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In lieu of the added protein, we used one of milk solids and casein, respectively, and mixtures of the proteins herein recited.

In these several examples we used the respective materials in various combinations successfully and produced sour cream powders having the advantageous properties above described. The number of examples was multitudinous, but uniformly satisfactory products were obtained.

Example 11

Sour cream suitably cultured by conventional procedure having a pH of about 4.6 had added to it gum acacia. The mass was suitably mixed with a mechanical paddle agitator, homogenized under about 750 pounds pressure and spray dried to give a free flowing sour cream powder containing approximately 82% sour cream solids and 18% gum acacia. The product was readily redispersible in water to give a homogeneous suspension which was stable in water for two hours and longer.

In contrast an acidified product such as that disclosed and claimed in Grellck Pat. 2,009,135 in which the albumin is coagulated and precipitated cannot be reemulsified in water to give a suspension having any stability. This Grellck acknowledges on page 2, col. 1, lines 19-40. In fact it is surprising that a spray dried sour cream can be redispersed in water in the manner of the product of present Example 11 in view of the well known instability of aqueous compositions containing acidified protein.

Example 12a

In this example there was prepared a spray dried, free flowing sour cream powder containing approximately 80% sour cream solids, 15% of a coating material, specifically, gum acacia, 5% of a protein, specifically casein and 2.5% disodium acid phosphate, based on the dry weight of the sour cream. Specifically, cultured sour cream having a pH of about 4.6 had added to it disodium acid phosphate, gum acacia and casein. The mass was suitably mixed with a mechanical paddle agitator, homogenized under about 750 pounds pressure and spray dried.

Example 12b

Example 12a was repeated but the disodium acid phosphate was omitted. The spray dried powder was readily redispersible in water to give a stable emulsion or suspension.

In lieu of gum acacia as the coating agent in Examples 12a and 12b, we also used gum tragacanth, corn, wheat and potato starches, phosphated starches, acid modified starches, enzyme modified starches of the previous group, dextrans, pectins, whey solids, and carboxymethyl cellulose, and mixtures of the coating agents recited.

In lieu of casein as the added protein in Examples 12a and 12b, we also used gelatin, milk solids, and mixtures of the added proteins recited. Here again, the powders were obtained by the numerous specific examples using 70%, 80% and 95%, respectively, i.e., 70-95% sour cream solids, with 5%, 10%, 15% and 20%, respectively, i.e., 5-20%, of the coating material, and 5%, 7% and 10%, respectively, i.e., 5-10%, of the added protein, the several materials being used alone or in various mixtures as recited above.

Example 13

These examples were carried out in accordance with the procedure of Example 1 and there was prepared a spray dried, free-flowing sour cream powder containing 90% of sour cream solids, 2.5% disodium phosphate and 7.5% of an emulsifying agent, namely, glycerol monostearate. In other examples, instead of using glycerol monostearate, we used one of glycerol monooleate, glycerol lactopalmitate, glycerol lactostearate, propylene glycol monostearate, polysorbitan monostearate, sorbitan monostearate, glycerol acetomonostearate and lecithin, respectively, and mixtures of these emulsifying agents.

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Example 13a

In this example, which was similar to Example 13 the emulsifying agent was a mixture of glycerol monostearate and glycerol lactostearate in about equal parts.

Example 14

A spray dried, free-flowing sour cream powder was prepared containing 92.5% sour cream solids and 7.5 of glycerol monostearate. Cultured sour cream having a pH of about 4.6 had added to it glycerol monostearate. The mass was suitably mixed with a mechanical paddle agitator, homogenized under about 750 pounds pressure and spray dried. In place of glycerol monostearate mixtures of the emulsifying agents set forth in Example 13 can be used.

Example 14a

A spray, free-flowing sour cream powder was prepared containing 82.5% sour cream solids, 10% nonfat milk solids and 7.5% glycerol monostearate. Cultured sour cream having a pH of about 4.6 had added to it nonfat milk solids and glycerol monostearate. The mass was suitably mixed with a mechanical paddle agitator, homogenized under about 750 pounds pressure and spray dried. The spray dried product was readily redispersible in water to give stable suspensions.

Example 15

Example 6 was repeated utilizing in one instance gum acacia, and in another instance corn starch as the coating agent, and in a further instance mixtures of these coating agents in equal parts, and there was added an emulsifying agent in each such example, as described in connection with Example 13, namely, glycerol monostearate. The other emulsifying agents and mixtures of the various emulsifying agents were also employed successfully as described in Example 13.

Example 15a

This example was like Example 15 except that the disodium phosphate was omitted and about 10% nonfat milk solids (skim milk solids) were included in place of the phosphate.

Example 16

In this example 20% of skim milk (serum solids, nonfat) based on the dry weight of the final powder was added to an 18% butterfat cream before culturing. Thereafter the procedure referred to in the proceeding examples was carried out using such cultured sour cream product in lieu of the conventional product in which the skim milk is not usually employed. The mixed product is cultured, of course, in the customary manner. The amount of added serum solids, nonfat, will vary between 5 and 25% on a dry basis of the finished powder.

This example differs from those previously described in that the sour cream solids are produced from a cultured cream including the skim milk, i.e., serum solids, nonfat, as described, instead of the conventional sour cream solids. All of the examples previously mentioned can utilize this cultured mixture of sour cream and skim milk and produce satisfactory spray dried, free-flowing sour cream powders.

Example 16a

20% of skim milk (serum solids, nonfat) based on the dry weight of the final powder was added to an 18% butterfat cream before culturing. The cultured product was homogenized and spray dried to give a free-flowing powder which was readily dispersible in water to give a stable suspension.

Example 16b

To sour cream suitably cultured and having a pH of 4.6 were added 20% of skim milk (serum solids, nonfat) in an amount of 20% of the dry weight of the sour cream product. The mass was suitably mixed with a mechanical