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(54) Title: A TURKISH DELIGHT AND PRODUCTION METHOD FOR SUCH A CONFECTIONARY PRODUCT

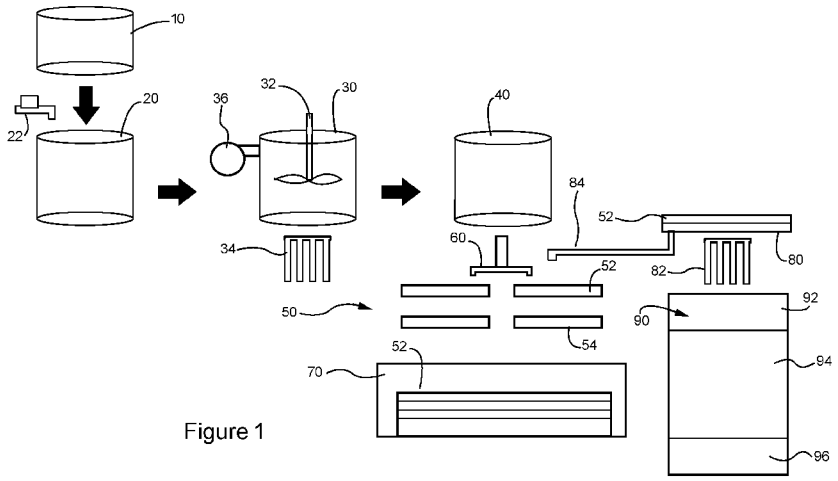

Figure 1

(57) Abstract: The invention is a method for manufacturing Turkish delight comprising the steps of preparing a starch solution comprising starch, fructose and water. Method also comprises the steps of first mixing the solution at 60 to 85°C for 15 to 45 minutes to obtain a slurry over 70° brix; cooking the slurry at 150 to 175°C to form an intermediate product; applying vacuum to the intermediate product in a sealed container until brix value set a value over 80° to obtain a second intermediate product. A Turkish delight obtained by the process is also explained.

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SPECIFICATION

A TURKISH DELIGHT AND PRODUCTION METHOD FOR SUCH A CONFECTIONARY PRODUCT

TECHNICAL FIELD

The present invention relates to a particular jelly product, namely Turkish delight and a novel production method for producing the same.

PRIOR ART

Jellies and gums, conventionally prepared based on starch with high amyloused as gelling agent and providing the required elasticity for these soft articles, of elastic to plastic texture. Turkish delight is a variety of the jellies with special material and shape properties.

Traditionally, Turkish delight prepared in cooking pots by boiling a mix of starch, sugar and citric acid solutions in water. The boiled mass controlled by an operator to achieve a desired gel structure. Cooking process take 2-2,5 hours at 125°C. Subsequently, the mixture is cast in starch molds for cooling, drying and setting of the gel for 12 to 24 hours. Then cooled Turkish delight put on the marble bench to cover with fine sugar or coconut and portioned to the small cubical pieces by cutting. Residual moisture of the gel is around 10% to ensure a smooth texture. Using high-amylose corn starches to obtain satisfactory results require cooking under high temperatures, above 150°C and high vapor pressure. Therefore, some producers use pressure cooking pots to achieve the result in a shorter cooking time. Even though, traditional preparation of Turkish delight require long time which is not suitable for mass production or industrialization.

BG109127 patent publication discloses a composition and the process for the production of Turkish delight. The composition comprises sugar, water, wheat starch, tartaric acid, dry egg-white or dry egg mixture, and optionally additional raw materials and additives can be added such as colourant, essence, coffee, cocoa, kernels, liquid chocolate and others.

According to the publication, the Turkish delight is distinguished by its transparency, brittleness and improved taste qualities.

BRIEF DESCRIPTION OF THE INVENTION

The object of the present invention is to provide a method for production of Turkish delight in a continuous process.

