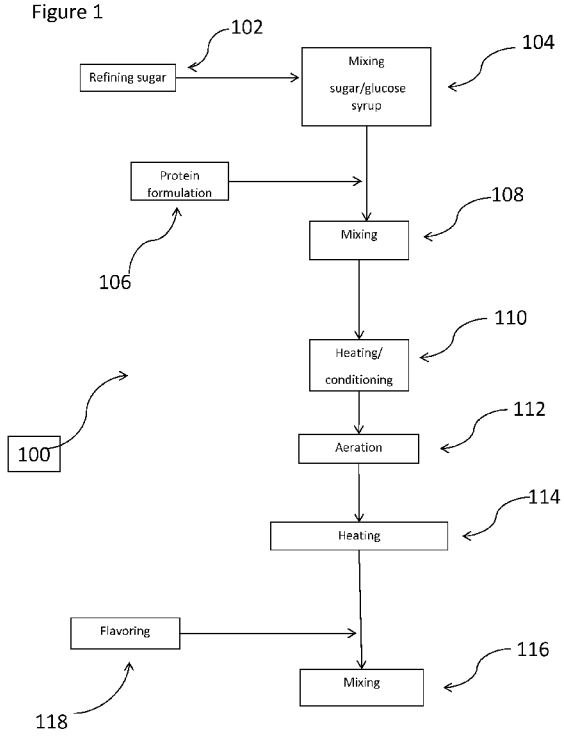
[Continued on next page]

(54) Title: CONFECTIONARY PRODUCTION

Figure 1



(57) Abstract: The invention provides a sugar composition for use in the manufacture of foodstuffs, said composition comprising a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup. This composition allows for energy efficient production of products including frappe, and methods as well as apparatus used in these methods form further aspects of the invention.

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Confectionary Production

Field

[0001] The present invention relates to a sugar composition useful in the production of confectionary products, in particular a nougat product, to processes for preparing the composition as well as its use in processes for manufacturing food products, to products obtained thereby and apparatus used in the manufacturing processes.

Background

[0002] Sugar syrups are used in the production of a wide range of processed foodstuffs and in particular confectionary items such as nougat.

[0003] Nougat is a particularly popular confectionary item. It may be available as a discrete product in itself. Alternatively, it is present as a component of composite confectionary items such as bars which comprise other elements such as chocolate, as well as caramels including aerated caramels, toffees, fudges, nuts, wafers, biscuits, gels, flavoured creams or pralines.

[0004] Nougats traditionally comprise sugars which may be in the form of honey as well as egg white, which provides a source of protein. Some nougats are hard and chewy but softer nougats, sometimes called nougatines, contain higher moisture content. They may contain ingredients such as cocoa, milk powder, lactose, malt and icing sugar, which have a shortening effect. Fat and emulsifiers may also be included.

[0005] Typical nougat recipes are described for example in 'Sugar Confectionary Manufacture (Berlin:Springer) Second edition, 1995 Ed. E.B. Jackson and in particular in Table 13.3 which shows some specific examples. Typically, nougat formulations comprise from 60-82%w/w for example from 67-80%w/w of a sugar syrup, 6-32% for example from 8-25%w/w of an egg mixture and from 5-15%

for example from 10-14% w/w of a flavouring and graining mixture.

[0006] In some cases nuts and dried fruit are added to nougat to produce a product called montelimart.

[0007] Nougat is typically prepared by mixing together appropriate amounts of a sugar syrup and a protein mixture, aerating the mixture and thereafter mixing the resultant frappe with a suitable quantity of flavouring/graining mixture. Thus as used herein, the term 'frappe' refers to an aerated or foamed mixture comprising sugars and proteins which has been stabilised by coagulation of the proteins. This is used as a starting material for a range of products including nougat but also meringue, fondant, cake, bavaroise or mousse.

[0008] Typically, frappe is prepared using a syrup solution prepared by mixing a sugar such as granulated sucrose with sufficient water to form a solution, which sugar solution is formed into a 'base syrup' or 'doctor syrup' by addition of glucose and optionally other ingredients such as salt. It is then generally necessary to subject the base syrup to a heating or cooking procedure to remove at least some of the water before the syrup is of an appropriate concentration to go forward to the subsequent processing stages.

[0009] Highly elevated temperatures for example of up to 140°C are generally required in order to evaporate water so as to reduce the water content in line with the recipe. On cooling, the resultant syrup forms a highly saturated solution which changes state during production to a crystalline form to obtain the desired texture properties. Residual energy may be used subsequently to assist in coagulating protein. However, overall, this process requires considerable energy expenditure.

[0010] An example of a method requiring high temperature cooking to evaporate water is described WO2008/117066. In this process, a mixture of sugars or sugar substitutes in water are first cooked down to provide a suitable syrup having the desired dry solid content. To this cooked mixture, a structuring agent is added followed by fats or acids, the latter being intimately associated, for example adsorbed on a 'carrier material'. Carrier materials are used in order to reduce adverse effects on networks or foam structures in such products caused by the presence of fats or acids. Suggested carrier materials include sugars such as powdered or fine sucrose. The resultant slurry is then aerated and shaped to form a foamed candy composition.

