United States Patent Office

2,724,649

Patented Nov. 22, 1955

2,724,649

MARGARINE

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No Drawing. Application March 23, 1951, Serial No. 217,302

7 Claims. (Cl. 99—123)

This invention relates to improvements in margarine, and to the improved margarines.

Margarine as it is normally produced in commerce is an emulsion of water phase and an oil phase together with small amounts of other ingredients. The oil is usually the external phase. Under usual frying conditions, the margarine tends to separate into two layers since heat breaks the emulsion. The water droplets, being heavier than oil, collect underneath the oil and become superheated. This causes the water to burst out of its fatty enclosure with explosive violence giving rise to the phenomenon commonly known as spattering.

Past experience has shown that this difficulty can be overcome more or less successfully by incorporating in the margarine interface modifiers which disperse this water phase in the oil phase even at cooking temperatures, allowing the fine water droplets to evaporate quietly without undue superheating. A number of interfacial modifiers have been proposed and considered for use as emulsifiers or dispersing agents in margarine to assist in overcoming spattering. Vegetable phosphatides, commonly called vegetable lecithins, have been one of the most common of such agents, but they have not been completely successful and the prior art abounds with proposals and attempts to improve their efficiency. To the best of our knowledge, however, the problem has not heretofore been solved satisfactorily. Margarine is a highly competitive product not only as against other margarines but also as against butter. Margarines which simulate butter as closely as possible while yet being producible at costs competitive with other margarines are a main objective in the margarine art. Accordingly, margarine which exhibits no more spattering than butter, and preferably less spattering, is desired, but the costs of interface modifiers which will achieve this goal must be moderate. The commercial vegetable lecithins have been selling in recent years at prices which have been considered low or moderate by margarine manufacturers, and hence constitute a class of interface modifiers which have seemed likely to meet the requirements of anti-spattering interface modifiers if their efficiency could be improved without greatly increasing their cost. At present, usually an additional interface modifier, such as mono- and di-glycerides, is used in conjunction with the vegetable lecithins to produce margarines capable of exhibiting approximately the above-mentioned desirable characteristics of butter. Accordingly, such improvements in vegetable lecithins have long been sought.

We have now found that a particular fraction or moiety of vegetable lecithins is especially adapted for use as an anti-spattering agent in margarines, that when it is incorporated in margarines by itself in very small amounts, it not only substantially eliminates spattering but also imparts to the margarine some additional properties simulating butter. We have also found that the processing steps which are required to provide this fraction in a condition suitable for such use are relatively inexpensive so that the price of the improved interface modifier is currently satisfactory.

Accordingly, it is the principal object of this invention to provide an improved margarine which is substantially free of spattering and which manifests additional properties simulating butter.

Other objects ancillary thereto will be apparent from the following description of our invention.

In our efforts to improve the anti-spattering efficiency of vegetable lecithins, we have found that the alcohol-insoluble moiety of crude vegetable lecithins is an unusually effective anti-spattering agent, and that the alcohol-soluble moiety is substantially ineffective in that function. Moreover, we have found that the two moieties are somewhat antagonistic so that the removal of the alcohol-soluble moiety permits the alcohol-insoluble fraction to function more effectively than it would in the presence of that moiety. In addition, we have found that the alcohol-insoluble moiety imparts to margarine improved foaming characteristics which simulate those of butter. Furthermore, the alcohol-insoluble moiety substantially eliminates the sticky milk curd which heretofore has formed on the bottom of the frying pan. The whole vegetable lecithins which have heretofore been used in margarine as anti-spattering agents and which contain both of the moieties described above, have not provided these latter improvements, so that it will be apparent that the elimination of the alcohol-soluble moiety of the whole mixture has led to unexpected improvements in margarine so far as frying characteristics are concerned.

The improved margarine compositions of the present invention additionally possess high resistance to "water-bleeding," a property characteristic of butter. "Water-bleeding" is evidenced by breakdown of the emulsion and appearance of droplets of water on the surface of the product. As this water evaporates, the surface of the margarine becomes encrusted with salt crystals and the product takes on an unsightly and undesirable appearance. Many margarine compositions are presently available uncolored, and dyestuffs are subsequently incorporated in the margarine to impart a yellow color. During the coloring process, a product having poor emulsion stability will tend to "bleed," and hence be objectionable. We have found that margarines containing whole vegetable lecithins have poor emulsion stability and frequently "bleed." However, margarines prepared with the alcohol-insoluble moiety are characterized by excellent resistance to "water-bleeding" and, in fact, at least are equal to, and in some instances, superior to butter in this respect. Accordingly, it is a surprising result of this invention that margarines which contain the alcohol-insoluble moiety of vegetable lecithins and are substantially free of the alcohol soluble moiety thereof are characterized by substantial freedom from "water-bleeding."

We acknowledge the fact that whole commercial vegetable lecithins can be incorporated in margarine in such amounts as will substantially eliminate spattering, but it has not been practical to use the amounts which are so needed because those amounts impart a distasteful characteristic flavor to the margarine different from that of butter, which is objectionable. In contrast, the amounts of the alcohol-insoluble moiety which suppress spattering do not noticeably alter the flavor of margarines in which they are incorporated. The amount so needed varies, of course, with the formulation of the margarine, the product of some manufacturers requiring more than others. When the margarine is substantially free of the alcohol-soluble fraction, an amount of the alcohol-insoluble