

UNITED STATES PATENT OFFICE

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PRESERVATION OF OILS

No Drawing.

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This invention relates to the preservation of oils, particularly cod liver oil, in a substantially tasteless and odorless condition.

The following terms will be employed hereinafter in the special senses indicated: "malflavor" and "malflavored", to designate offensive or objectionable taste and/or odor; "demalflavor" and "demalflavored", to designate the deprivation of malflavor; "edible oils" to designate oils used for therapeutic and alimentary purposes; "reconversion", to designate a deterioration of demalflavored oil wherein it becomes malflavored again, resuming some or all of its previous malflavor and/or acquiring new malflavor.

Certain edible oils, notably cod liver and castor oils, are of considerable alimentary and therapeutic value, but possess or develop a malflavor that militates strongly against and unduly restricts their use. For the purpose of rendering such oils less disagreeable to administer, numerous investigations have been conducted, as a result of which it has been found possible to demalflavor cod liver oil by various methods. In the most practical of these the oil is placed in a suitable vacuum pan and steam is passed through the oil while the space within the vacuum pan is maintained under reduced pressure, so that the vapors arising from the oil are immediately withdrawn therefrom. The more or less volatile fractions, to which the initial malflavor is largely attributable, are thus substantially expelled.

Oils demalflavored by this or other treatments commonly suffer a reconversion in a relatively short time. No theory has yet been established as the explanation of this phenomenon, but it is taken as a working hypothesis that this reconversion is caused by the oxygen of the atmosphere.

It is the object of this invention to prevent, by a simple and inexpensive method, the reconversion of demalflavored oils, especially cod liver oil, for any desired period.

We have discovered that demalflavored cod liver and other oils of a similar character can be preserved indefinitely in their demalflavored condition by preventing contact of the atmosphere therewith. This is accom-

plished in large storage vessels by removing the air from the space above the oil and substituting therefor an inert gas, such as nitrogen or carbon dioxide. The same expedient can be employed in preserving oils such as cod liver oil in the small containers in which the product is supplied to the trade. These small containers, however, are opened frequently during use and, as a consequence, air will mix with the inert gas and vitiate the protective effect of the latter.

We have also discovered that certain substances when added to the oil in even such relatively minute quantities as to impart none of their own characteristics to the oil, inhibit the reconversion of the latter. Some of these substances are reducing in nature, and it may be assumed that they function as deoxidizers, thereby preventing the reconversion of the oil. However, it cannot be determined that the action of these substances is to be ascribed to their antioxidant effect, and it is possible that they actually operate in some other mode; for example, as negative catalysts.

In the preferred embodiment of the invention, we add to the demalflavored oil a small proportion of p-aminophenol, from .01% to 5% of which has been found very effective in preventing the reconversion of cod liver oil. The desired proportion of p-aminophenol, preferably about .1%, is thoroughly admixed with the oil, and the latter preferably sealed in suitable containers. Reconversion does not occur even when the oil is exposed to the atmosphere. The other phenols, aminophenols and aromatic amines and their derivatives can be used with equal effect.

Neither the physical, therapeutic, nor alimentary characteristics of the edible oils are appreciably modified by the addition of the substances referred to, which serve to prevent for an indefinite length of time the reconversion of the oil, despite exposure to the atmosphere, and thus encourage the use of oils that are otherwise obnoxious to the consumer.

The addition of the inhibiting agent can be practiced either by itself or in conjunction with packing under inert gases.

Among the reducing agents, inhibitors or negative catalysts that may be used to replace

p-aminophenol are hydroquinone, diphenylamine, phenyl- α -naphthylamine and other phenols, amino-phenols and aromatic amines and derivatives thereof. It is obviously impossible to set forth here all of the agents that may be utilized for the purpose of the present invention. Nevertheless we desire to claim the method of preserving oils as herein described and the product containing added ingredients which effect that preservation. Within the scope of the accompanying claims various changes may be made without departing from the invention or sacrificing any of the advantages thereof:

We claim:

1. The method of preventing the reconversion of edible oils which comprises adding thereto a compound selected from the class consisting of phenols, aromatic amines, substituted aromatic amines, and aminophenols.

2. The method of preventing the reconversion of edible oils which comprises adding thereto a compound selected from the class consisting of aromatic amines, substituted aromatic amines, and aminophenols.

3. The method of preventing the reconversion of edible oils which comprises adding thereto an aminophenol.

4. The method of preventing the reconversion of edible oils which comprises adding thereto p-aminophenol.

5. The method of preventing the reconversion of edible oils which comprises adding thereto from .01% to 5% of p-aminophenol.

6. The method of preparing oils for therapeutic and other uses which comprises demalflavoring them and adding a compound selected from the class consisting of phenols, aromatic amines, substituted aromatic amines, and aminophenols.

7. The method of preventing the reconversion of cod liver oil which comprises adding thereto a compound selected from the class consisting of phenols, aromatic amines, substituted aromatic amines, and aminophenols.

8. The method of preventing the reconversion of cod liver oil which comprises adding thereto a compound selected from the class consisting of aromatic amines, substituted aromatic amines, and aminophenols.

9. The method of preventing the reconversion of cod liver oil which comprises adding thereto an aminophenol.

10. The method of preventing the reconversion of cod liver oil which comprises adding thereto p-aminophenol.

11. The method of preventing the reconversion of cod liver oil which comprises adding thereto from .01% to 5% of p-aminophenol.

12. The method of preparing cod liver oil for therapeutic and other uses which com-

prises demalflavoring it and adding p-aminophenol.

13. The product comprising demalflavored cod liver oil containing a compound selected from the class consisting of phenols, aromatic amines, substituted aromatic amines, and aminophenols, to inhibit the reconversion of the oil.

14. The product comprising demalflavored cod liver oil containing a compound selected from the class consisting of aromatic amines, substituted aromatic amines, and aminophenols, to inhibit the reconversion of the oil.

15. The product comprising demalflavored cod liver oil containing an aminophenol, to inhibit the reconversion of the oil.

16. The product comprising demalflavored cod liver oil containing p-aminophenol, to inhibit the reconversion of the oil.

17. The product comprising demalflavored cod liver oil containing from .01% to 5% of p-aminophenol, to inhibit the reconversion of the oil.

In testimony whereof we affix our signatures.

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