[0011] The applicants have found a completely different energy efficient means of introducing sugars into food products, in particular confectionary such as nougat.

Brief Summary

[0012] According to one embodiment, a sugar composition for use in the manufacture of foodstuffs, said composition comprising a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup. In some embodiments, the sugar composition consists of a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup. The fine sugar may suitably be a refined glucose with a mean particle size of, e.g., from about 5 to about 25 microns, or from about 10 to about 15 microns. The glucose syrup may suitably have a DE value in the range of from 35-95, with the ratio of glucose syrup to fine sugar in the sugar composition ranging from 3:1 to 1:3.

[0013] A method for preparing the sugar composition is also provided and comprises mixing fine sugar with glucose syrup at a temperature at which a suspension will form.

[0014] Such a method is useful for preparing a processed food stuff consisting of or including the sugar composition and such a use is also provided. In some embodiments, the processed food product prepared is a confectionery item.

[0015] The sugar composition may be used in the preparation of a frappe, and accordingly, a method for producing a frappe is also provided and comprises mixing a sugar composition according to an embodiment with a formulation comprising a protein to provide a mixture, and aerating the mixture. The protein formulation may further comprise powdered egg, milk protein or a mixture thereof. In some embodiments, the mixture comprises the protein formulation in amounts of from about 2-20%w/w.

[0016] Suitable aeration techniques include dispersing air into the mixture under pressure, or utilizing a pressure beater aerate the mixture. Once aerated, the mixture may desirably be heated, and in such embodiments, the heating may occur under pressure.

[0017] A frappe produced by the method is also considered to be a further aspect, and in yet further embodiments, may be suitably used in a confectionery product by addition of further ingredients.

[0018] An apparatus for producing a frappe in accordance with one or more embodiments is also provided, and comprises a container, mixing means for mixing material in the container, means for delivering fine sugar powder to the container, means for delivering glucose syrup to the container and control means to control the relative amounts of fine sugar powder and glucose syrup which is delivered to the container.

[0019] The apparatus may further comprise additional delivery means, arranged to provide further formulations, compositions or ingredients to the suspension of fine sugar in glucose syrup as

soon as it has been formed in the mixer. In these, or other embodiments, the apparatus may further comprise heating means arranged to condition mixtures to produce a viscosity suitable for aeration. An aeration device may also desirably be provided, and in such embodiments, is arranged to receive material from the mixing container. The apparatus may further comprise a heater, such as a direct heater, arranged to heat the aerated material.

[0020] In another aspect, an apparatus is provided and comprises a container, a mixer comprising a series of rotating blades arranged in the container such that material added to an end region of the container is transported along it while being mixed, a first pipe or tube, operably disposed relative to a storage device such as a hopper for fine sugar and the container, a second pipe or tube operably disposed relative to a storage device such as a tank for glucose syrup and the container, a control system operably disposed to adjustable valves further operably disposed relative to the first and second pipe or tube.

Brief Description of the Drawings

[0021] The invention will now be particularly described by way of example with reference to the accompanying diagrammatic drawings in which:

[0022] Figure 1 is a schematic process diagram illustrating a process according to one embodiment; and

[0023] Figure 2 is a photograph showing confectioneries in accordance with and/or prepared in accordance with certain embodiments.

Detailed Description

[0024] According to the present invention, there is provided a composition for use in the manufacture of foodstuffs, said

composition comprising a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup.

[0025] The sugar particles represent components of the recipe, for example bulk components, and are not acting as carrier materials. Thus they do have fats or acids associated therewith. The composition itself is suitably free of any fats or acids, and in particular is free of all other components. Thus, in a particular embodiment, the composition consists of a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup.

[0026] This represents a simple, and easily prepared starting material. There is no need to dissolve and cook the sugar to form a solution and then a syrup as described in for example WO2008/117066, and thus the heating requirements are reduced at this stage. Furthermore, the presence of a sugar particles in the material can provide advantages in downstream processing, as they may act as nucleating agents to facilitate crystallisation downstream in the process.

[0027] The applicants have surprisingly found that the use of suspensions of fine sugar can be used as a substitute for sugar solutions or syrups in manufacturing processes, without causing undue 'graininess' or 'sandiness' in the final product. However, by using this product, there is no need to include the relatively large amounts of water necessary to create a sugar solution, and which may have to be removed later during the processing. This results in significant energy savings in the processing. Furthermore, the use of a sugar suspension of the invention may simplify the production process in other ways, since the handling of a sugar suspension at moderate temperatures may be easier than dealing with sugar solutions and the high temperatures to which they are required to be exposed in order to produce acceptable products.

[0028] As used herein, the expression 'for use in manufacture' generally means that the composition is suitable for use on a production manufacturing scale. Thus for example, the composition may be produced in significant quantities, for example in excess of 10kg/hour, for example from 60kg/hour to 2000kg/hour.

