

## DESCRIPTION

### SURFACE-BAKED FOOD ITEM AND METHOD FOR MANUFACTURING SAME

#### Technical Field

[0001]

5           The present invention relates to a surface-baked food item and a method for manufacturing the same.

#### Background Art

[0002]

          A method has heretofore been known in which sugar is sprinkled  
10   on the surface of food items such as pudding, crème brulee, custard pudding, ice cream, other western confectionery and baked confectionery, and bread, and is heated to caramelize the sugar attached to the surface of the food items to achieve a crispy texture and a unique savory flavor.

15   [0003]

          Further, from the viewpoint of convenience for eating and food distribution, manufactured food items are packaged in various ways before distributed. For example, Patent Literature 1 discloses a method by which the surfaces of food items contained in containers  
20   are continuously baked while the containers are prevented from being thermally deformed.

#### Citation List

##### Patent Literature

[0004]

25           Patent Literature 1: Japanese Patent Application Laid-Open No. Hei. 9-252737

## Summary of Invention

### Technical Problem

[0005]

However, caramel is likely to absorb moisture, and therefore  
5 easily becomes sticky due to the moisture of food items themselves  
and moisture in the air, so that its good crispy texture and savory  
flavor just after heating are not maintained.

[0006]

Therefore, even when food items with caramelized surface are  
10 manufactured, their good crispy texture is lost when the food items  
are distributed after manufacturing, which is disadvantageous in  
that customers who buy the food items cannot enjoy such a good texture.

### Solution to Problem

[0007]

15 In view of such a problem, the present invention is provided  
with the following features.

(1) A surface-baked food item according to the present  
invention is characterized by including a first food item, and a  
second food item containing fat and oil, wherein part or all of  
20 a surface of the second food item is coated with a heated product  
of sugar.

(2) In (1) described above, it is characterized in that at  
least part of a surface of the first food item is coated with the  
second food item.

25 (3) It is characterized in that the second food item is at  
least one type or two types or more food items selected from the

food item group consisting of chocolates and fats and oils.

(4) It is characterized in that the first food item is at least one type or two types or more food items selected from the food item group consisting of pudding, crème brulee, custard pudding, ice cream, cake, other western unbaked confectionery, "iced milk" (ice cream with a milk solids content of 10% or more and a milk fat content of 3% or more), "lacto-ice" (ice cream with a milk solids content of 3% or more), sherbet, other baked confectionery, cheese, yogurt, pasta, meat, and bread.

(5) It is characterized in that the second food item is placed so as to coat a surface of the first food item filled in a container having an opening, the surface being located on an opening side of the container.

(6) A method for manufacturing a surface-baked food item according to the present invention is a method for manufacturing a surface-based food including a first food item and a second food item that coats at least part of a surface of the first food item and contains fat and oil, the method characterized by comprising the step of heating sugar attached to a surface of the second food item to obtain a heated product of sugar.

(7) It is characterized in that the heated product of sugar in the method for manufacturing a surface-baked food item according to the present invention is obtained by caramelizing the sugar by heating.

Brief Description of Drawing

[0008]

FIG. 1 is a schematic cross-sectional view of a food item according to the present invention contained in a container.

#### Description of Embodiments

[0009]

5        Hereinbelow, the present invention will be specifically described. FIG. 1 is a schematic cross-sectional view of a food item contained in a container. A food item 1 according to the present invention is provided to be contained in a container 2 in such a manner that the surface of a first food item 11 is coated with a  
10   second food item 13, and becomes a state in which a caramel portion 15 is further provided on the surface of the second food item 13. Note that an embodiment that will be described below includes a heated product obtained by caramelization, and therefore the heated product is referred to as a "caramel portion," but when a heated  
15   product obtained not by caramelization is used, the "caramel portion" can be replaced with "heated product" as an alternative meaning.

[0010]

      The first food item 11 is a main food item to be subjected to caramelization. Examples thereof may include western unbaked  
20   confectionery such as pudding, crème brulee, custard pudding, and cake, ice cream, "iced milk" (ice cream with a milk solids content of 10% or more and a milk fat content of 3% or more), "lacto-ice" (ice cream with a milk solids content of 3% or more), sherbet, other baked confectionery, cheese, and yogurt. Alternatively, the first  
25   food item 11 may be pasta, meat, bread, or a cookie.

