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EFFERVESCENT DRINK CONCENTRATE AND METHOD OF MAKING SAME

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This invention relates to stable, dry, granular compositions in concentrate form, suitable for the preparation of effervescent drinks, particularly of the soft drink variety. It also relates to methods of preparing the stable, granular concentrates.

The effervescent drinks are produced from the stable, dry, granular concentrates of the present invention by stirring the same in water, particularly cold water (about 35°–40° F.). The resulting drinks have a clarity, sparkle and taste at least comparable to the common bottled, carbonated soft drinks presently available commercially. The effervescence initiated on stirring the dry granular concentrate in water continues without substantial diminution during the normal period of consumption, and the aforesaid clarity, sparkle and taste are maintained throughout this same period.

The dry granular concentrate of the present invention, in its preferred aspect, comprises an intimate, homogeneous, free flowing mixture of two dry constituents: (1) a sugar-acid crystal blend or core, preferably a mixture of sucrose sugar and acid crystals, uniformly colored and flavored by, and encased in, a readily water-soluble hull or casing comprising a mixture of an edible, water-soluble or dispersible film-forming colloid or gum, a monosaccharide sugar, coloring and flavoring materials, and (2) a sugar-carbonate crystal blend or core, preferably a mixture of sugar and carbonate crystals, uniformly colored by, and encased in, a readily water-soluble hull or casing comprising a mixture of an edible, water-soluble or dispersible film-forming colloid or gum, a monosaccharide sugar and a coloring material. In the main, the cores of the dry constituents consist essentially of a physical mixture of the crystals making up the cores; however, some cores consist solely of sugar crystals or of acid crystals or of carbonate crystals.

The monosaccharide tends to make the hull or casing adhere more tenaciously to the crystal cores and also tends to make the hull or casing more soluble in cold water and thereby quickly release the crystal cores for solution and reaction in the water. While the use of the monosaccharide is preferred, it may be omitted.

In accordance with the present invention, the sugar-acid crystal blend and the sugar-carbonate crystal blend are made separately in a dry granular state and the dry granules are then placed in homogeneous admixture in any desired manner, as in a conventional powder mixing machine, and then coated. The character and details of the constituents of the two crystal blends and of their methods of manufacture will now be described.

The sugar-acid crystal blend is formed by preliminarily mixing, in a dry state, a sugar or a mixture of sugars and an edible organic acid or mixture of such acids. The sugar is in the form of granules of the size corresponding to the commercial form of granulated sugar (sucrose) and the crystals of organic acid are preferably of the same or a closely similar size. The sugar constituent may be either a monosaccharide such as dextrose, for example, or a disaccharide such as sucrose, for example, or any mixture of such sugars. Preferred sugar mixtures are sucrose and lactose or dextrose. The sucrose-lactose mixture is particularly preferred because the lactose aids in forming a uniform mixture of the sucrose and the edible organic acid and because it adds stability and shelf life to the final product. In general, the choice of the sugar or mixture of sugars used is dependent upon the ultimate taste desired in the product. For example, if sweetness is objectionable, the sucrose can be replaced entirely with lactose or a mixture of lactose and dextrose. While the sugar constituent of the sugar-acid crystal blend may be either a monosaccharide such as dextrose or a disaccharide such as sucrose, it will be understood that more of the dextrose than of the sucrose would be required to give the desired sweetness, as is well understood in the art.

Dextrose is the preferred monosaccharide; however, glucose, levulose, galactose and other monosaccharides, alone or in admixture, may be used in accordance with the present invention. Sucrose is the preferred disaccharide in accordance with the present invention. Other disaccharides such as maltose, trehalose, melibiose, etc., or mixtures thereof including sucrose, may, of course, be used.

The edible organic acid is preferably citric acid. Other normally crystalline edible organic acids which may be used are tartaric and malic acids, either in anhydrous or hydrated state. A mixture of edible organic acids may be used, if desired. All or part of the edible organic acid may be replaced with an inorganic acid such as phosphoric acid, for example, but this is not preferred.

The quantity of crystal sugar with respect to the edible acid which may be used in making the sugar-acid crystal blend may vary rather widely. For example, there may be from about 3 to 10 parts by weight of crystal sugar to 1 part by weight of edible organic acid. A preferred proportion in the case of the preferred sucrose-citric acid blend is about 4 parts by weight of sucrose and 1 part by weight of citric acid. Where it is desired to use lactose in the sucrose-citric acid blend, the lactose content may vary from about 0.3 to 1 part by weight per unit weight of acid, preferably about 0.5 part by weight. As is apparent, the proportion of sugar to acid may be varied to obtain any desired sweetness in the final beverage.

It is to be understood that there must be a definite relationship between the amount of edible acid in the sugar-acid crystal blend and the carbonate in the sugar-carbonate crystal blend to be hereinafter described. Thus there should be at least enough acid to react chemically with the carbonate to effect a full release of carbon dioxide therefrom. It is preferred that there be an excess of acid used since for a properly palatable beverage, it is necessary to maintain in the beverage an acidity not only during the neutralization reaction, but during the time interval that the beverage is normally consumed. This excess of acid supplies the tartness characteristic of soft drinks. Some or all of this tartness may be due to an inorganic acid, as noted above.

The sugar and acid constituents are mixed dry into homogeneous form and are then wetted down with a solution or a dispersion of a film-forming material which forms a readily water-soluble, protective hull or casing about the sugar-acid mixture. The film-forming materials which may be used are, suitably, aqueous dispersions of an extract of the yucca plant or aqueous dispersions of other non-toxic saponins, gum tragacanth, gum arabic, Irish moss, alginates, gelantin and other similar water-soluble colloids or gums. The choice of the film-forming material depends in part upon the color, taste and/or flavor quality desired in the finished product. The preferred film-forming materials are a 60% (solids) aqueous dispersion of the saponin extract of the yucca plant and