[0029] Suitably the fine sugar is a refined or milled sucrose. In particular, the fine sugar has a mean particle size of less than 25 microns, for example less than 20 microns, in particular less than 15 microns. Thus for example, the fine sugar has a mean particle size in the range of from 5-30microns, for example in the range of from 10-30microns. Whilst the mean particle sizes are in the ranges given above, the maximum particle size is suitably no more than 35 microns, and in particular no more than 30 microns.

[0030] Such sugars are available commercially where they may be sold as 'icing sugars'. Alternatively, they may be produced by grinding or milling granulated sugars.

[0031] Glucose syrups are well known in the art and are obtained by hydrolysis of starches, generally vegetable starches. They may have a variable composition but are generally classified on the basis of their dextrose equivalence (DE) value. Generally, the higher the dextrose equivalence, the lower the viscosity of the syrup is, although temperature also plays a key role in the viscosity. In order to form a suspension, the viscosity of the glucose syrup is suitably in the range of from 6 Pa.s/60°C to 1.5 Pa.s/60°C. This may be achieved with a range of glucose syrups by adjusting the temperature accordingly. However, in order to ensure that a suspension, in particular a uniform suspension, may be formed within a reasonable temperature range, the glucose syrup used in the composition of the invention suitably has a DE value in the range of from 35-95, for example from 45-80 such as from 55-70, for instance about 62.

[0032] The ratio of glucose syrup to fine sugar in the composition of the invention will vary depending upon the product to which the composition is required to be added. Typically however, it will be in the range of from 3:1 to 1:3, for example in the range of from 2:1 to 1:2, such as from 1:1 to 1:1.5 based upon dry weights. The composition may be formed by mixing the fine sugar with glucose syrup at a suitable temperature in order to form the composition. Typically, the temperatures will be in the range of from 35 to 65°C to ensure that a substantially homogenous or uniform suspension is formed, but this will depend upon the viscosity of the particular glucose syrup and the particle size of the fine sugar used. Such a method forms a further aspect of the invention.

[0033] In a particular embodiment, the suspension is formed in a two-step process, in which in a first step, the fine sugar is mixed with the glucose syrup at a moderate temperature, for example in the range of from 35-45°C, and the pre-mix is then, in a second step, heated or warmed to facilitate blending, for example at temperatures in the range of from 55-65°C. These two steps may be carried out sequentially or simultaneously, for example in a single heated mixer.

[0034] The composition may then be used in a further process to form a foodstuff and in particular a confectionary item.

[0035] Thus, a further aspect of the invention provides the use of a composition comprising a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup as described above, in the production of a processed foodstuff such as a confectionary item.

[0036] Particular confectionary items that may be prepared using the composition of the invention include frappes. These may

then be used to produce other products such as nougats, meringue, fondants, cakes, bavaroise and mousses.

[0037] In yet a further aspect the invention provides a method for producing frappe, said method comprising mixing a composition as described above and a formulation comprising a protein under conditions in which frappe is formed.

[0038] Suitably the mixing process is carried out at a moderately elevated temperature to condition the mixture of the sugar/syrup/protein formulation mixture, so as to ensure that the viscosity of the suspension is sufficiently high to allow intimate mixing to occur. However, the temperature is suitably below that at which the proteins coagulate, so as to maintain protein functionality through mixing. Thus in particular, the mixing/conditioning is carried out at temperatures below 65°C, for example in the range of from 55-65°C.

[0039] A suitable protein formulation is a mixture which comprises powdered egg, milk protein or a mixture thereof. In particular the protein formulation may comprise egg syrup. The protein formulation is suitably added to the composition of the invention in an amount of from 2-20%w/w, for example from 5-15%w/w.

[0040] The protein formulation may further comprise other agents or ingredients as required including sugar such glucose, which may be in the form of the base or doctor syrup, but also salt, hydrocolloids, gums and raising agents as necessary. For example, a typical egg syrup will contain components such as glucose syrup and water as well as egg powders in particular egg albumen powders. Further additives may include whipping or setting agents, flavouring agents or salt.

[0041] Water is added at this stage in order to provide the required moisture level in the final product. The amount of

water added will vary depending in particular on the nature of the final product but for a confectionary product, will typically be in the range of from 5-20%w/w for example from about 10-15%w/w. In a particular embodiment, the water is mixed with the protein formulation as described above. It may be introduced in a homogenisation and hydration step before the protein formulation is mixed with the sugar suspension.

[0042] The resultant mixture may be subject to further processing as required at this stage. In particular, it is aerated using conventional methods, in particular after conditioning to ensure that the temperature of the mixture is such as to produce the required viscosity for aeration.