[0011]

The second food item 13 contains fat and oil. Particularly suitable examples thereof may include chocolates such as chocolate, "quasi chocolate" (quasi chocolate refers to a dough containing only a quasi-chocolate dough with a cacao content of not less than 15% of the total weight (cocoa butter content of not less than 3% of the total weight), a fat content of not less than 18% of the total weight, and a moisture content of not more than 3% of the total weight (excluding those falling under the category of chocolate dough) or refers to a dough containing only a quasi-chocolate dough with a cacao content of not less than 7% of the total weight (cocoa butter content of not less than 3% of the total weight), a fat content of not less than 18% of the total weight, a milk solids content of not less than 12.5% of the total weight (a milk fat content of not less than 2% of the total weight), and a moisture content of not more than 3% of the total weight (excluding those falling under the category of chocolate dough)), chocolate confectionery, "quasi chocolate confectionery" (quasi chocolate confectionery refers to a chocolate processed product with the quasi-chocolate dough content of less than 60% of the total weight), "Nama-Chocolate" ("Nama-Chocolate" refers to a dough with a chocolate dough content of not less than 60% of the total weight, a cream content of not less than 10% of the total weight, and a moisture content of not less than 10% of the total weight), and chocolate-using food items.

[0012]

The second food item 13 herein referred to as a "food item containing fat and oil" may include fat and oil itself such as fat

and oil derived from a vegetable source such as palm, coconut, soybean, corn, rapeseed, sunflower, cotton seed, cacao (cocoa butter), shea, or rice, animal fat and oil such as butter, cream, or lard, edible refined and processed fat and oil, or margarine. As the second food  
5 item 13, the above-mentioned chocolates and fats and oils may be used singly or in combination of two or more food items appropriately selected therefrom.

[0013]

The caramel portion 15, which will be described later, is a  
10 heated product of sugar obtained by heating sugar sprinkled on the second food item 13. Here, the sugar is not particularly limited, and examples thereof may include: so-called sucrose such as refined sugar (e.g., granulated sugar, white soft sugar, white crystal sugar, brown soft sugar, light brown crystal sugar, powdered sugar, cube  
15 sugar, and rock sugar) and unrefined sugar (e.g., black sugar, Wasanbon (refined Japanese sugar), maple sugar, and casonade); and saccharides such as glucose, fructose, xylose, and trehalose. These sugars may be used in combination as appropriate. The surface temperature during heating is preferably 100°C to 350°C, and more  
20 preferably 150°C to 300°C. Note that the above-described heated product may be obtained by only caramelization or by caramelization and Maillard reaction that occur at the same time. Alternatively, the heated product may be obtained by only Maillard reaction without caramelization.

25 [0014]

The process of manufacturing the food item 1 will be described.

Particularly when the food item 1 is contained in a container, the first food item 11 is first charged into a predetermined container 2, and then the second food item 13 is placed so as to coat at least part of the surface of the first food item. At this time, the second  
5 food item 13 in a liquid state may be poured onto the first food item 11 contained in the container 2, or the second food item 13 in a molded solid state may be put on the surface of the first food item 11. The thickness of the second food item 13 is preferably 0.8 mm to 7.0 mm, and more preferably 1.0 mm to 5.0 mm.

10 [0015]

After the first food item 11 is charged and then the second food item 13 is placed so as to coat the first food item 11 in such a manner as described above, sugar is sprinkled on the surface of the second food item 13 and heated. The amount of the sugar is  
15 preferably  $0.02 \text{ g/cm}^2$  to  $0.20 \text{ g/cm}^2$ , and more preferably  $0.04 \text{ g/cm}^2$  to  $0.16 \text{ g/cm}^2$ . The sugar attached to the surface of the second food item 13 is caramelized by heating and fixed so that the caramel portion 15 is formed.

[0016]

20 A means for the heating is not particularly limited. As is generally known, the sugar may be directly exposed to flame with a burner or the like. Alternatively, various heaters such as a halogen heater and a near-infrared heater may be appropriately used.

