

3,397,063

**BEVERAGE MIX AND PROCESS**

Paul O. Carlson, Hickory Corners, Mich., and Elmer W. Michael, Evansville, Ind., assignors to General Foods Corporation, White Plains, N.Y., a corporation of Delaware

No Drawing. Continuation of application Ser. No. 452,012, Apr. 29, 1965. This application Aug. 1, 1966, Ser. No. 569,111

4 Claims. (Cl. 99—78)

**ABSTRACT OF THE DISCLOSURE**

A new and improved fruit flavored, beverage drink in the form of a powder adapted to be reconstituted in cold water, has been prepared. The surface of the sugar granules, sugar being the major weight constituent of the blend, have been uniformly impregnated with a coloring agent and a desiccating agent without destroying their crystalline structure.

This application is a continuation of our copending patent application Ser. No. 452,012, filed Apr. 29, 1965, for Food Product and Process (now abandoned) which copending application was a continuation-in-part of our copending patent application, Ser. No. 209,797, filed July 13, 1962, for "Food Product and Process" (now abandoned).

This invention relates to a new and improved beverage composition and to a method of manufacturing same. More particularly, the invention is concerned with the manufacture of a beverage preparation typically of the fruit flavored type and like that disclosed in U.S. Patent No. 3,023,106 to Common, issued Feb. 27, 1962.

In the manufacture of a powdered beverage composition adapted to be reconstituted in cold water, it is desirable to incorporate into such composition a flavoring material consisting essentially of an emulsion of discrete droplets of a flavoring oil such as orange oil in a matrix of amorphous sugar solids such as corn syrup solids. Manufacture of such a particulate flavoring material is described in U.S. Patents 2,809,895 and 3,041,180 to Swisher, issued Oct. 15, 1957, and June 26, 1962, respectively. According to these patents, the flavoring material may be produced by preparing an emulsion of oil and a corn sugar syrup having a moisture content of from 3% to 8%, dispersing the flavor oil in the matrix material through the use of a suitable dispersant, converting the emulsion to a solidified state and subdividing the solidified emulsion into a particulate free-flowing granular consistency. Preferably, although not necessarily, the flavoring oil is removed from the surface of the material through the use of a suitable solvent such as ethyl alcohol which may also be refrigerated and serve as a means for solidifying extruded filaments of the liquid emulsion as described in the latter of the aforesaid Swisher patents.

It is believed critical that an amorphous sugar be employed as the matrix material for this solidified emulsion so as to avoid crystallinity which is attributed by Swisher to an instability of the flavoring oil; hence the employment of an amorphous sugar matrix. However, amorphous sugar solids like corn syrup are quite hygroscopic and call for the employment of the most sophisticated packaging techniques wherein the presence of moisture must be obviated to the maximum practical extent.

In the preparation of a beverage mix containing such a flavoring composition, it is usually desired to furnish the powdery material in a color identifiable with the flavor of the encapsulated oil. Thus, in the case of an orange oil having a distinctive orange flavor, it will be desired to

color the remaining constituents of the beverage composition with an orange color. Since the major constituent by weight of the beverage composition is usually a sugar such as sucrose, this will call for wetting the sugar with the food color in solution under conditions which call for the uniform distribution of the coloring solution over the sugar.

By reason of the hygroscopic character of the amorphous sugar solids employed as the matrix for the encapsulated flavoring oil, there is a tendency for the particulate flavoring material to agglomerate with the sugar and other ingredients constituting the balance of the beverage mix. This tendency is aggravated by attempts to suitably color the mix by the incorporation of the appropriate coloring solution onto the sugar crystals.

In accordance with the present invention a beverage composition having a suitable uniform color identifiable with the flavoring composition incorporated in the beverage mix is provided in a manner which avoids agglomeration or caking of the mix and, hence, renders it pack- ageable and useable by the consumer in a free-flowing particulate condition such that the consumer may simply spoon out the desired level of the mix for reconstitution into the beverage form. In accordance with its specific aspects the invention calls for the preparation of a suitable food color solution and the spraying of this solution at a very minor fraction by weight of the sugar component of the mix in proportions wherein less than 500 mls. of the coloring solution is added to 1000 lbs. of sugar and mixing is continued for a sufficient period to promote a uniform incorporation of the color matter into the individual sugar crystals (typically, sucrose) so that the crystals have the desired color and the greater part of their surface is uniformly impregnated with the coloring matter.

The use of such low proportions of coloring solution to sugar is a critical feature of the present invention. It has been found that low proportions of coloring solution are sufficient to dissolve the surface portions of the sugar crystals without dissolving the bulk of the sugar crystal. With continued mixing the coloring solution containing this dissolved surface sugar loses moisture (since the moisture present in the coloring solution is above the equilibrium moisture of sucrose—about 0.1%—the sucrose tends to return to equilibrium by losing moisture). As a result of this moisture loss, sugar and coloring matter are deposited on undissolved sugar crystals, thereby forming a sugar crystal containing coloring matter as an integral portion of the sugar crystal. If a more intense color is desired, an additional quantity of coloring solution, in the same proportion to sugar as specified above, may be applied to the already colored sugar crystals. The use of the low proportions of coloring solution to sugar specified herein provides a uniformly colored product and eliminates the necessity of a drying step.

A minor quantity of a desiccating agent, for example, powdered tricalcium phosphate or magnesium carbonate, or mixtures of these agents, is added at a point during incorporation of the coloring matter into the individual sugar particles. As is more specifically described herein- after, the coloring solution is sprayed onto the sugar particles over a period of time and the latter are continuously tumbled or otherwise agitated so as to uniformly distribute the coloring matter in the outer layers of the sugar crystals to provide a uniform color in gross appearance. This coloring solution will usually be applied at a level which, despite continued and prolonged agitation, will not cause the colored sugar particles to lose their tendency to agglomerate or aggregate. Distribution of the coloring solution is continued for a time such as will provide the aforementioned gross optical appearance of uniformity when the sugar particles are ultimately dried to a stable free-flowing form. The