

Such a glyceryl stearate is tasteless, edible, and is non-toxic in the amounts used. The quantities of the emulsifying agent may be varied between the range of 0.5 to 3.0 percent weight/volume of the emulsion, dependent upon the fineness and stability desired. The specified quantity (1.5%) appears to be optimum for an emulsion of cream-like consistency.

Although an emulsion without polyoxyethylene sorbitan monostearate may be used satisfactorily when freshly prepared and does retain its cream-like consistency without breaking for a long period, the addition of at least 1.0% by weight of polyoxyethylene sorbitan monostearate (in which 20 ethylene oxide molecules are combined in each molecule) is necessary to provide long shelf life. Furthermore, the incorporation of such an amount of the polyoxyethylene sorbitan monostearate is necessary to prevent breaking of the emulsion in contact with acid fluids. The emulsion of the present invention was found to be still completely emulsified after several hours in the stomachs of rats to which it had been administered, while emulsions that did not contain it had broken under the same conditions. Polyoxyethylene sorbitan monostearate (having 20 combined ethylene oxide molecules) is sold under such trade-names as Tween 60 and is tasteless and nontoxic in the amounts used in the emulsions of this invention. The polyoxyethylene sorbitan monostearates having 20 combined ethylene oxide molecules are substantially water-soluble while those having fewer (such as Tween 61, which has only 4 combined ethylene oxide molecules) are substantially water-insoluble. Other emulsifying agents or combinations of emulsifying agents failed to produce results that were the equivalents of the combination of the glyceryl stearate and polyoxyethylene sorbitan monostearate; polyoxyethylene sorbitan monolaurate, for example, is not tasteless.

The ingredients of the emulsion are incorporated together by conventional procedures. A convenient method consists in heating them together with constant stirring at a temperature between 50° and 80° C. (70° C. is preferred) and thereafter passing the emulsion through a homogenizer sufficient to produce particles having an average size between 1 and 2 microns, although emulsions having particles up to 5 microns in diameter produce satisfactory emulsions.

The emulsion as thus prepared has a cream-like consistency, is remarkably resistant to rancidification and to breaking, even in contact with acidic liquids, and has a life that, in accelerated shelf-life tests, is approximately three times as long as that of commercially available peanut oil emulsions emulsified with lecithin and synthetic emulsifiers. Thirty (30) cubic centimeters (two table-spoons) provide a caloric equivalent of 150 calories. The emulsion is entirely compatible with water, milk and hot beverages and may be mixed readily with ice cream, cereal, fruits and other foods to supplement their caloric value. The oral fat emulsions of the present invention may be diluted extensively with water (two or more volumes) without settling or losing their cream-like consistency over prolonged periods of time.

Although the size of the fat particles in such emulsions appears to be related to palatability, its effect on absorption or utilization for providing the requisite caloric input is still not established. It may be that an emulsion which, when brought into contact with the acidic fluids of the stomach, coagulates to form larger particles, will provide just as great a caloric input in the normal case as one that remains stable and is not affected substantially by acids. But in the exceptional case, in which the digestive function of the individual is impaired, an emulsion that does not coagulate in the presence of acid appears to be more desirable, and may be more completely utilized in the form of small particles than is one composed of larger particles.

The oral fat emulsions of the present invention are more homogeneous and its fat particles are of smaller size than

those of commercial peanut oil preparations heretofore available.

Optional constituents which may be added to the oral fat emulsions of this invention, and which are without deleterious or adverse effect when so combined, are the following:

Sodium benzoate, in amounts from 0.1 to 1.0% weight/volume or other preservative to prevent or retard fermentation of the saccharide.

Sodium salt of ethylenediaminetetraacetic acid (known under such trade names as Sodium Sequestrene) in amounts from 0.01 to 0.02%, to chelate or sequester copper and iron ions, should any be present in the ingredients used, and thereby prevent the metal ions from catalytically hastening oxidation of the coconut oil.

Flavoring materials, such as vanillin, in small amounts. Since the emulsion of this invention is tasteless or has a bland taste, the use of flavoring agents, to which some patients have or may develop aversions, is preferably avoided.

Inasmuch as the foregoing specification comprises preferred embodiments of the invention it is to be understood that the invention is not limited thereto and that variations of the proportions and in the method of preparation, as well as other conventional modifications, may be adopted without departing from its purview or the scope of the appended claims.

I claim:

1. A palatable, fluid fat emulsion for oral ingestion to provide supplemental alimentation, which has a cream-like consistency, a substantial shelf life and the fat particles of which have an average diameter not in excess of 2 microns, which consists essentially of an aqueous suspension containing approximately 50 percent of a refined coconut oil having a solidification point of approximately 76° F., approximately 12.5 percent of sucrose, 1.5 percent of an emulsifying grade of glyceryl monostearate containing approximately 10 percent by weight of an alkali-metal stearate, and 2 percent of polyoxyethylene sorbitan monostearate having approximately 20 ethylene oxide units per molecule, each of the said percentages based upon parts by weight to parts by volume of the emulsion.

2. A palatable, fluid fat emulsion for oral ingestion to provide supplemental alimentation, which has a cream-like consistency, a substantial shelf life, and the fat particles of which have an average diameter not in excess of 2 microns, which consists essentially of an aqueous suspension containing each of the following four ingredients in approximately the following ranges of percentages (representing parts by weight to parts by volume of the emulsion):

	Percent
a. Refined coconut oil having a solidification point of approximately 76° F.....	40 to 55
b. Saccharide of the group consisting of sucrose, glucose and mixtures thereof.....	5 to 20
c. Emulsifying grade of glyceryl monostearate..	1.5 to 3.0
d. Water - soluble polyoxyethylene sorbitan monostearate having approximately 20 ethylene oxide units per molecule.....	1 to 2

3. A fluid fat emulsion as defined in claim 1 in which the sucrose is partially replaced by glucose.

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