[0017]

25 The caramel portion 15 shown in FIG. 1 is clearly separated from the second food item 13, but may not be clearly separated from

the second food item 13 because part of the second food item 13 is practically melted by heating for caramelization so that the second food item 13 melted by heating and the melted sugar are mixed and then fixed by cooling.

5 [0018]

In the case of a conventional general food item with caramelized surface such as a confection, a caramel portion 15 is obtained by heating sugar directly sprinkled on a food item herein referred to as the first food item 11. The caramel portion 15 of such a conventional food item is in direct contact with the first food item 11 and therefore easily absorbs moisture originally contained in the first food item 11, so that its good crispy texture is quickly lost.

[0019]

15 However, in the present invention, the second food item 13 is interposed between the first food item 11 and the caramel portion 15, and therefore the caramel portion 15 is less likely to absorb moisture from the first food item 11. Further, oil contained in the second food item 13 further prevents the caramel portion 15 from absorbing moisture. As a result, the good crispy texture of surface of the food item achieved by caramelization can be maintained for a long period of time. In the present invention, how the second food item 13 is placed on the first food item 11 is not particularly limited. For example, there may be a method in which the second food item 13 previously prepared may be placed on the first food item 11 prepared after the second food item 13 has been prepared.

Also when the second food item 13 is placed on the first food item 11 in this way, the crispy texture of the caramel portion 15 can be achieved.

[0020]

5           When the first food item 11 is, for example, a food item having a low melting point, such as sherbet, heat generated by heating for caramelization is not directly conducted to the first food item 11 due to the interposition of a layer of the second food item 13, and therefore the first food item 11 is hard to melt. This contributes  
10   to the quality control of the first food item 11.

[Example 1]

[0021]

<Comparison 1>

          Hereinbelow, food items contained in containers were actually  
15   manufactured in the following manner and stored under certain conditions by way of example.

(Food item of Example 1)

          First food item: ice cream

          Second food item: chocolate-using food item

20           Storage environment: freezer (-20°C or lower (set at -24°C))

(Food item of Comparative Example 1)

          First food item: ice cream

          Second food item: none

          Storage environment: freezer (-20°C or lower (set at -24°C))

25           The ice cream used as the first food item in Example 1 and the ice cream used as the first food item in Comparative Example

1 are the same, and the storage environment in Example 1 and the storage environment in Comparative Example 1 are the same.

[0022]

The ice cream used as the first food item 11 in Example 1 and  
5 Comparative Example 1 had a milk solids content of 15.0% or more (milk fat content: 8.0% or more). The chocolate-using food item used in Example 1 had a vegetable fat and oil content of 55.5% and a cocoa butter content of 2.2%, and further appropriately contained whole milk powder, cream powder, sugar, lactose, etc.

10 [0023]

The food item of Example 1 was manufactured by charging ice cream into a container, pouring a chocolate-using food item onto the surface of the ice cream so that the surface of the ice cream was entirely coated with the chocolate-using food item having a  
15 thickness of about 1 mm, sprinkling granulated sugar on the chocolate-using food item, and baking the granulated sugar with a burner for caramelization.

[0024]

On the other hand, the food item of Comparative Example 1 was  
20 manufactured in the same manner as general ice cream contained in a container by charging ice cream into a container, sprinkling granulated sugar directly on the surface of the ice cream, and baking the granulated sugar with a burner for caramelization.

[0025]

25 The results of comparison are shown in the following Table 1. Table 1 shows the results of a sensory evaluation performed by

tasting by a total of seven persons to evaluate with time how the crispy texture of the surface caramel portion was maintained according to the following three criteria: "3. The crispy texture was well maintained.", "2. The crispy texture was maintained to some extent.", and "1. The crispy texture was lost.".