[0043] In a particular embodiment, aeration is effected in a pressurised system using a pressure beater. Such devices generally comprise a stator and rotor, which may be provided with pins, forming a 'pin beater'. In this arrangement, the mixture is mixed in a container into which pressurised air is fed. The pressure of air applied during frappe make up will depend upon factors such as the consistency of the medium (comprising sugars and protein) to be aerated, and the parameters of the pressurised system, for example, the degree of back pressure delivered into the pressure device by a downstream pressure valve, but will typically be in the range of from 3-5 bar (43.51 - 72.52 psi). Suitable mixing speeds will be in the range of 300-1200rpm. The temperature at which the aeration is carried out is selected so as to ensure that the viscosity of the mixture is suitable to allow it to be beaten and for air bubbles to be entrapped and dispersed within it and hold the air bubbles within it. It may be in the range of from 55-110°C although at the higher levels, proteins may coagulate. If this is not required, then the temperatures may be kept below 65°C.

[0044] The degree of aeration produced in the mixture depends upon the amount of air injected into the pressurised system.

[0045] The mixture is suitably heated, preferably in a subsequent step, so as to coagulate at least some of the proteins present to stabilise the final frappe product.

[0046] The temperatures used at this time will depend upon factors such as the precise nature of the protein mixture and the desired consistency for the frappe. Typically however, the temperatures used at this stage will be in the range of from 65-100°C. In particular however, the temperatures used will be in the range of from 85-95°C.

[0047] The temperature is suitably achieved by heating the mixture with stirring, using conventional heating methods and equipment. In particular, heat is applied using efficient direct heating equipment which may be applied to the mixture in the production line, continuous process. The amount of heat required to achieve this will be dependent upon factors such as, in the case of a continuous process, the mass flow, the residence time with the heating unit, and the density and conductivity of the frappe as well as the energy efficiency of the equipment. In the case of the conductivity of the frappe, this will be affected by the composition (e.g fat and water content, the fluid viscosity, whether or not it contains any solid pieces, and the specific heat of the components.

[0048] The heat administered should be sufficient to coagulate the proteins present in order to stabilise the product, but there is no need to heat in order to evaporate moisture from the product. Thus the process is efficient.

[0049] During this heating step, some of the finer sugar particles will be dissolved in the matrix so that the saturation level increases. In addition, some of the larger sugar particles may partially dissolve, further increasing the saturation level.

However, at least some sugar particles will remain as discrete particles and nucleate crystallisation during the subsequent conditioning processes.

[0050] Once this heating is complete, the product exits the pressurised system whereupon it expands as a result of the incorporated air, which reduces the density, to form a frappe, having a characteristic white colour and visco-elastic properties. Expansion results in partial cooling which is suitably controlled to 80-90°C to enable shaping of the resulting frappe. The cooling results in a highly saturated sugar suspension in the product.

[0051] Other components may be may be mixed with the frappe, or even with the mixture before aeration if required. Suitable other components may comprise a flavouring/graining mixture, such as is used to flavour commercial nougat products. The flavouring/graining mixture will vary depending upon the particular recipe being produced but may contain for example fat such as vegetable fat in an amount of from 33-50%w/w for example from 30-35%w/w and colouring or flavouring such as milk powder or lactose in an amount of from 20-50%w/w such as from 20-25%w/w. In some cases, this mixture may further comprise additional components to produce a flavouring or taste effect such as cocoa powder, typically in an amount of from 14-35%w/w such as from 25-33%w/w.

[0052] The fine sugar already present may function as nuclei for crystallisation and so there is no need to add further nucleation agents such as icing sugar at this time.

[0053] This is advantageous in that it produces raw material cost savings as there is no need for seeding crystals. Furthermore, there may be reductions in asset costs because there is no need to provide a mixer, specifically to blend seeding crystals into the frappe. This may be particularly useful in processing

plain nougat textures.

[0054] As described above, although it may be expected that the presence of fine sugar particles in the product may affect the graininess or roughness of the product as well as the perceived density when tasted, the applicants have found that, generally, this is not the case. The size of the particles in the suspension should be small enough to ensure that the product does not have an undesirable graininess or roughness. In some instances, in particular where the product has an inherently uneven texture, such as products containing solid particles such as nuts or biscuit particles, the size of the fine sugar used in the suspension may be at the upper end of the ranges used, whereas where the product is of a smooth texture, smaller fine sugar particles may be preferred.

[0055] One exemplary embodiment of a method for producing a sugar composition and/or frappe is shown in Figure 1. As shown in Figure 1, method 100 includes mixing fine sugar (as may optionally be obtained by refining sugar (102) to the desired particle size) with a glucose syrup (104), adding a protein formulation (106) to the sugar/glucose syrup mixture, mixing the sugar/syrup mixture and protein formulation (108), optionally heating/conditioning the mixture (110), aerating the mixture (112), heating the aerated mixture under pressure(114). The frappe expands as cools as it exits the pressurized heater, and may either be used unflavoured, or, may optionally have a flavouring (118) added with mixing (116).

[0056] Frappes and nougats obtainable in this manner and confectionary products containing them form a further aspect of the invention.

