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(54) METHODE ET COMPOSITION POUR MASQUER LE GOUT ET L’ODEUR DE L’HUILE DE POISSON
(54) METHOD AND COMPOSITION FOR MASKING TASTE AND ODOR FROM FISH OIL

(57) Masking the taste and odor of fish oil is achieved by mixing fish oil and thyme essence in sufficient quantities to mask the fish oil taste and odor.
Abstract

Masking the taste and odor of fish oil is achieved by mixing fish oil and thyme essence in sufficient quantities to mask the fish oil taste and odor.
Method and composition for masking taste and odor from fish oil.

Field of Invention

This invention relates to an additive for food substances for animal or human consumption. In particular, the invention relates to a method and composition for masking fish oil taste and odor from fish oil suitable for human or animal consumption as e.g., nutritional supplements, pharmaceutical and industrial products.

Background Art

The health benefits of omega-3 poly-unsaturated fatty acids are widely known. Scientific evidence has shown that regular consumption of omega-3 poly unsaturated fatty acids may have preventative and therapeutic effects.

The principle dietary sources of fatty acids are primarily cold water fish (for omega-3 fatty acids) or vegetable oils (for omega-6 fatty acids). These are typically classified by the position of their first double bond, as either omega-3 or omega-6 fatty acids.

Generally speaking, fish oil has a strong taste and odor which discourages many people from consuming this health substance, either in its pure form or as an additive. Numerous different combinations of aromas, flavourings and sweeteners have been added to mask or disguise the taste and odor of the
fish oil to make it more palatable. Many of the prior art references mask the scent and taste of the fish oil by forming an emulsion though adding a new and or stronger taste or scent to the substance. However, the masking substance may itself add an unwanted flavour, and in general achieves its masking effect by effectively overpowering the fish taste and scent with the masking scent and taste.

Typical of the prior art is US 5,472,705 (Bruzzese et al.), in which the fish oil is added to pharmaceutical compositions, and where the fish odor and taste is inhibited and disguised through the addition of anti-oxidants and perfumes.

Another reference US 4,961,939 (Antrim et al.), discloses an emulsion containing fish oil, noting that an enzyme stabilization system is used in an emulsion containing fish oil, whereby the use of the enzyme system stabilizes the fish oil against the formation of malodorous alcohols and aldehydes during the shelf life of the emulsion. Canadian Application 2,064,025 (Bumann), discloses a foodstuff containing dried fatty acids from fish oils. The fish taste is masked by adding sweeteners and flavourings to give the foodstuff a taste that overwhelms the native fish oil taste and smell.

The prior art has not provided a simple masking agent capable of completely masking the taste and odor of fish oil without the use of stronger tastes or scents. Further, the prior art has not provided a masking agent that may be added to foodstuffs prior to cooking, which when cooked retains its masking capabilities.

It is therefore desirable to provide a composition and method to substantially or completely mask or remove the taste and odor from fish oil whereby the fishy taste is neutralized without the addition of a further taste or scent. It is further desirable to provide a neutralizing or masking substance that is stable during cooking and heating.
Summary of the Invention

The present invention is directed towards a method for masking the taste of fish oil using thyme essence without adding any additional tastes or odors and a composition derived therefrom.

In one embodiment of the invention, there is provided a method of masking the taste of the fish oil comprising the steps of providing a quantity of fish oil, preferably having an omega-3 component, providing a quantity of thyme essence, and mixing the fish oil and thyme essence together in an amount sufficient to produce a neutral taste solution.

The invention further comprises in another embodiment a composition suitable for human or animal consumption, comprising fish oil and thyme essence in a concentration sufficient to mask the normally present fish odor and taste.

Preferred for use with the invention as fish oils are those which have poly-unsaturated, omega-3 fatty acids containing 18-22 C atoms. For pharmaceutical use, pharmaceutically tolerable esters or salts may be desirable. Examples of suitable omega-3 fatty acids are eicosapentaenoic acids (EPA) and docosahexaenoic acids (DHA). The fatty acids are preferably used in their substantially pure form, preferably as fish oil or highly purified fish oil concentrations.

Suitable fish oils are derived from species of cold water fish. Examples include pilchard, menhaden, sardine, salmon, mackerel and herring. Preferred are highly purified fish oil concentrations produced from herring, salmon, mackerel and tuna.

In accordance with this invention, it has been found that thyme essence or essential
oils, derived from natural or synthetically produced compounds, possess excellent masking qualities for use with fish oils. The use of thyme is known as a seasoning agent. There are numerous varieties of thyme, which is generally defined as any herb or shrub with aromatic leaves of the genus Thymus. Thyme itself has been grown for culinary use, the most common being sweet thyme or thymus vulgaris. The present invention is directed to any of the varieties of thyme, as well as artificially prepared thyme essence and thyme extractives, all of which are encompassed within the term "thyme".