[0026]

[Table 1]

| Elapsed time after baking | Samples                            |                                                                                                                                     |                        |                                    |
|---------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------|
|                           | Food item of Comparative Example 1 |                                                                                                                                     | Food item of Example 1 |                                    |
|                           | Result                             | Comment                                                                                                                             | Result                 | Comment                            |
| After 2 hours             | 2                                  | The crispy texture was maintained.                                                                                                  | 3                      | The crispy texture was maintained. |
| After 6 hours             | 2                                  | The crispy texture was maintained.                                                                                                  | 3                      | The crispy texture was maintained. |
| After 1 day               | 2                                  | The crispy texture was maintained.                                                                                                  | 3                      | The crispy texture was maintained. |
| After 2 days              | 2                                  | The crispy texture was maintained.                                                                                                  | 3                      | The crispy texture was maintained. |
| After 1 week              | 1                                  | The crispy texture achieved by caramelization was lost. Only the grainy texture of sugar remaining unmelted during baking remained. | 3                      | The crispy texture was maintained. |
| After 2 weeks             | 1                                  | The crispy texture achieved by caramelization was lost. Only the grainy texture of sugar remaining unmelted during baking remained. | 3                      | The crispy texture was maintained. |

|                                            |   |  |   |                                                                                                    |
|--------------------------------------------|---|--|---|----------------------------------------------------------------------------------------------------|
| After about<br>3 weeks<br>(After 23 days)  | - |  | 3 | The crispy texture<br>was maintained.                                                              |
| After about<br>2 months<br>(After 70 days) | - |  | 2 | The surface caramel<br>portion was<br>slightly sticky but<br>its crispy texture<br>was maintained. |
| After about<br>3 months<br>(After 90 days) | - |  | 2 | The surface caramel<br>portion was<br>slightly sticky but<br>its crispy texture<br>was maintained. |

[0027]

As shown in Table 1, in the case of the food item of Example 1, the crispy texture of the surface caramel portion was well maintained even after a lapse of about three weeks, and was maintained to some extent even after a lapse of about three months. Further, the surface caramel portion of the food item of Example 1 was very crispy even just after caramelization performed by baking (e.g., after two hours from baking). Therefore, the food item of Example 1 can give a more crispy texture as compared with the food item of Comparative Example 1 using a conventional method in which sugar is directly sprinkled on the surface of ice cream and baked for caramelization.

[Example 2]

15 [0028]

<Comparison 2>

Hereinbelow, Comparison 2 will be described.

(Food item of Example 2)

First food item: pudding

Second food item: chocolate-using food item

Storage environment: Refrigerator (10°C or lower)

(Food Item of Comparative Example 2)

5 First food item: pudding

Second food item: none

Storage environment: Refrigerator (10°C or lower)

Note that the pudding used as the first food item in Example 2 and the pudding used as the first food item in Comparative Example 2 are the same, and the storage environment in Example 2 and the storage environment in Comparative Example 2 are the same.

[0029]

The pudding used as the first food item in Example 2 and Comparative Example 2 is not limited by its components, composition, and manufacturing method and is an already-known one. Further, the composition of the chocolate-using food item used in Example 2 is the same as that of the chocolate-using food item used in the above-described Example 1.

[0030]

20 The food item of Example 2 was manufactured in the following manner. A liquid pudding mix obtained in such a manner as described above was charged into a container. After the liquid pudding mix set, a chocolate-using food item was poured onto the pudding to have a thickness of about 1 mm. Then, granulated sugar was sprinkled on the chocolate and baked with a halogen heater for caramelization.

[0031]

On the other hand, the food item of Comparative Example 2 was manufactured in the following manner. A liquid pudding mix obtained in such a manner as described above was charged into a container. After the liquid pudding mix set, granulated sugar was sprinkled  
5 on the surface of the pudding and baked with a halogen heater for caramelization.

[0032]

As a result of Comparison 2, the caramel portion of Comparative Example 2 almost completely lost its crispy texture in about half  
10 a day (about 12 hours), and was then turned to almost a liquid state after a lapse of one day and therefore completely lost its crispy texture.

[0033]

The food item of Example 2 was not subjected to a long-term  
15 test performed in Comparison 1, but maintained its crispy texture even after a lapse of at least 3 days from caramelization.

[0034]

The present invention is not limited to the above examples. Although the food items contained in containers have been described  
20 above, the present invention is not limited to such food items contained in containers. For example, the surface (part or all of the surface) of the first food item 11 formed into a predetermined shape without using the container 2 may be coated with the second food item 13. Then, sugar is attached to the surface of the second  
25 food item 13 and then caramelized. That is, the present invention can be applied also to food items not contained in the containers

2, such as so-called ice cream bars.

