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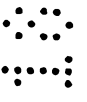
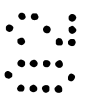
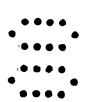
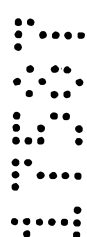
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CHOCOLATE OR COMPOUND COATING WITH UNIQUE TEXTURE

ABSTRACT

The present invention relates to the production of chocolates and compound coatings having a unique texture and mouthfeel while being eaten. The chocolates and compound coatings include hydrocolloids.



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ORIGINAL

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Invention Title: 'CHOCOLATE OR COMPOUND COATING WITH UNIQUE
 TEXTURE'

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

File: 26928AUP00

CHOCOLATE OR COMPOUND COATING WITH UNIQUE TEXTURE

Technical Field

The present invention relates to the production of chocolates and compound coatings having a unique texture and mouthfeel while being eaten.

5 Background Art

Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of common general knowledge in the field.

10 In order to make a candy product that is palatable to the consumer, the texture or mouthfeel of the candy product is often varied. For example, foaming confectionary products are available. This method of varying the mouthfeel of the product depends on the reaction of two ingredients, such as an acid and sodium bicarbonate, when the product is placed in the mouth.

15 Candy products containing chocolate or compound coatings are well known. Compound coatings having a chocolate flavor are commonly used as a replacement for chocolate in candy products, so that the texture or mouthfeel of compound coatings may be varied.

20 The texture of the compound coating is typically varied by varying the melting profile of the fat used in the compound coating. The melting profile of the fat can be changed by varying the type of fat used, the level of hydrogenation of the fat, fractionation of the fat and/or esterification of the fat. In addition, the texture of the confectionary coating can be varied by varying the amount and/or kind of emulsifier.

Flavored compound coatings often do not have the texture of the product whose flavor they exhibit. For _____

example, peanut butter flavored compound coatings often lack the cloyiness or sticky texture of real peanut butter.

Hydrocolloids have been used in the food industry as a thickening agent and stabilizing agent in a variety of food products. For example, hydrocolloids are used in salad coatings and pectin jellies. The hydrocolloids are also useful in preparing low fat or no fat confections. In all these uses the hydrocolloids are present in water based food products and exist in their hydrated state.

10 For example U.S. Patent No. 5,607,716 discloses a "water and sugar based" confection which is a caramel and includes hydrocolloids. Other foodstuffs referred to include fudge, nougat, toffee, creams, gums and jellies. All these products are water based materials.

15 WO 93/17,582 discloses edible dispersions used as a fat substitute. The product has continuous and gel dispersed phase containing hydrocolloids. The gel is formed from an aqueous solution.

European Patent No. 522,704 discloses hydrated
20 micro particles of cocoa dispersed in an aqueous sugar solution that can be used, for example, as a low fat icing.

European Patent No. 515,864 discloses a water and sugar based high solids confectionary useful in foodstuffs such as confectionary products and jellies, especially low
25 fat and no fat confections.

WO 91/19,424 discloses a fat substitute comprising micro-particulate beads of hydrous hydrocolloid gel. The micro-particulate beads may be used as a fat substitute for ice cream, pudding, cheesecake, dips, salad dressings and the
30 like.

European Patent No. 434,025 discloses the preparation of crispies by extrusion of a hydrocolloid and/or raw fiber, oat bran, sugar substitute, starch and wheat flour. The crispies product initially has a high moisture content and is dried to a final moisture content of 4 percent. The crispies may be coated with chocolate.

5 U.S. Patent No. 3,849,395 discloses modified hydrocolloids useful as a suspending or gelling agent for chocolate or fruit syrups.

As noted above, flavoured compound coatings often do not have the texture of the product whose flavor they exhibit. Thus, there is a need for compound coatings which provide a texture more like the product whose flavor they exhibit. In addition, it is
10 desirable to make candy products having unique and novel textures that are attractive to consumers.

It is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art, or to provide a useful alternative.

Summary of the Invention

15 An aspect of the present invention provides a chocolate or compound coating comprising a substantially non-hydrated hydrocolloid in an amount sufficient to modify the texture or mouthfeel of the composition when the chocolate or compound coating is eaten.

20 Preferably, the hydrocolloid is a functional protein, a gum, a gel, a cellulosic material, a glucan, a starch, a clay or a mixture thereof. More preferably, the hydrocolloid is a gelatin, a carrageenan, a pectin, a cellulose, an alginate, a xanthan, or a mixture thereof, and most preferably is guar gum.

