Title: A CONFECTION AND ITS MANUFACTURING METHOD

Abstract: The present invention is related with a confection (1) in the form and shape of dragée comprising popping candy (4) and chocolate-like substances (3) and coated with hard sugar coating (6).

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A CONFECTION AND ITS MANUFACTURING METHOD

The present invention is concerned with a sweet confection in the form of a dragee coated with hard sugar, comprising substances such as popping candy and chocolate like products.

In the prior art, it is known that substances where chocolate and popping candy are used together. However, the popping candy, which loses its popping effect when subjected to high moisture and hot temperatures, can be mixed up in a moisture-controlled ambient with chocolate having low moisture. The product originating there from is packed using special materials to make sure that the same is protected against moisture.

In the U.S. patent application 4,287,216, disclosure of a substance having at least two compounds, one of which being chocolate, and the other one being popping candy has been made. The moisture of content of such a substance has been disclosed as being in the range of 0.1-5.0 per cent. However, during the shelving of such product various deteriorations arising from ambient moisture cause the popping candy to lose its popping effect and to whiten the chocolate.

U.S. patent application 4,275,083 discloses a confection comprising popping candy particles suspended in a sweetened oily material. The said oily material protects the particles against moisture by wrapping up around the same popping candy particles and in this way, no requirement arises for using a specific packing material to ensure protection thereof against humidity. In the specification (column 2, line 48-53), candy coated with an edible outer coating such as hard sugar is explained. However, nothing has been disclosed as to how to coat confection with hard sugar.

Actually, in order to coat a material comprising popping candy with hard sugar syrups with a moisture as high as 30 % is applied. In the course of such treatment, when the moisture within the sugar syrup, namely the H₂O molecule contacts the sugar crystals inside the oily material, a fast diffusion takes place within the crystal structure, which attains the popping candy and causes the same to lose its
popping characteristics. Coating with a hard sugar coat of a substance comprising popping candy by applying it a sugar syrup and such a substance still preserving its popping features has not been successful in the prior art. Although this treatment can be effected with success at first stage, deteriorations in the content of confection take place in and on the product following a two months period.

The object of the present invention is the realization of a confection comprising popping sugar coated with hard sugar not affected in time.

Confection and the method used to realize objects of this invention have been shown in the drawings enclosed, wherein:

Figure 1 is the flow chart of confection production

Figure 2a is the cross-sectional view of the confection having an amorphous core;

Figure 2b is the cross-sectional view of the confection having a uniform core.

The parts shown in the figures numbered with the same numbers, numbers corresponding to parts are given as below:

1. Dragee
2. Core
3. Chocolate
4. Small popping candy particles
5. Gum arabic and starch layer
6. Hard sugar coating

The confection which is the subject matter of this invention is as claimed in the claims. Said confection is a dragee (1) comprising chocolate or the like (3) having moisture less than 3 % popping candy around a core having particles (4) in it with moisture of 0.4 to 3.5 % and a hard sugar coating(6) covering all of the above. A layer (5) of gum Arabic and starch are provided beneath the hard sugar coating.
The core (2) defines the final shape of the dragee (1) over which other parts are coated. The core (2) may contain popping candy or consists of coarse popping candy particles, or raisins, nuts, peanuts or particles thereof.

Chocolate (3) is a well-known type of confection. It comprises sugar, cacao, cacao oil, milk powder, lecitine, and optionally almonds, nuts, raisins or various flavores. In the disclosure, all substances having structure identical to definition given above with characteristics conforming to physical features as set forth herein shall be described as “chocolate”. Under good ambient conditions, quality chocolates have low moisture – less then 3 %. This feature of the chocolate is suitable for protecting popping candy (4) from ambient moisture. The present invention takes advantage of this feature of chocolate.

Popping candy (4) is obtained by mixing hot sugar mass consisting of sugar, glucose and/or lactose heated to 150-160°C under high pressure, cooling and crumbling the sugar mass to a pre-selected size. Sizes of pieces obtained vary between 0.5 and 5 mm.

The sugar coating (6) functions as an attractive and tasty cover ensuring protection for chocolate and popping candy against moisture. Furthermore, it prevents the damaging of chocolate during packing and facilitates operation of packing machines by smooth motion of products.

The method used for the production of the confection comprises of the following steps:

- In a moisture free ambient, cores are put into the dragee vessels. If cores are to be formed of popping candy particles of 3 to 5 mm size are selected and put into the vessel.

- Dragée vessel is run and melted chocolate is sprayed onto the cores in the vessel (102). The temperatures of melted chocolate may be around 35 to 45°C, but preferably around 45°C. Chocolate is sprayed with or without an air like gas.
• When cores are sufficiently coated with chocolate spraying operation is stopped, vessel is cooled to ensure that melted chocolate is cured because of cacao oil (103). To effect such a treatment, cold, moisture free pressurized air may be applied to vessel. Until the desired size of dragees are obtained, spraying melted chocolate and curing steps are repeated. When repeated for there times, dragees of varying size covered with chocolate of 1-2 mm thickness are formed.

