

ALCOHOL-STABLE, LOW PH-STABLE FAT EMULSION PRODUCT

BACKGROUND OF THE INVENTION p 1. Field of the Invention

This invention relates to a dried protein-free, fat emulsion concentrate, which when reconstituted with an aqueous media, forms an oil-in-water emulsion which is stable in the presence of alcohol and an acidic pH. More particularly, the invention relates to the method of using a dried, protein-free, fat emulsion concentrate to impart a creamy appearance and creamy mouthfeel to an aqueous product containing alcohol and having an acidic pH.

2. Description of the Prior Art

In recent years, dried non-dairy fat emulsion products have become of increasing importance in the food industry because of their ability to impart a creamy appearance and a creamy mouthfeel to aqueous products, such as the use of non-dairy coffee whiteners to whiten and improve the taste of coffee. Typically such dried fat emulsion products contain as essential ingredients vegetable fat, carbohydrate (such as corn syrup solids, sucrose, etc.), protein, emulsifiers, stabilizers, and stabilizing and buffering salts. Upon addition to an aqueous medium, the dried fat emulsion product forms an oil-in-water emulsion which imparts a creamy appearance to the medium due to the refraction of light from the finely emulsified fat globules. A water dispersible protein, such as sodium caseinate or soy protein is included as an essential ingredient in the emulsion product to stabilize the liquid emulsion concentrate through drying so that when the dried emulsion is reconstituted, such as by addition to coffee, a stable emulsion is provided.

U.S. Pat. No. 4,045,589 discloses a dried non-dairy fat emulsion product for use as a coffee whitener which is prepared without the use of protein. The non-dairy coffee whitener of that patent comprises vegetable fat, carbohydrate, emulsifier, and buffering salts, with emulsion stability upon reconstitution being provided by the use of a chemically modified dextrinized starch having a lipophilic character.

The principal use heretofore of dried non-dairy fat emulsion products has been as a coffee whitener. Other well known uses for these products has been in the preparation of imitation sour cream mixes, dip mixes, creamy salad dressings, and whipped toppings. More recently, dried protein-containing fat emulsion products have also been used in the production of an alcoholic beverage containing neutral grain spirits to impart a creamy appearance to the beverage. However, prior to the present invention, attempts to produce a flavored wine based beverage having a creamy appearance and mouthfeel using such dried protein-containing fat emulsion products have not been successful since the dried fat emulsion products available heretofore have not been stable against the alcohol concentration, acidity and/or the destabilizing compounds such as tannins which are present in wine. These characteristics of wine make it difficult to maintain a stable oil-in-water emulsion when the fat emulsion product is reconstituted and added to wine.

SUMMARY OF THE INVENTION

The present invention provides a dried, protein-free, fat emulsion concentrate which, when reconstituted with water, forms an oil-in-water emulsion which is

stable in the presence of a relatively high alcohol concentration and a relatively high acidity, and which remains stable over a wide range of temperatures, including pasteurizing and freezing temperatures. The dried emulsion concentrate contains a major proportion by weight of a water soluble carbohydrate, such as corn syrup solids, and an edible fat or oil, with the fat or oil particles being encapsulated with a lipophilic starch derivative. One or more stabilizers may be included with the dried emulsion concentrate, in minor amounts, as an optional ingredient.

The dried emulsion concentrate is prepared by forming a liquid emulsion concentrate containing the water soluble carbohydrate, edible fat or oil, edible lipophilic starch derivative and sufficient water to maintain the solids in solution or dispersion and provide sufficient fluidity to the concentrate so that it may be pumped. The amount of lipophilic starch derivative included in the emulsion concentrate is sufficient to encapsulate substantially all of the fat or oil globules in the concentrate to thereby stabilize the emulsion through the drying step. The liquid emulsion concentrate is then homogenized and spray dried.

The dried emulsion concentrate thus produced is particularly well suited for producing a stable oil-in-water emulsion in an aqueous medium having a relatively high alcohol concentration and relatively high acidity, such as wine. The dried emulsion concentrate is combined with water to form an oil-in-water emulsion containing 15% to 30% by wt. of the dried emulsion concentrate, and this emulsion is added to wine having an alcohol concentration of 8%-20% (vol/wt) and a pH of about 2.5 to 5.0 to form a stable oil-in-water emulsion in the wine, thereby producing a unique wine base beverage having a creamy appearance and mouthfeel. The amount of the reconstituted emulsion added to the wine in order to produce a beverage having these unique, desired characteristics is sufficient to provide a ratio of wine to dried emulsion concentrate of about 5:1 to 15:1. The resulting oil-in-water emulsion in wine is shelf stable and is resistant to grain or sludge formation and phase separation over extended periods of time.

DETAILED DESCRIPTION OF THE INVENTION

In preparing the dried, protein-free, fat emulsion concentrate of this invention, a liquid emulsion concentrate containing an edible fat or oil, water-soluble carbohydrate, and a lipophilic starch derivative is prepared by adding the ingredients to hot water, and then drying the emulsion concentrate. The edible fat or oil may be of animal or vegetable source, but should be light in color, have a bland or neutral flavor, and be resistant to oxidative rancidity. Fats and oils which may be used include partially or fully hydrogenated vegetable fats and oils such as coconut oil, palm kernel oil, cottonseed oil, corn oil, soybean oil, peanut oil, and the like, and mixtures thereof, tallow and lard. Satisfactory results have been obtained in producing the dried emulsion concentrate of this invention using hydrogenated vegetable oils having a melting point of about 118° F., as well as hydrogenated vegetable oils having a melting point of about 65° F. The fat or oil may comprise from about 15% to 25% by weight of the dried emulsion product, with levels of between about 18% to 22% by weight of the dried concentrate being preferred.