[0057] The methods described above are suitably carried out in an 'in-line' production procedure using apparatus designed to effect the process.

[0058] The apparatus used to carry out the method may also be novel and novel apparatus forms a further aspect of the invention. In particular, the apparatus comprises a container, mixing means for mixing material in the container, means for delivering fine sugar powder to the container, means for delivering glucose syrup to the container and control means to control the relative amounts of fine sugar powder and glucose syrup which is delivered to the container.

[0059] The container is suitably an elongate container. The mixing means are suitably a series of rotating blades arranged in the container such that material added to an end region of the container is transported along it while being mixed. The means for delivering fine sugar powder suitably comprises a pipe or tube, connected to a storage device such as a hopper for fine sugar. Similarly, the means for delivering glucose syrup suitably comprises a pipe or tube, connected to a storage device such as a tank for glucose syrup. The control means those known in the art and will be set to ensure that the desired ratio of fine sugar to glucose syrup as described above is delivered to the container.

[0060] In a particular embodiment, heating means are provided for the elongate container, suitably downstream of the means for delivering fine sugar powder and the means for delivering glucose syrup, arranged to heat the contents of the container to a suitable temperature to allow a suspension of the sugar powder to form in the glucose syrup as described above. Control means to maintain such temperatures may be provided.

[0061] In a particular embodiment, the apparatus comprises additional delivery means, arranged to provide further formulations, compositions or ingredients to the suspension of fine sugar in glucose syrup as soon as it has been formed in the mixer. In particular, the apparatus comprises means for

delivering a protein formulation such as an egg syrup as described above, to the suspension of fine sugar in glucose syrup once it has been formed.

[0062] Heating means, arranged to condition the resultant mixture by producing temperatures for example in the range of from 45 to 65°C allows the viscosity of medium to be controlled making it suitable for aeration without causing coagulation of proteins.

[0063] In a particular embodiment, the apparatus further comprises an aeration device such as a pressurised pin beater, which is arranged to receive material from the mixing container. The pin beater is arranged to aerate the product so as to allow frappe to form as described above.

[0064] The apparatus may further comprise additional heaters, arranged to further heat the aerated material so as to coagulate proteins and stabilise the resultant frappe.

[0065] This may then be used to form a range of confectionary products including nougat using known methods.

[0066] In summary, the invention provides a convenient and energy efficient process for producing foodstuffs, in particular frappes and nougats used in the confectionary industry. By using a sugar suspension instead of concentrated sugar syrup, there may be significant energy savings since the high temperatures required to form a highly saturated sugar solution (120-140°C) can be avoided. This means also that risks associated with the use of such high temperature sugar solutions, such as the formation of glasses, which can block or clog a processing line is avoided.

[0067] In addition, the equipment required may be simpler than conventional nougat processing equipment and thus may represent an asset cost reduction. In particular, there is no need to

provide a frappe cooler which may otherwise be required to ensure that frappe is cooled to temperature below that at which the seed crystals are destroyed.

[0068] Furthermore, the avoidance of such high temperature procedures may allow further optimization of the process. For example, procedures such as aeration, required to be carried out before protein coagulation, may be carried out after the formation of the frappe rather than before. This is because heat transfer from a high temperature sugar syrup that may cause premature protein coagulation is avoided.

[0069] Since only the pressurized mixture of egg, saturated sugar suspension and air is required to be subjected to high temperatures required to coagulate the proteins, efficient heating apparatus such as Direct Electric resistance heating (Ω) units may be used. Such heaters allow high temperatures to be reached rapidly and with great controllability allowing processes to be started and stopped quickly as required. They do not produce hot surfaces and thus there is less risk of accidentally burning the product. Furthermore, they provide high energy conversion efficiency, (of the order of 95%) and require relatively low capital cost as compared to say, microwave heaters.

Example 1

Production of Nougat-type product

[0070] Nougat type products were produced in a laboratory according to the process illustrated in Figure 1.

[0071] More specifically, a sugar composition was prepared using the following components:

Fine sucrose	664g
Glucose syrup	900g
Salt	6g

[0072] Two grades of fine sugar (sucrose) (standard grade having an average particle size in the range of from 20-30microns, and super fine grade having an average particle size in the range of from 10-15 microns) were used to prepare two alternative sugar compositions. The components of the two sugar compositions were mixed in a mixer at a temperature held in the range of from 40-45°C until an even suspension was produced.

[0073] A protein formulation was prepared from the following ingredients:

Egg albumen	28g
Water	52g
Glucose	78g
Fine sucrose	62g

[0074] The temperature of the protein formulation at this time was in the range of 15-20°C.

[0075] The protein formulation was then mixed with the sugar composition. After a period of conditioning to produce the required viscosity in the mixture, during which the mixture was heated to temperatures in excess of 55°C but less than 65°C so not to denature proteins present, the mixture was subjected to an aeration process.