• Dragees are further covered with one layer of melted chocolate (104).

• Smaller popping candy particles are spread upon dragees wetted by melted chocolate (105). The particles are preferably in the range of 0.5-2 mm. Such quite small particles adhere to melted chocolate. At this stage, coarse particles cannot be used, as melted chocolate does not have sufficient surface tension to ensure adherence of such coarse particles.

• Dragee vessel is rotated for a while to enable adherence of small particles onto chocolate dragees homogeneously.

• Next, cold and dry air is applied to cure chocolate (107). This treatment is continued until chocolate is satisfactorily cured.

• The treatments stated in the last four steps are repeated until dragees of desired size are obtained. The appearance of dragees thus formed at the end of such treatments is rather rugged because popping candy particles are not completely covered by melted chocolate; edges of popping candy particles can be seen from outside.

• To obtain a smooth appearance and to cover popping candy by chocolate one more layer of chocolate is sprayed (108). This procedure is continued until the thickness of chocolate reaches to 1-1.5 mm.

• In order to provide chocolate dragees having a smooth surface the lid of the vessel is closed and the vessel is rotated (109). With the surface heat formed by the friction of dragees to each other in the vessel, chocolate is softened and the outer surfaces of the dragees become smoother.
Popping candy dragees are cured (110) for the next stage. Curing process is achieved by leaving dragees in flat trays in a dry and cool ambient. To facilitate the curing of dragees and to prevent their crashing when set in trays, special care is given to place the dragees in single rows. This operation is conducted a chamber temperature under max 15-20°C; preferably +17°C.

Chocolate dragees are taken into the dragee vessel after completely cured and are wetted with a solution of gum arabic of 70% by volume (111).

Immediately after this, starch is spread onto dragees (112) the vessel is rotated twice (113).

When the vessel is stopped, the dragees are taken out, placed and left onto shallow trays in dry and cool ambient preferably for ten to fifteen hours (114). At the end of this period, a hard protective layer forms on the dragees which facilitates the syrup pouring.

In the following step, excess powder starch on the dragees are sifted (115).

Dragees are transferred to the dragee vessel (116) for treatment either by spraying or pouring (117) sugar syrup prepared at the rate of 70% by volume.

To make sure that coating syrup is fully cured the dragees are cured, after each syrup treatment (118). Curing is done by applying cool and dry air. Cool air here hinders heating caused by friction to play an important role in causing deformations to occur and thus is effective in preventing the deformations of chocolate dragees. Temperatures of applied air should be in the range between 10 to 17°C. Dragees may be made attractive by adding various food dyes to sugar syrups. Treatments of applying sugar syrups (117) and curing (118) are repeated until the dragees are sufficiently coated with sugar.

Dragees are polished in polishing vessels (119) and are transferred to packing section (120).
Confections produced using the disclosed method may be of various size and shape due to the differences of popping candy particles (3 to 5 mm); this may not be desirable. In order to obtain much homogenous, regularly shaped products, a second method which comprises the following steps can be used.

- In this method, the cores must be regular such as cubic or ellipsoidal. To obtain such cores pressed small cores containing powder cacao to give taste and dextrose having sizes of 30 to 50μ are prepared. These cores are in the shape of spheres preferably of diameter 3 to 5 mm. When cores are treated in the dragee vessel for coating, pressure applied at the stage of pressing should be carefully adjusted to prevent crumbling of dragees. If pressing pressure is too high, the surfaces of cores will be very smooth and polished and chocolate will not coat over cores homogeneously and easily. Therefore, when preparing cores pressure should be adjusted to prevent crumbling and should not be raised more than needed. In this way surfaces of cores will be much rugged and this will ensure that chocolate coats the surface.

- Regularly shaped and equally sized cores prepared as described are transferred to dragee vessel and steps mentioned above are repeated (101-120). At the end, regularly shaped and homogeneously sized dragees are obtained.