Advantageously, the hydrocolloid is present in an amount from about 0.1 percent to about 20 percent by weight of the composition, preferably from about 1 percent to
25 about 10 percent by weight of the composition. The hydrocolloid has a particle size of

between about 50 μ m and about 500 μ m, preferably, between about 70 μ m and about 250 μ m, and most preferably between about 80 μ m and about 180 μ m.

Most confectionary compositions have a moisture content of no more than about 5 weight percent, and preferably no more than about 2 weight percent.

5 Unless the context clearly requires otherwise, throughout the description and the claims, the words 'comprise', 'comprising', and the like are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of "including, but not limited to".

Detailed Description of the Preferred Embodiments

10 It has been surprisingly discovered that combining hydrocolloids with chocolate or compound coatings produces a product with a unique texture and mouthfeel when eaten.

By hydrocolloid is meant those substances which influence the physical properties of water. In particular, hydrocolloids are substances that swell and produce a
15 viscous dispersion or solution when exposed to water. Hydrocolloids include functional proteins such as, gelatin, myosin, sarcoplasmic proteins, albumens, and globulins; gums, such as, galactomannans, glucomannans, and microbials; gels, such as, seaweed extracts, pectinaceous materials, and konjacs; and other macromolecular entities such as, cellulosics, glucans, starches, and clays.

20 Hydrocolloids which may be added to the chocolate or compound coating according to the present invention include, but are not limited to, acacia, acetan, acetylated distarch phosphate, acetylated starch, acid-thinned starch, adipic starch, agar (agar-agar), agaropectin, agarose, algin, alginate, alginic acid, amidated pectins, amorphophallus, amylopectin, amylopectin starch, amylose, arabic, arabica,

arabinogalactan, arabogalactan, arracacha, arrowroot, beet
 pulp, beta glucan, bevo, blood, british gum, cactus gum,
 carboxymethyether starches, carboxymethylcellulose,
 carboxymethylmethylcellulose, carboxymethyl starch, carob,
 5 caseins, caseinates, cassia, chitin, chitosan, clay,
 collagen, combretum, curdlan, cyclodextrin, cydonia, danish
 agar, dextran, dextrin, dulsan, distarch phosphate,
 ethylcellulose, ethylhydroxyethylcellulose,
 ethylmethylcellulose, eucheumas, ferlo, fibres, fibrinogen,
 10 flax seed, fucoidan, furcelleran, funoran, galactomannans,
 gatto, gelidium, gellan, ghatti, gigartinas, globulins,
 glucomannans, glues, gluten, gracilarias, guluronics,
 gummifera, hashab, hemicelluloses, high amylose starch,
 hoblobo, hydrogenated starch, hydroxyalkylcellulose,
 15 hydroxyalkyl starch, hydroxyethylcellulose,
 hydroxyethylmethylcellulose, hydroxypropylcellulose,
 hydroxypropylmethylcellulos, hydroxypropyl starch, hypnean,
 iridaeans, isinglass, karaya, karroo, kelp, keltzan, konjac,
 kordofan, lakee, lambda carrageenan, laminaran, larch, latex,
 20 linseed, locust bean, lupo, luposol, maltodextrin, mannan,
 mannoglucuronoglycans, mannuronics, maracuya, mesquite,
 methylcellulose, microcrystalline cellulose, mucilage, mucin,
 mung bean, okra, ovalbumins, oxidised starch, pea starch,
 pectic acid, plant exudates, plasma, porphyran, potato pulp,
 25 potato starch, pregelatinized starches, proatrim, propylated
 starch, propylene glycol alginate, prosopsis seed, prosopsis
 exudate, protopectins, prowashonupana barley, pulcherima,
 pullulan, psyllium, pyrodextrins, quince, quince seed,
 ramalin, rhamsam, rice products, St. Johns bread, salabreda,
 30 sandra beida, schizophyllan, scleroglycan, seaweed powders,
 semen cydonia, senna, seyal, sorghum, soy protein, sterculia,

suakim, succinoglycan, sunflower pectin, sunt, tahl, tahla, tamarind seed, tamarind kernel, taminda, tapioca, tara, tragacanth, undaria, verrek, wattles, waxy maize, waxy rice, waxy sorghum, wheat products, whey protein, xyloglucan, yeast
5 cell walls, and mixtures thereof. Preferably the hydrocolloid is gelatin, iota carrageenan, kappa carrageenan, pectins, powdered cellulose, sodium alginate, xanthan, and mixtures thereof. Preferably, the hydrocolloid is guar gum.