In order to realize the abovementioned object, invention is a method for manufacturing Turkish delight with the steps of preparing a starch solution comprising starch, fructose and water. A preferred application of the invention is including the steps of first mixing the solution at 60 to 85°C for 15 to 45 minutes to obtain a slurry over 70° brix; cooking the slurry at 150 to 175°C to form an intermediate product; applying vacuum to the intermediate product until brix value is set to a value over 80° to obtain a second intermediate product. In a possible application, vacuum is applied in a sealed container wherein the second intermediate product is stored. Vacuum application increases the speed to reach a set brix value and overall production efficiency.

In a preferred application, sugar in crystal form is added to the slurry before the cooking step. Sugar decreases plasticization property of the water in the slurry and facilitate gel forming. The slurry is continuously mixed before the cooking step. Mixing of the slurry breaking down the intermolecular bonds which is required for gelatinization process. The temperature of the slurry is set to 75°C allowing hydrogen bonding sites to engage more water. The slurry is mixed until the Brix value reach 77-78°. The cooking temperature is set to 163° during cooking process. Then a vacuum set to -0,75 bar is applied to the slurry. This step can be carried out during or after the cooking process until reaching a predetermined brix value over 80°. After vacuum application to the slurry the second intermediate product is deposited over 100°C and conditioned to 21-25°C at a moisture level of 30-40% for at least 24 hours to obtain a final product. Second intermediate product is cast to the starch covered mold having moisture level of 5-7%. The moisture level is set to 5,5-6,5%. The final product is cut into the cubical pieces of traditional Turkish delight.

In order to achieve above mentioned object, a preferred application is a manufacturing method further comprising the steps of removing the cubical pieces of final product from starch in a first mold; collecting and drying recovered starch from the first mold and feeding back the dried starch to a second mold. Continuous processing of the starch in the first mold after removing the final product and create a loop to provide collected and dried starch received from the first mold where the cooked final product is removed, back to the second mold for further processing the final product within the first mold with starch, significantly reduces required amount of starch to be used during the production process. In a preferred

application, brix value of the pieces after removal of the starch is set to a value between 86-86,5°. In a preferred embodiment, the cubical pieces comprises recovered starch from a mold used for a previous final product. In another preferred embodiment, the pieces of Turkish delights are covered by a chocolate layer.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 is a schematic view of the production layout for manufacturing a subject matter Turkish delight.

THE DETAILED DESCRIPTION OF THE INVENTION

In this detailed description, the subject matter improvement is explained with references to examples without forming any restrictive effect only in order to make the subject more understandable.

In Figure 1, manufacturing layout for continuous Turkish delight production is shown. A starch solution comprising starch, fructose, water and salt is prepared in a solution container (10). Temperature in the solution container is set to 75°C. The starch solution is stored and mixed for 30 minutes in the heated solution container (10) until the pasting of the starch is completed and a slurry is obtained. Subsequently, sugar in crystal form is added to the slurry in an intermediate mixing container (20) by a sugar inlet (22). Slurry is then transported to a cooker (30) and mixed until the brix value reach to 77,8°. Mixing is provided by a mixer (32) inside the cooker (30). Slurry is then cooked and temperature is set to 163°C until an intermediate product is obtained. In order to configure condensation level, a vacuum is applied to the intermediate product inside the cooker (30). A vacuum pump (36) is adapted to the cooker (30) to provide negative pressure. After applying vacuum, condensation values are changed until the brix value is set to the 86° defining a secondary intermediate product. Pipes are used to transport the secondary intermediate product to buffer (40) which is in the form of a container. Colorant and flavorings are added by automatic dosing units (not shown) into the secondary intermediate product. A depositor (60) in communication with the buffer (40) distribute the secondary intermediate product over molds (50). Molds (50) are made of pre-heated starch as arranged inside a tray. In order to form the molds (50) a shaping part (not shown) having multiple cubical projections press over the starch in the tray to form the starch layer on the molds (50) in the traditional form of Turkish delight. The depositor provide the secondary intermediate product at 105°C over the molds (50) to form a final product.