As contemplated in the present invention, thyme essence or thyme extract is used to substantially or completely mask the taste and odor of fish oil. The thyme is preferably in the form of an essence or extract such as an essential oil of thyme. This extract is most desirably in the form of a compatible liquid that is able to be easily mixed into the fish oil or forming a solution. The thyme essence or extract is added in sufficient quantity in order to completely mask the taste and odor of fish oil. The substances after mixing may then be placed in a suitable container for future use and storage.

The fish oil contemplated for use in the present invention preferably contains (amongst different saturated fatty acids) at least 2 different omega-3 fatty acids; namely eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) and which generally have an average concentration of omega-3 acids of 18% and 12% respectively.

Generally speaking, the quantity of thyme essence or essential oil used to provide a masking function for the fish oil will depend on several factors, including the specific type of fish oil (some are stronger in odour than others) and the purity of the fish oil. In broad terms, the amount of thyme essence or essential oil of thyme will vary from about .01% to about 10% by volume of the fish oil, assuming one employs substantially pure thyme essence or essential oil of thyme. Preferred amounts are in the range from about .03 % to about 4 % and most desirably from about .5% to about 3% of thyme oil essence or essential oil per unit volume of
the fish oil.

In various versions, the invention includes a quantity of fish oil, preferably containing omega-3 poly-unsaturated fatty acids, which may be substituted with its ester or derivatives, and a quantity of thyme essence consisting of, for example natural or synthesized isolated compounds of thyme.

If desired, the resulting fish oil solution may include at least one vitamin, pro-vitamin or anti-oxidant. The vitamins are preferably selected from the group of A, D, E and K. Most desirably, the vitamin comprises vitamin E.

The resulting solution of thyme and fish oil, which is a substantially flavorless and odorless compound, can be used as a healthful ingredient to different foodstuffs, such as ice cream, cheese, baby formulas or any other appropriate food in order to increase the omega-3 fatty acid contents. The product can also be used in cosmetic preparations, such as creams and lotions for pharmaceutical and cosmetic use, and it is possible for fish oil based creams and liniments to be used in combination with other active ingredients such as other medicaments or healing ingredients.

In alternative embodiments, the thyme may be added in other forms, such as in powder form, dried thyme leaves in sufficient quantities and preparations. For illustrative purposes only, a sufficient quantity of dried, finely cut or shredded thyme may be added as described in the above method, where the final product, from a commercial or aesthetic stance, may be desired. In a further alternative embodiment, a powder form of the thyme essence, or other commercially available sources of thyme essence may be used in place of the natural thyme essence or essential oil.
Description of the Preferred Embodiment

Compositions according to this invention are preferably produced via the following method.

A quantity of refined fish oil is provided, along with a quantity of thyme essence. The fish oil, most desirably containing omega-3 poly unsaturated fatty acids, is preferably refined by fractionalization, (winterizing), and further has been nitrogen saturated. Types of fish oil include salmon, mackerel and tuna. Preferably, the fish oil contains omega-3 fatty acids, and desirably contains at least 2 different omega-3 fatty acids; namely eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) preferably in an average concentration of about 18% and 12% respectively.

The natural thyme essence or essential oil is preferably produced from *Thymus vulgaris*. Other suitable thyme varieties include those with generally similar properties and chemical substances, for example thymol and carvacrol. If desired, synthetic thyme essence or essential oils may also be used. The use of the above natural or synthesized isolated compounds of thyme may also used. The form of thyme essence is preferably in the form of a liquid essence, and in which liquid or thyme essence is compatible with fish oil. An example of such an essence is a lipophil essence (oil) which is soluble in fish oil. The concentration of thyme essence varies according to the different uses of the oil as an end product. For example the concentration of thyme has to be somewhat higher if the oil is heated during cooking or otherwise. The concentration can be lower, if the oil is used for non-cooked supplements.

The following examples illustrate variants of the method and compositions according to the invention.
Example 1.
Fish oil useful as an oral nutritional supplement.
0.07 ml of Thyme essence per 100 ml fish oil.
This will be sufficient to mask the fish taste and odor of fish oil, when it is not heated, for use as a nutritional supplement for human consumption.

Example 2.
Fish oil useful as an additive for food processing.
2.0 ml of Thyme essence per 100 ml fish oil.
This will be sufficient to mask the fish taste and odor of fish oil while not imparting any extraneous tastes or smell to produce a neutrally tasting and smelling compound, which may be then subjected to cooking at normal cooking temperatures.

