To meet the demand for high quality and agreeable taste the crude vegetable oils are typically refined by chemical and/or physical processes to remove a number of minor constituents present in the crude oil.

As described by Anderson (2005), a refining process typically includes a degumming step where phosphoric acid is added to the oil, thereby rendering the phospholipids of the oil soluble in water. The water may be removed from the refined vegetable oil by gravity techniques.

Next step is normally the removal of the free fatty acids, also referred to as the deacidification. The deacidification may be performed by the alkaline wash process, which involves the addition of aqueous, diluted lye to the vegetable oil. Bertholet (2003) (US 6506916 B2) discloses a process for extracting free fatty acids (FFA) from vegetable oil comprising preparing a reaction medium by mixing the fatty substances with an aqueous medium containing an alcohol or polyol. The reaction medium contains an aqueous solution of 10% NaOH in addition to vegetable oil and alcohols or polyols. The lye converts the free fatty acids into the corresponding soaps, which are soluble in water, and which can be removed in a separator followed by a series of washing step with water to provide an acceptable removal of traces of soaps. The alkaline wash-process requires a number of washing step, which consume a significant amount of energy and makes the process complicated and expensive.

Next step of the refining process is typically the bleaching of the degummed, deacidified, vegetable oil. The bleaching may involve addition of bleaching clay like bentonite or silicon dioxide to remove colour components as well as the traces of free fatty acids from the vegetable oil. The addition of the clays often takes place in closed tanks under reduced pressure and after a specified duration the oil is filtered to provide an edible quality oil.

Instead of the above-mentioned alkaline wash process the free fatty acids may be removed by another process. Here the lye addition step is omitted and the bleached oil, now with a high content of free fatty acids, is treated in a steam distillation process known as deodorisation, see e.g. Anderson (2005). In this process the vegetable oil is heated to a high temperature under vacuum. The heating is performed by contacting the vegetable oil directly with superheating steam under conditions which allows for a good contact between the oil and the steam, and thus an efficient distillation. The steam distillation will remove the low boiling components, in this case the free fatty acids, and a number of colouring products as well as off flavour components, thereby yielding a bland and stable vegetable oil. In the case of alkaline washed vegetable oil, a deodorisation will

CLAIMS

1. A method of producing a refined vegetable oil, the method comprising the steps of:

a) providing a vegetable oil comprising triglycerides, diglycerides, monoglycerides and free fatty acids,

b) contacting the vegetable oil with a polyol-containing solvent and an alkalizing agent, thereby forming a first composition, said first composition containing water in an amount of at most 6% by weight relative to the weight of the first composition,

c) exposing the first composition to conditions suitable for extracting free fatty acids to the polyol-containing solvent,

d) forming a phase-separated system comprising a separate polyol-containing solvent phase and a separate oil phase,

e) recovering the oil phase from the phase-separated system of step b), thereby obtaining a refined vegetable oil.

2. The method according to claim 1, wherein the vegetable oil comprises one or more vegetable oil(s) selected from the group consisting of palm oil, palm kernel oil, olive oil, soy oil, rapeseed oil, sunflower oil, safflower oil, cottonseed oil, shea butter, coconut oil, cocoa butter, linseed oil, corn oil, rice bran oil, avocado oil, oat oil, and a combination thereof.

3. The method according to any of the preceding claims, wherein the vegetable oil contains triglyceride in amount of at least 50% by weight relative to the weight of the vegetable oil.

4. The method according to any of the preceding claims, wherein the vegetable oil contains a total amount of mono-glyceride of at least 0.1% by weight relative to the weight of the vegetable oil.

5. The method according to any of the preceding claims, wherein the vegetable oil contains free fatty acids in amount of at least 0.5% by weight relative to the weight of the vegetable oil.

6. The method according to any of the preceding claims, wherein the polyol-containing solvent comprises a c_3-c_8 polyol containing at least 3 hydroxyl groups.

7. The method according to any of the preceding claims, wherein the polyol-containing solvent comprises glycerol.

8. The method according to any of the preceding claims, wherein the polyol-containing solvent comprises glycerol in an amount of at least 90% by weight relative to the weight of the polyol-containing solvent.

9. The method according to any of the preceding claims, wherein the first composition comprises the polyol-containing solvent in an amount of at least 10% by weight relative to the weight of the first composition.

10. The method according to any of the preceding claims, wherein the first composition comprises the vegetable oil in an amount of at least 10% by weight relative to the weight of the first composition.

11. The method according to any of the preceding claims, wherein the alkalizing agent is a salt of an organic or inorganic Brøndsted acid.

12. The method according to any of the preceding claims, wherein the first composition furthermore comprises an auxiliary solvent.

13. The method according to any of the preceding claims, wherein an auxiliary solvent is added to the first composition during step c).

14. The method according to any of the claims 12-13, wherein an auxiliary solvent comprises ethyl acetate.

15. The method according to any of the preceding claims wherein step e) furthermore involves removing auxiliary solvent from the recovered oil phase.