[0076] More specifically, the mixture was introduced into a pressurized pin beater at a temperature of 55°C and beaten with a rotary beater, turning at 710 r.p.m in an air pressure of 4.2 bar.

[0077] The resultant aerated mixture was heated at a temperature greater than 93°C, but less than 100°C, so as to denature the proteins and so stablise the final frappe.

[0078] As the product exits the pressurized pin beater, the incorporated air expands as a result in the reduction in

pressure, causing the density of the product to decrease and an open aerated frappe to form.

[0079] A flavouring mix or slurry was prepared from the following ingredients:

Cocoa powder	34g
milk powder	34g
Fat	108g

[0080] The slurry (176g) is mixed with the frappe (1790) to produce a nougat type product.

[0081] Products obtained according to this example resembled a conventional nougat in appearance and texture, i.e., the nougats did not have undue 'graininess' or 'sandiness'.

Example 2

Sensory test

[0082] The nougats produced in Example 1 and/or nougats similar to those obtained in Example 1 were formulated into two different confectionary product bars by addition of additional ingredients including caramel layers, biscuit layers, nuts and chocolate layers.

[0083] More particularly, two alternatives of a first confectionary product bar (Product A) were produced. A first alternative using the nougat produced according to Example 1 and including icing sugar having a particle size of from 10-15 microns, caramel and a chocolate coating, and a second alternative including the nougat produced according to Example 1 and including icing sugar having a particle size of from 20-30 microns, caramel and a chocolate coating.

[0084] Similarly, two alternatives of a second confectionery product bar (Product B) were produced. A first alternative using

the nougat produced according to Example 1 and including icing sugar having a particle size of from 10-15 microns, caramel, nuts and a chocolate coating, and a second alternative including the nougat produced according to Example 1 and including icing sugar having a particle size of from 20-30 microns, caramel, nuts and a chocolate coating.

[0085] Two exemplary confectionary product bars A and B so obtained are shown in Figure 2. As shown, neither of the nougats included in product A or product B had an unduly 'grainy' or 'sandy' appearance. Both products A and B thus closely resemble conventional confectionery product bars (not shown).

[0086] The bars were aged for a period of 6, 12 or 18 weeks, after which a series of taste tests were carried out to determine whether the different icing sugars used in the nougats used in Products A and B impacted in particular on the roughness of the product. Panels of from 12 or 15 individuals were asked to taste similar confectionery product bars prepared using a conventional, factory-produced nougat and the confectionery product bars prepared according to this example using the inventive nougats produced in Example 1.

[0087] The results are summarized in the following table:

Aging (weeks)	Mean Particle size	No of panelists who mentioned presence of sugar crystals	
		Product B	Product A
6	20-30	0/15	5/15
	10-15		0/15
12	20-30	0/12	3/12
	10-15		0/12
18	20-30	0/13	4/13
	10-15		0/12

[0088] As can be seen, sugar crystals were not perceived by any panelist in either Product A or B containing the superfine icing sugar aged 6, 12 or even 18 weeks. Further, no panelist noticed the presence of sugar crystals in the Product B alternative including icing sugar having a particle size of from 20 to 30 microns.

[0089] While it is possible that the presence of nuts in Product B acts to mask any sugar crystals present and prevent their detection by the panelists, it can yet reasonably be concluded that confectionery products including the inventive nougat are not characterized by a 'grainy' or 'sandy' texture, and instead have a texture similar to that provided by conventional nougats, produced via conventional methods.

Claims

1. A sugar composition for use in the manufacture of foodstuffs, said composition comprising a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup.

2. The sugar composition according to claim 1 which consists of a suspension of a fine sugar having a mean particle size of less than 30 microns in glucose syrup.

3. The sugar composition according to claim 1 or claim 2 wherein the fine sugar is a refined sucrose.

4. The sugar composition according to any one of the preceding claims in which the fine sugar has a mean particle size of 5-25 microns.

5. The sugar composition according to claim 4 wherein the fine sugar has a mean particle size of from 10-15 microns.

6. The sugar composition according to any one of the preceding claims wherein the glucose syrup has a DE value in the range of from 35-95.

7. The sugar composition according to any one of the preceding claims wherein the ratio of glucose syrup to fine sugar in the composition is in the range of from 3:1 to 1:3.

8. A method for preparing a sugar composition according to any one of the preceding claims which comprises mixing fine sugar with glucose syrup at a temperature at which a suspension will form.

9. The use of a composition according to any one of claims 1 to 7, in the production of a processed foodstuff.

10. The use according to claim 9 wherein the processed foodstuff is a confectionary item.

11. A method for producing frappe, said method comprising mixing a composition according to any one of claims 1 to 7 and a formulation comprising a protein and aerating the mixture.

12. A method according to claim 11 wherein the protein formulation comprises powdered egg, milk protein or a mixture thereof.

13. A method according to claim 11 or claim 12 wherein the formulation comprising protein is added so that it is present in the mixture in an amount of from 2-20%w/w.