The thyme essence and fish oil are then mixed thoroughly to ensure the proper blending. The oil is processed at room temperature, as heating would substantially impair the delicate omega-3 acids. The components are mixed by any conventional mixing means (shaking, stirring etc.). The resulting composition is a solution of different oils.

During the mixing process, other additives may be added depending on the desired composition or use of the final product. Examples of such additives may include vitamins or pro-vitamins or anti-oxidants. Vitamins or pro vitamins may be selected from the group of A, D, E and K. Preferably the vitamin or pro-vitamin used is fat soluble, and most preferably includes at least vitamin E. Anti-oxidants may include ascorbyl palmitates, butylated hydroxy toluene, butylated hydroxyanisole, nitrogen and vitamin E.

Further, by adding an increased level of thyme after the initial masking, a thyme flavor can be achieved. This may be desirable depending on the future use of the solution.
The resulting composition solution containing the modified fish oil may then be placed into containers, covered with an anti-oxidant, i.e. nitrogen, and then is sealed to preserve the contents.

The solution is able to be utilized in a variety of fields, most notably as a foodstuff, food additive or nutritional supplement, for example in ice cream, cheese, baby formulas or any other appropriate food in order to increase the omega-3 fatty acid content. Baby formulas, if desired, could also include the use of re-constituted or freeze dried solutions of the present invention. The fish-oil solution can also be used in cosmetic and pharmaceutical preparations, such as creams, lotions and liniments.

Other possible areas for use include other foodstuffs, most notably pet foods. Such pet foods could include dog and cat food, horse feed etc. These additional areas as outlined above could use a stronger or weaker thyme essence in the solution, based on the desired final product and its contemplated use.

Although embodiments of the invention have been described above, it is not limited thereto and it will be apparent to those skilled in the art that numerous modifications form part of the present invention insofar as they do not depart from the spirit, nature and scope of the claimed and described invention.
THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of masking the taste and odor of fish oil, comprising the steps of:
   - providing a quantity of fish oil;
   - providing a quantity of thyme essence; and
   - mixing said fish oil and thyme essence together, said thyme essence being present in an amount sufficient to mask the taste and odor of the resulting solution of said fish oil to obtain a neutral taste and odor.

2. A method according to claim 1, wherein said quantity of thyme essence is present in an amount from about 0.01% to about 10% by volume of fish oil.

3. A method according to claim 2, wherein said thyme essence is present in an amount of about 0.03% to about 4% per volume of fish oil.

4. A method according to claim 3, wherein said thyme essence is present in an amount of about 0.5% to about 3% per volume of fish oil.

5. A method according to claim 1, wherein said quantity of fish oil contains at least one omega-3 poly-unsaturated fatty acid.

6. A method according to claim 1, comprising incorporating a vitamin or provitamin with said fish oil.

7. A method according to claim 6, wherein said vitamin is a fat soluble vitamin selected from the group of A, D, E and K.
8. A method according to claim 7, wherein said vitamin is vitamin E.

9. A method according to claim 1, wherein said thyme essence is derived from thymus vulgaris.

10. A method according to claim 5, wherein said omega-3 poly-unsaturated fatty acids is an ester.

11. A method for the production of a fish oil solution suitable for human and or animal consumption, comprising the steps of:
    providing a quantity of fish oil;
    providing a quantity of thyme essence in an amount sufficient to produce a solution of neutral taste and odor;
    mixing said quantities; and
    incorporating said solution into a foodstuff, cosmetic or pharmaceutical composition.

12. A method according to claim 11, wherein said quantity of fish oil containing omega-3 poly-unsaturated fatty acids contains at least one fatty acid chosen from the group of EPA or DHA.

13. A method according to claim 11, wherein said quantity of thyme essence is derived from thymus vulgaris.

14. A composition suitable for human or animal consumption, comprising fish oil having an omega-3 component and thyme essence wherein said thyme essence is present in an amount sufficient to mask the taste and odor of the resulting solution of
said fish oil.

15. A composition according to claim 14, wherein said thyme comprises thyme essence present in an amount of about 0.01% to about 10% by volume of fish oil.

16. A composition according to claim 15, wherein said thyme essence is present in an amount of about 0.03% to about 4% by volume of fish oil.

17. A method according to claim 16, wherein said thyme essence is present in an amount of about 0.5% to about 3% per volume of fish oil.

18. A composition according to claim 14, wherein said composition further includes at least one vitamin selected from the group of A, D, E and K.

19. A composition according to claim 18, wherein said vitamin is vitamin E.

20. A composition according to claim 14, wherein said thyme essence is derived from thymus vulgaris.