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IMPROVEMENT IN WINTER VEGETABLE OILS

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This invention relates to the treatment of vegetable oils to inhibit the crystallization and deposition of stearin therefrom at low temperatures. The term "stearin" as used herein refers to the precipitate that forms upon chilling such natural vegetable oils as cottonseed, peanut, olive, soybean, corn and the like, and embraces not only tristearin, but also mixed glycerides containing preponderant amounts of palmitic, stearic, arachidic and other higher saturated fatty acids, which comprise the bulk of the solid glycerides referred to in the trade as stearin. The stearin which separates from vegetable oils upon chilling may also contain some of the more insoluble non-glyceridic constituents of the oils, such as waxes, sterols, higher alcohols and phosphatides.

More specifically, this invention relates to retarding the clouding and deposition of stearin in "salad oils," particularly winter cottonseed oil, and which may be defined more broadly as including any refined vegetable oil which does not deposit stearin on long standing at temperatures substantially above the range of temperatures hereinafter specified. During prolonged exposure to refrigeration or severe winter climatic temperatures in the range from 32° to 45° F., many salad oils lose their clarity and brilliancy owing to separation of stearin, and while this does not render the oils unfit for edible purposes, it detracts from their appearance. Moreover, the stability of a mayonnaise or salad dressing emulsion is to a large extent dependent upon the resistance of the salad oil component to clouding and stearin separation. A well known and standardized procedure used in the salad oil trade for evaluating the resistance of an oil to clouding, commonly referred to as the "cold test," consists in aging a carefully dried sample of the oil in a bath of crushed ice and water at 32° F. and noting the elapsed time until a cloud or deposit of stearin is visible. The effectiveness of any inhibitor is determined by a comparison of such elapsed time when chilling the treated oil with the elapsed time when chilling the untreated oil. A secondary factor in determining the effectiveness of the inhibitor is the amount of clouding or deposit when the cooling period is further prolonged.

The present invention comprises a vegetable oil of the character above specified to which has been added, so as to be colloidally dispersed therein, a small percentage of aluminum tristearate and which has the property of withstanding a severe cold test varying from a minimum of 24 hours to a maximum in excess of 40 hours. The specified additive may be appropriately designated a "cloud inhibitor," inasmuch as its primary object and effect is to retard the clouding of the oil at low temperature. The effective concentration range of the cloud inhibitor is rather narrow, particularly when expressed in terms of metal concentration. In general the most effective range is from 1 to 30 parts of metal per 1,000,000 parts of oil. The effective concentration range of the cloud inhibitor when expressed in terms of the aluminum soap may be from 0.002 to 0.2 per cent. of the oil. Larger percentages than those specified may be used but without substantial improvement as a cloud inhibitor.

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The soaps used in the present invention may be prepared conveniently by double decomposition, induced by mixing aqueous solutions of the soluble metal salts with aqueous alkali soap solutions, or by heating the metal acetates with fatty acids. However, the invention is not limited by the method of preparation of the cloud inhibitor, and the soaps may be formed in situ in the salad oils by heating them with reactive aluminum compounds.

The following is an example of the application of the invention to winterized cottonseed oil:

In a winterized cottonseed oil having a cold test of 7 hours 0.01 per cent. by weight of aluminum tristearate was dissolved by heating and stirring. The product withstood a cold test of 40 hours.

What I claim and desire to protect by Letters Patent is:

1. A winter vegetable oil, characterized by substantial stability against resistance to clouding and stearin separation, having colloidally dispersed therein a small percentage of aluminum tristearate adequate to enable the oil to withstand a cold test of at least 24 hours.

2. A winter vegetable oil, characterized by substantial stability against resistance to clouding and stearin separation, having colloidally dispersed therein aluminum tristearate the concentration range of which, expressed in terms by weight of the soap, is over .005 per cent.

3. A winter vegetable oil, characterized by substantial stability against resistance to clouding and stearin separation, having colloidally dispersed therein sufficient aluminum tristearate, not less, in terms by weight of the soap, than about .01 per cent., effective to enable the oil to withstand a cold test of at least 40 hours.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,320,319	Black	May 25, 1943

OTHER REFERENCES

Oil & Soap, Sept. 1940 (Robinson) pages 208–210.