United States Patent Office 3,677,771
Patented July 18, 1972

3,677,771

PROCESS FOR THE MANUFACTURE OF CARAMELS

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No Drawing. Filed Sept. 21, 1970, Ser. No. 74,176
Int. Cl. A23g 3/00
U.S. Cl. 99—134 R 30 Claims

ABSTRACT OF THE DISCLOSURE

Production of a caramel-type confectionary product from a reconstitutable dried condensed milk product made by mixing concentrated fluid dairy whey with a proteinaceous source such as casein adding a partially hydrogenated fat to said mixture; drying the condensed milk product, and incorporating therewith a sequestering agent to sequester any calcium ions present in the milk product upon reconstitution and to prevent undesired calcium induced coagulation of the protein during subsequent heating to produce the caramel confection.

BACKGROUND OF THE INVENTION

This invention relates to an improved process for the production of a caramel-type confectionary product. Caramels are a highly desirable and useful confectionary product which are produced by the caramelization of sugar generally in the presence of protein, milk, solids, fat, and minor amounts of other materials to produce a soft, pliable confectionary product of a pleasingly chewable quality. Caramels not only make pleasing and desirable confectionary products in and of themselves but also are highly desirable as an ingredient of other confectionary products as for example, a candy bar which incorporates chocolate, fudge, nougat, etc. or other types of confectionary materials.

While caramel is most generally manufactured by the caramelization of sugar in the presence of liquid condensed milk, commercial processes for the production of caramels utilizing liquid condensed milk formulas suffer from certain economic disadvantages in that the milk or condensed milk employed must be refrigerated or otherwise maintained prior to use in order to prevent deterioration theeof. This not only adds to the cost of poducing the caramels but likewise reduces the quality thereof. Although skim milk products in liquid form have also been used in the production of caramels, it is necessary that a butter or vegetable fat be added to the caramel mixture in order to impart body to the product following caramelization, and skim milk products still require special storage thereof.

The use of dried reconstitutable milk products, especially those of a high fat content, have not been entirely successful in the production of caramels for several specific reasons. This is true even though the use of a dried milk product would overcome the aforementioned disadvantages of liquid milk products in that they may be readily reconstituted in water immediately prior to use with no refrigeration or storage of the milk required. The use of a dried reconstitutable milk product in the manufacturing of caramels is also advantageous economically since lower cost ingredients as for example, whey solids or vegetable proteinaceous materials may be incorporated as an ingredient of the reconstitutable product without detracting from the quality of the caramels. The most serious disadvantage which is noted in the commercial production of caramels using dried reconstitutable milk powder although the problem also results with some liquid milk products is that when the caramelization reaction takes place a "pudding-like" texture with poor flow properties results with the caramels as opposed to the flowable, pliable properties normally considered desirable in caramel-type products.

I have, therefore, determined that this undesirable "pudding-like" texture may be generally traced to the presence of a large amount of calcium ions which may normally be present in large amounts in the reconstitutable milk product although also present in milk products in general and that accordingly, the presence of these calcium ions aid in the coagulation of protein material which is present in the mixture during caramelization and induce the formation of an undesirable thick "pudding-like" or gel type of texture. Having recognized this problem, I have discovered that if a predetermined quantity of a sequestering agent is added to the milk or especially the reconstitutable product prior to the caramelization reaction the flow properties of the caramel produced is remarkably improved and the "pudding-like" texture accordingly prevented because of the sequestering of the calcium ions present in the milk or milk product and prevention of their reaction with the protein to cause the undesirable "pudding-like" texture.

The use of a sequestering agent to overcome this problem also eliminates the need for using a "low calcium" milk product, which while also solving the problem would not be commercially feasible because of the expense of controlling the calcium concentration thereof.

Although the undesirable "pudding-like" texture in caramels can exist because of the presence of calcium ions in liquid condensed milk products as well, the problem is much more pronounced when a dried, condensed milk product which is reconstitutable in water is employed because in the dried reconstitutable or imitation milk product made by combining casein and whey, more of the calcium is apparently present in the form of free calcium ions and capable of reacting with the protein than in the liquid milk product and accordingly will more often produce a severe "pudding-like" texture when used in the production of caramels.

SUMMARY OF THE INVENTION

I have, therefore, devised a novel process for the production of a caramel-type confectionary product which possesses consistently reproducible and desirable flow properties without the formation of a "pudding-like" or gel type of texture which comprises preparing a milk product by mixing concentrated fluid dairy whey and a proteinaceous source such as animal protein, additionally adding a partially hydrogenated fat to said mixture, drying the milk product to produce a readily reconstitutable condensed type milk product which is suitable for the production of caramels, and incorporating therewith a predetermined quantity of a sequestering agent in the dried condensed type milk product employed so as to sequester any calcium ions present in the milk product upon reconstitution and prevent coagulation or thickening of the protein material when it is used in the production of caramels during the caramelization reaction and produce a caramel-type product of improved and consistently reproducible flow properties with a soft, chewy texture.

It is, therefore, an object of the present invention to provide for a process of producing caramels of good flow properties from reconstitutable or dried milk products or from liquid milk products by the addition of a quantity of sequestering agent to prevent calcium induced coagulation of the protein and an undesirable "pudding-like" texture.

It is also an object of the present invention to provide an economic and commercially useful process for the production of caramel utilizing a wide range of commercially available ingredients without control of the calcium