When the confection is taken into mouth, a well-known taste of chocolate will be followed by popping beneath the attractively colored and polished hard sugar coating. Such features bring a significant difference to classical chocolate dragee type confections. Moreover, as curing and cooling operations are repeated in each stage, the final product will not have much moisture and the popping candy will not lose its popping features.
CLAIMS

1. A method employed in confecting a sweet confection of dragee form and shape containing popping candy and chocolate, covered with hard sugar and comprising the steps of:

5 a. Placing cores into dragee vessel in a moisture free ambient (101);

b. Running the dragee vessel and spraying melted chocolate onto cores (102);

c. Stopping spraying operation when cores are sufficiently coated with chocolate, cooling the vessel and curing melted chocolate (103);

d. Coating the dragees with melted chocolate once more (104);

e. Spreading smaller popping candy particles over chocolate coated dragees (105);

f. Rotating dragee vessel for a while to ensure that smaller particles adhere to chocolate dragees (106) homogeneously;

g. Next, cooling chocolate until it is sufficiently cured (107);

h. Repeating the last four steps until desired sized dragees are obtained;

i. Spraying melted chocolate until at shield of chocolate of desired thickness is formed (108);

j. Closing the lid of the dragee vessel and rotating the vessel (109);

k. Curing the popping candy dragees (110);

l. Placing the chocolate dragees into the drage vessel and wetting with gum Arabic solution of 70 % (by volume) (111);

m. Immediately after this, spreading starch over dragees (112) and rotating the vessel (113);

n. Curing dragees (114) after vessel is stopped;

25 o. Removing excess starch over dragees (115);
p. Transferring dragees to dragee vessel (116), applying prepared sugar syrup over the dragees (117);

q. Curing dragees after each and every application of sugar syrup (118);

r. Repeating the last two steps until dragees are sufficiently coated with sugar syrup;

s. Polishing dragees in polishing vessel (119) and transferring to packing section (120);

2. A method as claimed in claim 1 characterized in that in step (a) particles of popping candy having sizes in the range of 3 to 5 mm are used as cores;

3. A method as claimed in claim 1 characterized in that as fruits, nuts, dried fruits or particles of thereof are used in step (a) above as cores.

4. A method as claimed in the claim 1 characterized in that regularly pressurized cores having particles size of 30 to 55μ, comprising decstrose and powder cocoa are used in step (a) above.

5. A method a claimed in claim 4 characterized in that spherical pressurized cores with a diameter of preferably 3 mm are used in step (a) above.

6. A method as claimed in anyone of the claims above characterized in that melted chocolate at temperature 35 to 35°C are sprayed in the steps (b),(d) and (i).

7. A method as claimed in anyone of the claims above characterized in that melted chocolate is sprayed together with a gas in steps (b),(d) and (i).

8. A method as claimed in anyone of the claims above characterized in that moisture free pressurized air at a temperature ranging preferably between 10 and 17°C is used in cooling dragee vessel in steps (C) and (g);

9. A method as claimed in anyone of the claims above characterized in that particles of popping candy of sizes preferably of 0.5 to 2 mm are used in step (e).
10. A method as claimed in anyone of the claims above characterized in that the treatment mentioned in step (i) is maintained until a shield of chocolate of thickness of 1 to 1.5 mm is formed.

11. A method as claimed in anyone of the claims above characterized in that dragees are taken in the steps (k) and (n) onto trays and kept in an ambient at temperature ranging between +15 and +20°C for curing.

12. A method as claimed in anyone of the claims above characterized in that sugar syrup comprising at rate of 70 % by volume various food dyes is used in step (p).

13. A confection in the form and shape of a dragee obtained through the method mentioned in anyone of the claims above comprising chocolate and/or chocolate like substance (3) having moisture lesser than 3 % popping candy particles (4) having moisture of 0.4 to 3.5 % around an inner core (2) and hard sugar coating (6) wrapping around all of them.

14. A confection as claimed in claim 13 comprising a layer (5) of gum arabic and starch beneath hard sugar coating.

15. A confection as claimed in claim 13 or 14 characterized in that chocolate comprises sugar, cocoa, cocoa oil, milk powder, lecithine and optionally almond, hazelnut, peanut, dried raisins and/or various flavors.
Figure 1

The grains are put in drop tub (101)

Melted chocolate is sprayed on the grains (102)

Is the coating on the grains sufficient?

Yes

It is cooled and frozen (103)

Are the drops in required size?

No

Melted chocolate is sprayed (104)

Fine particles are sprinkled (105)

Drop tub is rotated (106)

Cool and dry air is applied (107)

Is it hard enough?

No

Is it in required size?

Yes

Is the coating on the candy sufficient?

No

Yes

Shining (119)

Packaging (120)

Drop tub is rotated (108)

Drops are put in the shallow trays and waited (110)

Drops are put in the tub and dampered with an adhesive (111)

Starch is poured (112)

Drop tub is poured (113)

Drops are put in shallow trays and waited (114)

Extra starch is sieved (115)

Drops are put in the tub (116)

Syrup solution is applied (117)

Cold and dry air is applied (118)
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

| IPC  | A23G/00 | A23G/00 |

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)

| IPC  | 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 practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<th>Relevant to claim No.</th>
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<td>WO 01/78519 A (NESTLE SA ; CONTI CLAUDIA (GB); WALKER JOHN HOWARD (GB)) 25 October 2001 (2001-10-25) page 7, line 6 - line 25</td>
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