The molds (50) are stored inside a conditioning room (70) at 21-25°C to cool down and settle under 31-35% condensation. After 24 to 72 hours, the final product as Turkish delight with a brix value of 85° is removed from the starch inside the molds (50) at a starch recovery station (80). Remaining starch inside the molds (50) are heated by a heater (82) and dried until the condensation of the remaining starch is reduced to 5,5-6,5%. Then dried starch is filled back by a feedback pipe (84) to the new molds (50) for being filled by depositor (60).

A first mold (52) made of starch in a tray is arranged under the depositor (60) and filled with the secondary intermediate product in gel form over 100°C. After conditioning and removal of the starch in the tray from the first mold (52), the remaining starch is dried and sent to a second mold (54) formed inside a tray and arranged under the depositor (60). In this case, starch used on the first mold (52) partially covered the Turkish delight inside the second mold (54). This step, continuously applied to the following molds to reduce starch to be used on the new molds.

REFERENCE NUMBERS

10 Solution container
20 Intermediate mixing container
22 Sugar inlet
30 Cooker
32 Mixer
34 Resistant
36 Vacuum pump
40 Buffer
50 Turkish Delight molds
52 First mold
54 Second mold
60 Depositor
70 Conditioning room
80 Starch recovery station
82 Heater
84 Feedback pipe
90 Preparation station
92 Chocolate cover section
94 Cooling section
96 Packaging section

CLAIMS

1. A method for manufacturing Turkish delight comprising the steps of preparing a starch solution comprising starch, fructose and water characterized by first mixing the solution at 60 to 85°C for 15 to 45 minutes to obtain a slurry over 70° brix; cooking the slurry at 150 to 175°C to form an intermediate product; applying vacuum to the intermediate product until brix value is set to a value over 80° to obtain a second intermediate product.

2. A method for manufacturing Turkish delight according to claim 1, wherein sugar in crystal form is added to the slurry before the cooking step.

3. A method for manufacturing Turkish delight according to claim 2, wherein the slurry is continuously mixed before the cooking step.

4. A method for manufacturing Turkish delight according to any one of the preceding claims, wherein the temperature of the slurry is set to 75°C.

5. A method for manufacturing Turkish delight according to claim 3 and 4, wherein the slurry is mixed until the Brix value is reached to 77-78°.

6. A method for manufacturing Turkish delight according to any one of the preceding claims, wherein the cooking temperature is set to 163°C during cooking process.

7. A method for manufacturing Turkish delight according to any one of the preceding claims, wherein applied vacuum is set to -0,75 bar.

8. A method for manufacturing Turkish delight according to any one of the preceding claims, wherein the second intermediate product is deposited over 100°C and conditioned to 21-25°C at a moisture level of 30-40% for at least 24 hours to obtain a final product.

9. A method for manufacturing Turkish delight according to claim 8, wherein second intermediate product is cast to the starch covered mold having moisture level of 5-7%.

10. A method for manufacturing Turkish delight according to claim 9, wherein the moisture level is set to 5,5-6,5%.

11. A method for manufacturing Turkish delight according to claim 8, wherein the final product is cut into the cubical pieces of traditional Turkish delight.

12. A method for manufacturing Turkish delight according to claim 11, further comprising the steps of removing the cubical pieces of final product from starch in a first mold; collecting and drying recovered starch from the first mold and feeding back the dried starch to a second mold.

13. A Turkish delight product by method of manufacturing according to claim 11, characterized by brix value of the pieces after removal of the starch is 86-86,5°.

14. A Turkish delight product by method of manufacturing according to claim 12, wherein the cubical pieces comprises recovered starch from a mold used for a previous final product.