By chocolate is meant any confectionary product
10 having qualities sufficient to impart chocolate taste.

Suitable chocolates include, but are not limited to, sweet chocolate, milk chocolate, buttermilk chocolate, milk
chocolate, bittersweet chocolate and chocolates as defined in
21 C.F.R. § 163. Chocolate also includes compound coatings
15 that have a chocolate flavor and any other material that performs as a chocolate analogue or a chocolate substitute.

By compound coating is meant any confectionary product based on vegetable fat. In addition to vegetable fat the confectionary coatings typically contain sugar;
20 flavorings such as cocoa solids, peanut solids, and other natural or artificial flavors; emulsifiers; coloring agents; and optionally milk solids.

By varying the amount of hydrocolloid present in the chocolate or compound coating the texture of the product
25 can be varied over a wide range. Increasing the amount of hydrocolloid present in the chocolate or compound coating increases the viscosity of the product during eating and thus, varies the mouthfeel of the product. For example, varying the amount of hydrocolloid added to the chocolate or
30 compound coating can lead to a product that has a slightly thickened texture, a chewy texture or even a slimy texture.

Typically the hydrocolloid is present in the chocolate or compound coating in an amount from about 0.1 to 20 percent by weight. Preferably, the hydrocolloid is present from about 1 to 10 percent by weight.

5 Adding the hydrocolloid directly to chocolate varies the textural eating qualities of the chocolate. For example, adding from about 1 to 3 percent by weight guar gum to chocolate provides slight thickening to the chocolate during mastication, while adding from about 3 to 6 percent by 10 weight of guar gum provides a chocolate with a slimy texture and mouthfeel. Increasing the level of guar gum in the chocolate to from about 6 to 9 weight percent gives a product with a chewy texture.

The hydrocolloids may also be added to compound 15 coatings. The hydrocolloid is typically added to a compound coating in an amount from about 1 to 10 weight percent, preferably in an amount from about 2 to 8 weight percent and most preferably in an amount from 3 to 5 weight percent. For example, adding hydrocolloids to peanut butter flavored 20 compound coatings imparts a mouthfeel more like actual peanut butter. The addition of about 3 to 5 percent by weight of guar gum to a peanut butter flavored confectionary coating made of vegetable fat, milk solids, sugar, salt and peanut solids has a more sticky texture and a mouthfeel more like 25 real peanut butter.

The unique texture and mouthfeel of the product results from the hydrocolloid being wetted by saliva during mastication. Hydration of the hydrocolloid by the saliva during chewing produces a slow build up in the viscosity of 30 the product which provides the unique mouthfeel. Thus, the presence of hydrocolloids in chocolate or compound coatings

provides a texture transformation that takes place while the candy product is being eaten. This unique mouthfeel is not attainable by other methods used to vary the texture of chocolate and compound coatings. Thus, the present invention
5 provides chocolate and compound coatings having a novel mouthfeel and an eating quality previously not obtainable.

The mouthfeel of the chocolate or compound coating is also dependent on the size of the hydrocolloid particles that are mixed with the chocolate or compound coating. Thus,
10 the texture of the chocolate or compound coating can be further varied by choosing a specific particle size of the hydrocolloid. The rate of hydration of the hydrocolloid, and thus the texture and mouthfeel of the product, is dependent on the size of the hydrocolloid particles. Larger particles
15 are hydrated more slowly than smaller particles. The particle size may range from about 50 μ m to 500 μ m, preferably from about 70 μ m to 250 μ m, and most preferably from about 80 μ m to 180 μ m.

In order to assure that the hydrocolloid is
20 hydrated while being chewed it is necessary to minimize hydration of the colloid before the product is placed in the mouth. To minimize hydration of the hydrocolloid the hydrocolloid is preferably added to a chocolate or compound coatings having a low moisture content. Typically, the
25 chocolate or compound coating has a moisture content of less than 5 percent and preferably less than 2 percent.

The hydrocolloid may be added to the chocolate or confectionary product at any time during the manufacturing process and no special process methods are necessary.
30 However, care should be taken to avoid exposing the

hydrocolloid to moisture. Thus, it is desirable that the humidity be kept low during the manufacturing process. To minimize exposure to moisture it is preferable to add the hydrocolloid to the chocolate or confectionary product at 5 the end of the manufacturing process.

