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3,764,346

SPRAY DRIED ESSENTIAL OIL COMPOSITION

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No Drawing. Continuation-in-part of abandoned application Ser. No. 344,825, Feb. 14, 1964, and a division of application Ser. No. 719,766, Apr. 8, 1968, now Patent No. 3,628,968. This application Nov. 4, 1969, Ser. No. 874,075

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5 Claims

ABSTRACT OF THE DISCLOSURE

A spray dried mixture is prepared from (1) a polyglycerol partial ester of a higher fatty acid, (2) water soluble starch, modified starch, dextrin, sucrose, glucose, maltose, lactose, gum arabic, larch gum or corn syrup solids having a D.E. value of at least 4, and (3) an essential oil.

This application is a continuation-in-part of application Ser. No. 344,825, filed Feb. 14, 1964, now abandoned, and is a division of application Ser. No. 719,766, filed Apr. 8, 1968 and now U.S. Pat. No. 3,628,968.

The present invention relates to emulsified mixtures of fats and carbohydrates.

It is normally difficult to make stable emulsions of sugars such as sucrose and dextrose containing syrups, e.g. corn syrup, with fats, particularly liquid fats in water. Thus the Schoch patent, 2,876,160, shows that corn syrups with a D.E. value of 30 and above are unsatisfactory as dispersing agents for oils. The file history of the Schoch patent further shows that corn syrups with a D.E. value as low as 24 are unsatisfactory for making dispersed products. This is true even though Schoch can add a surface active agent as an emulsifier to his formulations.

It is an object of the present invention to prepare novel stable aqueous emulsions of fats and carbohydrates.

Another object is to prepare stable aqueous emulsions of fats with corn syrups having a D.E. value of 24 to 80.

An additional object is to prepare stable aqueous emulsions of fats with sucrose containing formulations.

A further object is to prepare dry powders from aqueous emulsions of fats with carbohydrates, preferably corn syrups having D.E. values of 30 or above and/or sucrose.

Yet another object is to prepare such emulsions and dry powders without the use of protective colloids.

Another object is to spray dry mixtures of fats and corn syrup and/or sucrose having unusually high amounts of sugar.

A still further object is to provide an improved chocolate containing edible dry whipping composition.

Another object is to provide a chocolate containing dry whipping composition which, upon addition to a liquid such as water, whole milk, whole homogenized milk, or skim milk, will whip up immediately and remain stable in whipped form for prolonged periods of time.

It is still another object of the present invention to provide a method for preparing improved edible dry fat-carbohydrate compositions, e.g. dry whipping compositions containing chocolate.

Another object is to prepare novel spray dried mixtures of fats and colloidal carbohydrates.

Still further objects and the entire scope of applicability of the present invention will become apparent from the detailed description given hereinafter; it should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope

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of the invention will become apparent to those skilled in the art from this detailed description.

It has now been found that these objects can be attained by employing polyglycerol esters of fatty acids as the emulsifying agents. While polyglycerol esters from diglycerol to triconto (30 glycerol units) glycerol esters of fatty acids can be employed there are preferably employed triglycerol to decaglycerol esters of higher fatty acids (e.g. containing 12 to 22 carbon atoms in the fatty acid). The most suitable polyglycerol esters are partial esters, i.e. they have one or more free hydroxyl groups and hence have both hydrophilic and lipophilic characteristics.

Examples of suitable polyglycerol esters are triglycerol monostearate, triglycerol monoshortening (triglycerol mono ester of the acids of cottonseed oil), triglycerol monooleate, hexaglycerol monostearate, hexaglycerol monoshortening, hexaglycerol monooleate, hexaglycerol dioleate, hexaglycerol dishortening, hexaglycerol hexaoleate, decaglycerol monostearate, decaglycerol monoshortening, decaglycerol monooleate, decaglycerol monolaurate, decaglycerol tristearate, decaglycerol tri shortening, decaglycerol trioleate, decaglycerol trilinoleate, decaglycerol decastearate, decaglycerol decaoleate, decaglycerol deca linoleate, decaglycerol tetraoleate, diglycerol monostearate, dodecaglycerol hexapalmitate decaglycerol tripalmitate, decaglycerol di arachinate, triglycerol mono behenate, dodecaglycerol tri lignocerate, decaglycerol mono linolenate, hexaglycerol di ricinoleate, decaglycerol deca myristate, decaglycerol tri ester of soybean oil acids, decaglycerol tetra ester of cottonseed oil acids, hexaglycerol mono ester of coconut oil acids, triglycerol mono ester of peanut oil acids, decaglycerol deca ester of corn oil acids, decaglycerol ester deca ester of hydrogenated cottonseed oil acids.

The polyglycerol esters are useful in giving stable emulsions and uniform, non-sticky spray dried products in three groups of products in which the essential materials are:

- (I) fat, carbohydrate and polyglycerol ester
- (II) fat, carbohydrate, colloidal stabilizer and polyglycerol ester
- (III) fat, colloidal stabilizer and polyglycerol ester.

Conventional additional materials can also be present in the emulsions and spray dried products.

The term fat as used in the present specification and claims includes both liquid and solid fats. Among the suitable edible fats which can be used are cottonseed oil, safflower oil, corn oil, soybean oil, butterfat, coconut oil, peanut oil, lard, hydrogenated cottonseed oil, hydrogenated corn oil, hydrogenated soybean oil, hydrogenated peanut oil, olive oil, hydrogenated olive oil, hydrogenated coconut oil, e.g. hydrogenated to a melting point of 92° F.

The polyglycerol ester is used in the compositions of the present invention in an amount of 0.5–30%, preferably about 2 to 3% of the fat. In some instances it is desirable to use up to 10% of the polyglycerol ester based on the fat.

Unless otherwise indicated, all parts and percentages in the present specification and claims are by weight.

As the carbohydrate there can be used corn syrups with D.E. values of at least 4 and which can be 24 to 70 or higher, molasses, maltose, ribose, galactose, xylose, arabinose, honey, lactose, sucrose, dextrin, water soluble starch, pregelatinized starch, gum arabic, larch gum arabinogalactan (Stractan), d-glucose, modified starches of the types set forth in Schoch patent, 2,876,160, e.g. hypochlorite-oxidized cornstarch, torrefaction or roasted dextrins, e.g. canary dextrins, yellow dextrins and British gums having a solubility in cold water of at least 80%,