United States Patent Office 3,006,763 Patented Oct. 31, 1961



3,006,763

# METHOD OF PRODUCING A DRY SUGAR-COCOA MIX

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No Drawing. Filed June 3, 1954, Ser. No. 434,328
8 Claims. (Cl. 99—26)

This invention relates to an improved sugar-cocoa mix which is readily miscible with and dispersible in cold liquids such as milk, as well as in hot liquids, to produce a chocolate drink; and the invention includes the new sugar-cocoa mix and the method of producing it.

The cocoa powder of commerce is substantially insoluble in cold aqueous media such as water or milk. Furthermore, because of its low density and hydrophobic or water repellent character, cocoa powder is not readily wetted, tending to float on the surface of the liquid in clumps of dry aggregates. Even vigorous mechanical mixing will not disperse these clumps throughout the body of the liquid. The hydrophobic character of cocoa is not modified to a great extent when the cocoa is simply mixed mechanically with sugar; and the resulting mix is not readily dispersed when stirred into a cold liquid, the sugar dissolving and the cocoa floating on the surface in clumps.

In hot liquids, such as hot water or hot milk, the hydrophobic character of cocoa is modified by heat so that a dispersion is more readily made with moderate agitation. And for hot drinks a simple mechanical mixture of sugar, cocoa and other bodying and flavoring ingredients can be used without special treatment; but this method is unsatisfactory with cold liquids.

It has been proposed to make sugar-cocoa mixes containing sugar, cocoa and emulsifier intimately bound together so that the hydrophobic character of the cocoa is neutralized and so that the product consists of particles having a relatively uniform size which do not separate or stratify when handled during packing and shipping. But the preparation of such products generally requires special equipment or extensive processing, or the utilizing of special grades of the various ingredients, or may be difficult to vary or control to yield products having the desired properties.

The present invention provides an improved sugar-cocoa mix in dry form which is readily miscible with and dispersible in cold liquids such as cold milk, as well as in hot liquids, to produce a chocolate drink, and which is also suitable for preparing chocolate flavored candies, such as fudge, cake icings and other products in a minimum amount of time. The improved product is moreover one which is readily prepared in conventional low cost equipment from commercially available ingredients without having to resort to complicated or costly methods of processing.

The improved sugar-cocoa product of the present invention has the advantage of easy dispersibility, uniformity of particle composition and size and with a flexibility of product, due to the wide range in proportions and types of sugar, cocoa and aqueous spray which may be used, such that mixes of varying wetting out and dispersion rates, bulk densities, and shades of colors can be readily produced.

The improved process of the present invention for producing the sugar-cocoa mix requires no special expensive equipment and a minimum of processing and enables commercially available grades or types of ingredients to be used. An improved cocoa mix can thus be made easily and economically, which is a valuable product for use in making both cold and hot drinks, as well as for the production of chocolate flavored candies, cake



icings, and other food uses where cocoa and sugar are desirable ingredients.

In the improved method of the present invention, the sugar-cocoa mixture is produced in a form in which the sugar and cocoa particles and flavoring materials are cemented together with solid sugar deposited from solution in contact with the individual particles and acting as a binder to cement sugar and cocoa particles to other sugar and cocoa particles and to each other. This improved method increases the effective weight of the cocoa particles and enhances their dispersibility. When the improved composite particles produced by this process are introduced into a liquid, the sugar component of the particles dissolves and the attached cocoa particles wet out before they can coalesce into a non-wettable unit. The composite particles can be distributed evenly throughout the volume of the liquid by simple moderate stirring, so that the attached cocoa particles can also be dispersed quickly and evenly throughout the liquid.

In carrying out the process and producing the improved sugar-cocoa mix, in which the sugar and cocoa particles etc., are cemented together to form small aggregates by the action of solid sugar deposited from an aqueous solution in contact with the various solid particles, the dry sugar-cocoa mix is treated with a small and regulated amount of an aqueous liquid, particularly water or a sugar solution, introduced in the form of finely divided liquid particles which are uniformly distributed through the dry mix. When water is used, the individual small particles which comprise the liquid spray will dissolve a small amount of the sugar to form a sugar solution. The admixing of the fine spray droplets of aqueous liquid with the dry ingredients results in the production of small aggregates of sugar and cocoa particles. On drying to remove the water, the sugar which is deposited from the solution acts as a binder to cement together sugar and cocoa particles to other sugar and cocoa particles and to each other.

A limited and regulated amount of the finely divided liquid is applied and distributed throughout the dry sugar-cocoa mix so that the aggregates formed are small aggregates and so that the formation of large aggregates is avoided or minimized. In general, the amount of aqueous liquid added, which serves to wet and form small aggregates of the sugar and cocoa particles, will be a small percentage of the weight of the dry sugar-cocoa mix, varying somewhat with the relative proportions of and the particle size of the dry ingredients of the mix and with the concentration and spraying characteristics of the aqueous liquid. In general, the amount of water introduced as water spray, or wet steam spray or as an aqueous solution spray will be between about 2% and 9% of the dry ingredients to which the liquid is added. The amount will vary somewhat with the fineness of subdivision of the liquid used. The amount of such added liquid is limited so that the mixture remains freely flowing thus avoiding caking or sticking of the mass in the processing equipment.

The liquid used to form the cementum for the sugar and cocoa particles is advantageously a sugar solution such as a solution of invert sugar, sucrose, dextrose or other commercially available forms of sugars. And sugar solutions containing a substantial percentage of sugar can advantageously be used, e.g., sugar solutions containing 25% or 50% of invert sugar or sucrose.

The aqueous liquid added to the dry mix, when added in the form of a sugar solution, or as water which forms a sugar solution in the mix, should be added in a finely sub-divided form for most efficient use in forming aggregates in the mix. This fine state of subdivision can be obtained in various ways, for example, by reducing the aqueous liquid to a fine spray by atomizing it using com-