15. A Turkish delight product according to the claim 12-14, wherein the pieces are covered by a chocolate layer.

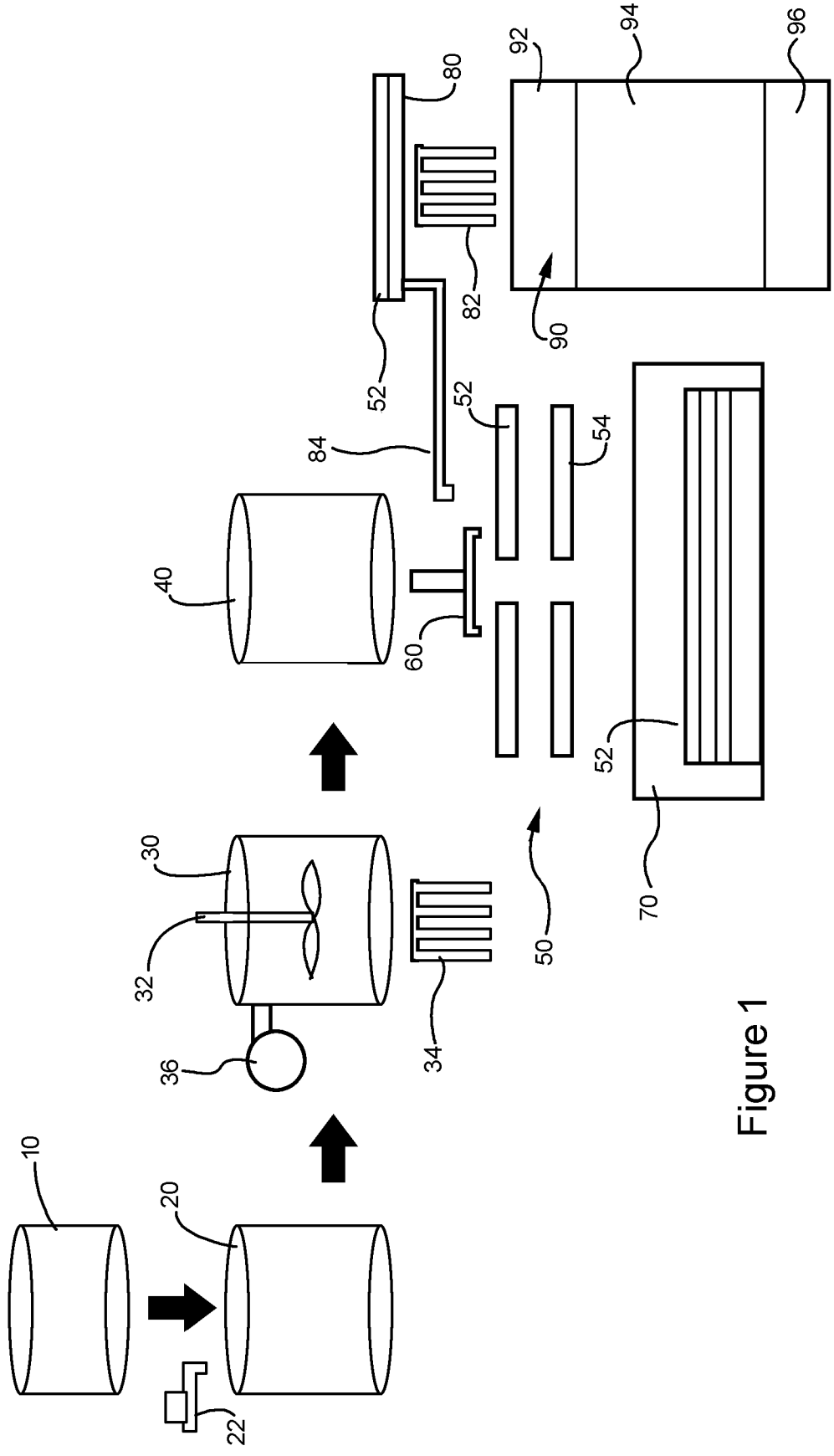

Figure 1

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A23G3/42 A23G3/54
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

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

[X] See patent family annex.

* Special categories of cited documents :

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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Name and mailing address of the ISA/	Authorized officer
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

International application No
PCT/TR2016/050092

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