[0035]

Further, the first food item 11 or the second food item 13 may be mixed with nuts, if necessary. Further, the food item  
5 according to the present invention may be wrapped with an outer edible part or may be sandwiched between outer edible parts. Examples of the outer edible part may include monaka wafers, cones, wafers, and cookies. The food item according to the present invention makes it possible to prevent such monaka wafers or cones from absorbing  
10 moisture, and therefore the crispy texture of monaka wafers or cones can be maintained.

[0036]

As described above, the thickness of the layer of the second food item 13 can be appropriately determined from the viewpoint  
15 of the amount and properties of the first food item 11. However, the influence of the second food item 13 on the taste and texture of the first food item 11 as a main component can be reduced by reducing the thickness of the second food item 13.

[0037]

20 Further, as described above, the second food item 13 is melted and mixed with surface sugar by heating. Therefore, depending on the type of the second food item 13, a unique and original flavor can further be added in addition to good texture and flavor of caramel itself.

25 Reference Signs List

[0038]

|   |    |                  |
|---|----|------------------|
|   | 1  | food item        |
|   | 2  | container        |
|   | 11 | first food item  |
|   | 13 | second food item |
| 5 | 15 | caramel portion  |

## Claims

1. A surface-baked food item comprising a first food item, and a second food item containing fat and oil, wherein part or all of a surface of the second food item is coated with a heated product of sugar,

wherein the first food item is at least one type or two types or more food items selected from the food item group consisting of pudding, crème brulee, custard pudding, ice cream, cake, “iced milk” - ice cream with a milk solids content of 10% or more and a milk fat content of 3% or more, “lacto-ice” - ice cream with a milk solids content of 3% or more, sherbet, cheese, yogurt, pasta, and meat,

wherein the second food item is at least one type or two types or more food items selected from the food item group consisting of chocolates, fat and oil derived from vegetable source, butter, cream, lard, edible refined and processed fat and oil, and margarine, the vegetable source being at least one type or two types or more vegetable source selected from the vegetable source group consisting of palm, coconut, soybean, corn, rapeseed, sunflower, cotton seed, cacao - cocoa butter, shea, and rice,

wherein the second food item and the heated product of sugar are in a form of layers, the layer of the second food item has a thickness of 0.8 mm to 7.0 mm, the layer of the second food item coats at least part of a surface of the first food item, and the layer of the heated product of sugar coats part or all of a surface of the layer of the second food item, and

a mixing portion including the second food item and the heated product of sugar is formed in boundary between the layer of the second food item and the layer of heated product of sugar.

2. The surface-baked food item according to claim 1, wherein the second food item—  
coats a surface of the first food item in a container having an opening, the surface being  
located on an opening side of the container.

3. A method for manufacturing a surface-baked food including a first food item and a  
second food item that coats at least part of a surface of the first food item and contains fat and  
oil, the method comprising the step of heating sugar sprinkled onto a surface of the second  
food item to obtain a heated product of sugar,

wherein the first food item is at least one type or two types or more food items  
selected from the food item group consisting of pudding, crème brulee, custard pudding, ice  
cream, cake, “iced milk” - ice cream with a milk solids content of 10% or more and a milk fat  
content of 3% or more, “lacto-ice” - ice cream with a milk solids content of 3% or more,  
sherbet, cheese, yogurt, pasta, meat, and bread,

wherein the second food item is at least one type or two types or more food items  
selected from the food item group consisting of chocolates, fat and oil derived from vegetable  
source, butter, cream, lard, edible refined and processed fat and oil, and margarine, the  
vegetable source being at least one type or two types or more vegetable source selected from  
the vegetable source group consisting of palm, coconut, soybean, corn, rapeseed, sunflower,  
cotton seed, cacao - cocoa butter, shea, and rice,

wherein the second food item and the heated product of sugar are in a form of layers,  
the layer of the second food item has a thickness of 0.8 mm to 7.0 mm,  
the layer of the second food item coats at least part of a surface of the first food item,  
and the layer of the heated product of sugar coats part or all of a surface of the layer of the  
second food item, and

a mixing portion including the second food item and the heated product of sugar is

formed in boundary between the layer of the second food item and the layer of heated product of sugar.

4. The method for manufacturing a surface-baked food according to claim 3, wherein
- 5 the heated product of sugar is obtained by caramelizing the sugar by heating.