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FOOD BAR AND METHOD FOR MAKING

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ABSTRACT OF THE DISCLOSURE

A compact, solid food unit characterized as possessing hardness, frangibility and water dispersible characteristics is imparted by utilization of a binder which provides a structural matrix for discrete edible food particles. The binder is comprised of a discontinuous phase of fat globules encapsulated by a continuous phase of water and a hydrophilic film former.

This invention relates to a compact, highly nutritious food unit adapted to be eaten without further preparations or dispersed in water to form a soup. More particularly, it relates to a compact, nutritious food bar comprising edible particles held together with a binder. The binder is comprised of an edible oil or a normally solid fat, a film-former and water.

It has long been desirable to provide a compact, nutritious food bar. Such bars are particularly suitable as a component of a food packet to be used, for example, by soldiers or campers. Both need a nutritious food that requires a minimum amount of space and is sturdy enough to withstand rough handling and it goes without saying the more palatable the food bar, the better it is. A compact, nutritional food bar also provides advantages in shipment and storage. That advantage is particularly important since use by the military in many cases requires extended shipment under vigorous handling conditions.

The prior art is represented by U.S. Patents 2,170,155 and 2,278,466, both issued to A. Musher. Each of the two patents discloses a compact food bar or brick that consists of edible particles and a binder. The binder is essentially an edible fat and the fat component is the substance that binds the edible particles together.

When a food bar, such as disclosed by Musher, is mixed with water or milk to form a soup, the fat is released and rises conspicously to the surface. Thus the fat is unstable in a water system and when released, forms an unsightly and undesirable fat layer on the surface of the soup.

The present invention provides a bar containing fat which does not separate in water, that is the fat component is water stable. In addition, it provides a food bar having a storage life, strength and nutritional properties which improve over the prior art.

Accordingly, it is the object of the present invention to provide a food bar consisting of edible particles; bound together by means of a dispersion comprising fat, a film-former and water capable of being mixed with water without release of fat.

It is an additional object to provide a nutritious food bar which contains a minimum of about four calories per gram.

It is a further object to provide a food bar in which the caloric content can be easily controlled.

It is a further object to provide a food bar in which the protein, fat, carbohydrate, ash and vitamin content can easily be controlled.

It is a further object to provide a food bar that is resistant to vigorous handling.

It is a further object to provide a food bar that can be eaten without further preparation or mixed with an edible liquid to form a soup.

It is a further object to make a food bar which has an improved storage life and more particularly, a storage life of at least 3 months at 100° F.

It is another object to produce a food bar at lower pressures than heretofore required.

An important feature of the invention is the provision for subdividing the fat into droplets and encapsulating the fat droplets within the film-former which provides a continuous relatively impervious protective layer over each droplet.

The product of the present invention comprises a binder consisting of a film former as a continuous phase or encapsulating material and a normally solid fat or oil. In one form of the invention edible food particles are distributed through the binder. The edible food particles may be either in flake, shredded, fibrous or powdered form and they provide the primary flavor and texture of the food bar. Examples of edible food particles that are contemplated by the present invention are: corn flakes, wheat flakes, rice, oats, graham cracker pieces, rice krispies, potato flakes, dried meat, vegetables, chocolate flakes or particles, cheese particles, ground peanuts, meat particles, raisins, dried fruit particles, fish, pregelatinized tapioca starch, and seasonings such as onion particles, pepper, salt, celery and monosodium glutamate.

A good number of other edible particles may be used by those skilled in the art, as long as the particles are in flake, shredded, fibrous or particulate form.

The dispersion or binder is made up of an edible oil or a normally solid fat which is melted during formulation and a film-former. Water is used during formulation but much or all of it is ordinarily removed to form the finished product. The edible oil may consist of any edible vegetable or animal oil or mixtures therein or normally solid fat and includes cottonseed oil, corn oil, lard, peanut oil, soy oil, safflower oil, butter or margarine.

The film-former may consist of any edible substance that will form a film around the edible oil using any known process, as for example, vigorous mixing in an aqueous suspension, coacervation, spray drying a fat suspension in a film-former and water solution or by coating fat particles that have been chilled to a hard and nontacky condition. Other methods will be apparent to those skilled in the art. Film-formers include nonfat milk solids, sodium caseinate, soy protein, egg albumen, egg yolk, wheat germ, gelatine, pea flour, bean flour, corn germ, agar-agar, whey, gelatinized starch, fish protein, bran protein, gum arabic and other hydrophilic colloids, such as carboxymethyl cellulose. Minor amounts of modifiers can be added to the film-former if desired. Among such modifiers are salts, polysaccharides such as sucrose or lactose and polyhydric alcohols such as glycerin.

Water is used to plasticize the film-former. With the film-former in a plastic state, vigorous mixing of the oil and film-former results in the formation of an oil and film-former dispersion. The dispersion consists of fat globules encapsulated in the film-former. The oil is the discontinuous phase, and the film-former is the continuous phase. The dispersion serves as a binder in the formation of the food bar from edible particles.

Because the fat is encapsulated, there is no release of fat when the food bar is placed in water or milk to make a soup. Thus the oil, film-former, water mixture must be mixed until encapsulation is complete. A convenient test for determining when the constituents have been sufficiently mixed is as follows: Remove one drop of the dispersion or binder and place it in 250 ml. of water at 140° F. If fat is released, mixing is not complete and