14. A method according to any one of claims 11 to 13 wherein air is dispersed into the mixture under pressure so that the frappe obtained is aerated.

15. A method according to claim 13 wherein the frappe is aerated using a pressure beater.

16. A method according to any one of claims 11 to 15 wherein the aerated mixture is heated under pressure so as to stabilise the final frappe.

17. A method according to any one of claims 11 to 16 wherein the frappe obtained is converted to a confectionary product by addition of further ingredients.

18. A frappe or other confectionary product obtainable by a method according to any one of claims 11 to 17.

19. An apparatus for carrying out a method according to any one of claims 11 to 18, said apparatus comprising a container,

mixing means for mixing material in the container, means for delivering fine sugar powder to the container, means for delivering glucose syrup to the container and control means to control the relative amounts of fine sugar powder and glucose syrup which is delivered to the container.

20. The apparatus according to claim 19 which further comprises additional delivery means, arranged to provide further formulations, compositions or ingredients to the suspension of fine sugar in glucose syrup as soon as it has been formed in the mixer.

21. The apparatus according to claim 19 or 20 which further comprises heating means arranged to condition mixtures to produce a viscosity suitable for aeration.

22. The apparatus according to any one of claims 19 to 21 which further comprises an aeration device arranged to receive material from the mixing container.

23. The apparatus according to claim 22 which comprises a heater, arranged to heat the aerated material.

24. The apparatus according to claim 23 wherein the heater is a direct heater.

25. An apparatus for carrying out a method according to any one of claims 11 to 18, said apparatus comprising a container, a mixer comprising a series of rotating blades arranged in the container such that material added to an end region of the container is transported along it while being mixed, a first pipe or tube, operably disposed relative to a storage device such as a hopper for fine sugar and the container, a second pipe or tube operably disposed relative to a storage device such as a tank for glucose syrup and the container, a control system

operably disposed to adjustable valves further operably disposed relative to the first and second pipe or tube.