The chocolate or compound coating containing the hydrocolloid may be manufactured into individual candy products, used as an inclusion in candy products, or used as a coating on a candy bar. One of ordinary skill in the art 10 may readily envision a variety of such ways to use the chocolate or compound coatings in candy products.

EXAMPLES

The invention is further defined by reference to 15 the following examples describing in detail the compositions of the present invention. The examples are representative, and should not be construed to limit the scope of the invention in any way.

20 **Example 1. Compound Coating Prepared According to the Present Invention.**

A confectionary coating according to the present invention was prepared as set forth below:

Product Composition	Weight Percent
Sucrose	53.99%
Non-fat Dry Milk	8.94%
Guar Gum	7.49%

Vegetable Fat	29.41%
Vanillin	0.03%
Lecithin	0.15%

Guar gum (Procol G-2, commercially available from Polypro International Inc. of Edina, MN) was added at the beginning of the process to make the confectionary coating. Sugar, non-fat dry milk, guar gum, vegetable fat, and vanillin were
5 mixed and refined through a 3-roll refiner. More vegetable fat was added to the refined mass and the product was conched in the same fashion as chocolate. The viscosity of the conched mass was adjusted using lecithin. The resulting product had a somewhat slimy texture when eaten. This
10 product demonstrated that guar gum could be hydrated in the mouth. The example also demonstrated that guar gum can be added at the initial stages of the manufacturing process.

Example 2. Chocolate Flavored Compound Coating Prepared According to the Present Invention.

15 Three chocolate flavored confectionary coatings, according to the present invention, having differing levels of guar gum, were prepared as set forth below:

Product Composition	Weight Percent		
	Sample 1	Sample 2	Sample 3
Sugar	47.93	46.94	45.97
Non-fat Dry Milk	9.70	9.50	9.30

Cocoa Powder	7.11	6.97	6.82
Vegetable Fat	28.86	28.27	27.68
Palm Stearine	0.49	0.48	0.47
Vanillin	0.02	0.02	0.02
Lecithin	0.13	0.12	0.12
Lactose	3.77	3.70	3.62
Guar Gum	2.00	4.00	6.00
Total	100	100	100

The chocolate flavored confectionary coating were prepared without guar gum. The confectionary coating was then melted and the guar gum (Procol G-2) was added and hand mixed using a spatula. The product was molded into tablets for 5 evaluation.

An increase in viscosity was noted in all cases compared to product not containing guar gum. The product became more viscous in the mouth as the level of guar gum increased. This example, demonstrated that the guar gum can 10 be added at the end of the manufacturing process.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A chocolate or compound coating comprising a substantially non-hydrated hydrocolloid in an amount sufficient to modify the texture or mouthfeel of the composition when the chocolate or compound coating is eaten.
- 5 2. The chocolate or compound coating of claim 1, wherein the hydrocolloid is a functional protein, a gum, a gel, a cellulosic material, a glucan, a starch, a clay or a mixture thereof.
3. The chocolate or compound coating of claim 1, wherein the hydrocolloid is a gelatin, a carrageenan, a pectin, a cellulose, an alginate, a xanthan, or a mixture thereof.
- 10 4. The chocolate or compound coating of claim 1, wherein the hydrocolloid is a guar gum.
5. The chocolate or compound coating of any one of claims 1 to 4, wherein the hydrocolloid is present in an amount from about 0.1 percent to about 20 percent by weight of the composition.
- 15 6. The chocolate or compound coating of any one of claims 1 to 5, wherein the hydrocolloid is present in an amount from about 1 percent to about 10 percent by weight of the composition.
7. The chocolate or compound coating of any one of claims 1 to 6, wherein the hydrocolloid has a particle size of between about 50 μ m and about 500 μ m.
- 20 8. The chocolate or compound coating of any one of claims 1 to 7, wherein the hydrocolloid has a particle size of between about 70 μ m and about 250 μ m.
9. The chocolate or compound coating of any one of claims 1 to 8, wherein the hydrocolloid has a particle size of between about 80 μ m and about 180 μ m.
10. The chocolate or compound coating of any one of claims 1 to 9, having a moisture
25 content of no more than about 5 weight percent.

11. The chocolate or compound coating of any one of claims 1 to 10, having a moisture content of no more than about 2 weight percent.

12. A chocolate or compound coating substantially as herein described with reference to anyone of the embodiments of the invention illustrated in the examples.

5 DATED this 9th day of March 2004
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