Figure 1

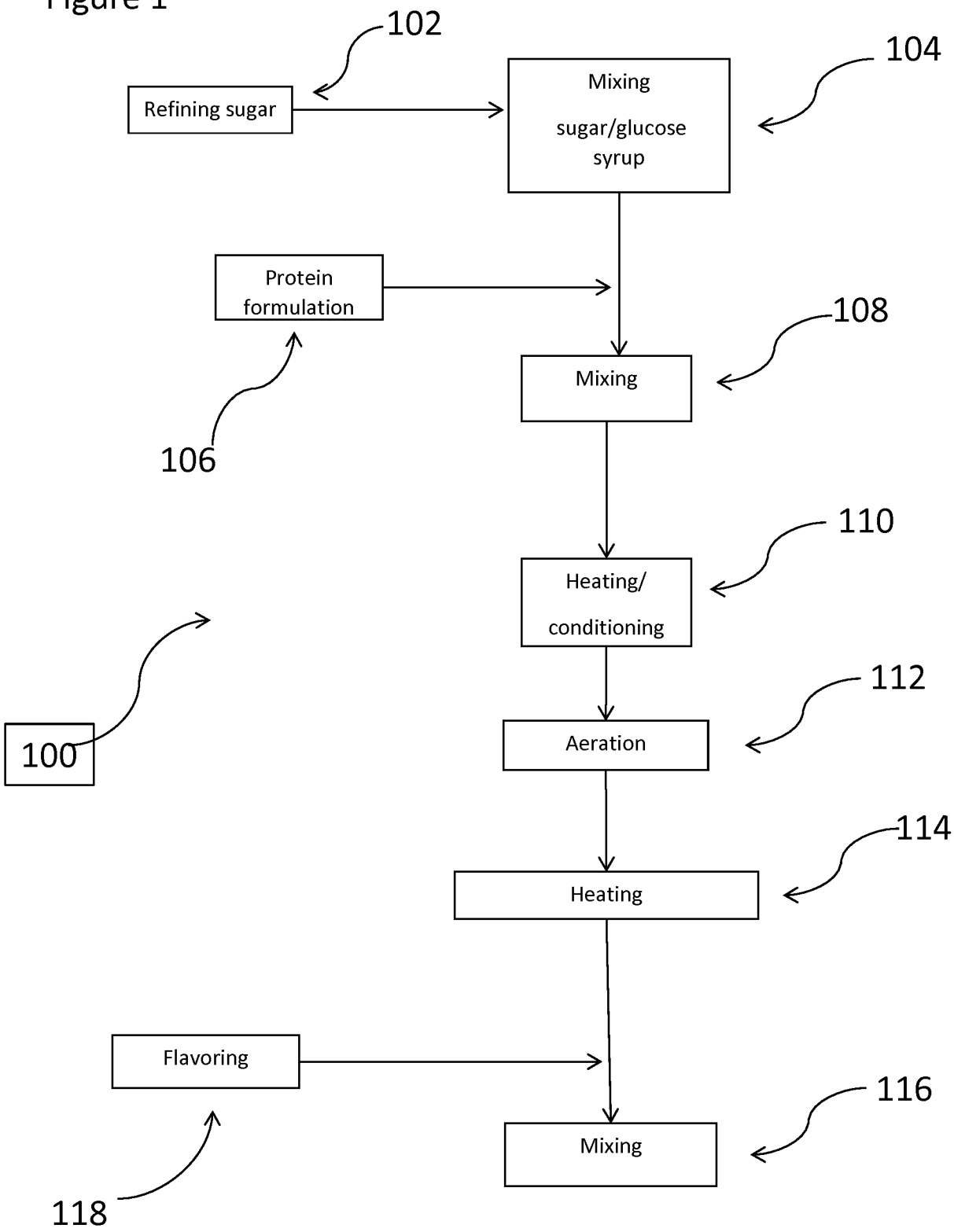
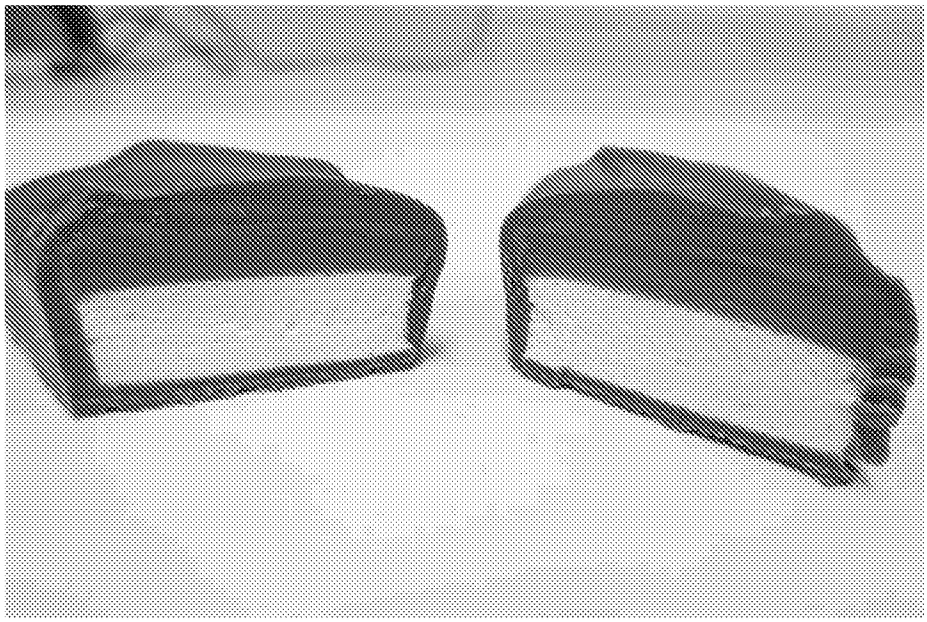
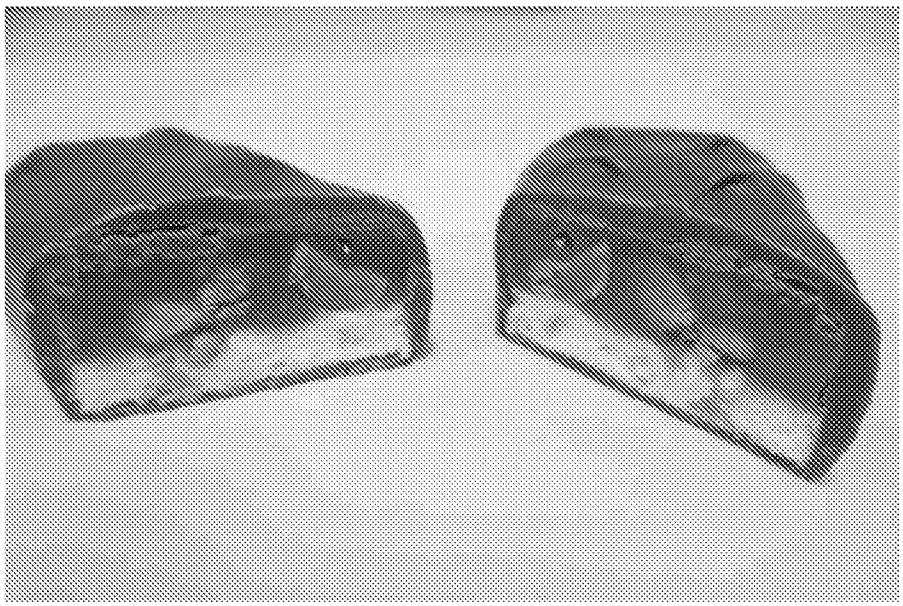

102
Refining sugar
104
Mixing
sugar/glucose
syrup
Protein
formulation
106
108
Mixing
110
Heating/
conditioning
100
112
Aeration
114
Heating
Flavoring
118
116
Mixing

Figure 2

A



B



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2015/055531

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23G3/48 A23G3/52
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 December 2015	07/01/2016

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