CLAIMS

1. A method for obtaining a structured oil in the form of an oil-in-water (o/w) emulsion comprising the steps of:

(i) Contacting an oil with an emulsifier and at least one hydrocolloid, said emulsifier and said at least one hydrocolloid being provided in aqueous solution; and

(ii) Processing the mixture obtained in step (i) under conditions adequate for the dispersion of the oil in the aqueous solution to obtain the o/w emulsion;

wherein the emulsifier is a denatured polypeptide selected from gelatine, pea protein, denatured collagen, albumin, casein, serum protein, soybean protein and rice protein and wherein the at least one hydrocolloid is a gum.

~~2. The method according to claim 1, wherein the denatured polypeptide is pea protein.~~

~~3. The method according to any of claims 1 or 2, wherein the emulsifier content in the mixture is of between 0,1 and 3% (w/w).~~

~~4. The method according to any of claims 1 to 3, wherein the oil content in the mixture obtained in step (i) is of at least 10% (w/w), at least 20% (w/w), more preferably at least 25% (w/w).~~

~~5. The method according to any of claims 1 to 4, wherein the hydrocolloid content in the mixture is of between 0,1 and 2% (w/w).~~

~~6. The method according to claim 5, wherein when the hydrocolloid content in the mixture is between 0.6% and 1% (w/w) then, a soft structured oil characterized by a hardness between 0.6 and 0.8 Kg/cm^2 is formed.~~

~~7. The method according to claim 5, wherein when the hydrocolloid content in the mixture is between 0.8% and 1.8% (w/w) then, a hard structured oil characterized by a hardness higher than 0.8 Kg/cm^2 is formed.~~

~~8. The method according to any of claims 1 to 7 further comprising a step wherein the structured oil obtained in step (ii) is processed under conditions adequate for the gelation of the structured oil.~~

~~9. The method according to claim 8 wherein said gelation is carried out by changing the temperature of the o/w emulsion to a temperature which is lower than the gelling temperature of the aqueous solution containing the at least one hydrocolloid, by inducing cationic gelation between a negatively charge macromolecule and a positively charged counterion or by lowering the pH to a value which is lower than the gelling pH of the aqueous solution containing the at least one hydrocolloid.~~

~~10. The method according to any of claims 1 to 9 wherein a single hydrocolloid is used in step (i).~~

~~11. The method according to claim 10 wherein the emulsifier and the single hydrocolloid are provided in a first and second aqueous solutions which are consecutively added to the oil.~~

~~12. The method according to claim 10 wherein the emulsifier and the single hydrocolloid are provided in a single aqueous solution which is added to the oil.~~

~~13. The method according to claim 1 to 7 wherein a first and second hydrocolloids are used in step (i).~~

~~14. The method according to claim 13 wherein the emulsifier and the first and second hydrocolloids are provided in a first, second and third aqueous solutions which are consecutively added to the oil.~~

~~15. The method according to claim 13 wherein the emulsifier is provided in a first aqueous solution and the first and second hydrocolloids are provided in a second aqueous solution which are added to the oil emulsifier or wherein the first and the second hydrocolloid are provided in a single aqueous solution which is added to the oil.~~

~~16. The method according to any of claims 1 to 7, wherein a first, a second and a third hydrocolloids are used in step (i).~~

~~17. The method according to claim 16, wherein the emulsifier and the first, second and third hydrocolloids are provided in a first, second, third and fourth aqueous solutions which are consecutively added to the oil.~~

~~18. The method according to claim 16, wherein the emulsifier is provided in a first aqueous solution and the first, second and third hydrocolloids are provided in a second aqueous solution which are added to the oil or wherein the first, second and third hydrocolloids are provided in a single aqueous solution which is added to the oil.~~

~~19. The method according to claim 14 wherein if two hydrocolloids are used, then the content of each hydrocolloid or of the total content of the first and the second hydrocolloids is of between 0.1% and 2% (w/w).~~

~~20. The method according to claim 16, wherein if three hydrocolloids are used, then the content of each hydrocolloid or of the total of the first, second and third hydrocolloids is of between 0.1% and 2% (w/w).~~

~~21. The method according to any of claims 1 to 20 wherein the oil, the emulsifier, the first, the second and the third hydrocolloids are from a non-animal source, preferably a plant source, an algal source or a microbial source.~~

~~22. The method according to any of claims 1 to 21 wherein the oil comprises a vegetable oil or an algal oil, or a microbial oil.~~

~~23. The method according to any of claims 1 to 22 wherein the emulsifier is also an hydrocolloid.~~

~~24. The method according to claims 1 to 23 wherein the gum is xanthan gum~~

~~25. The method according to any of claims 1 to 24 wherein if a second hydrocolloid is used, then the second hydrocolloid is a polysaccharide selected from xanthan gum, agar-agar and locust bean gum.~~

~~26. The method according to any of claims 1 to 25, wherein if a third hydrocolloid is used, then the third hydrocolloid is a poly saccharide selected from xanthan gum, agar-agar and locust bean gum.~~

~~27. The method according to claim 26, wherein a first, a second and a third hydrocolloids are used and wherein the hydrocolloids are xanthan gum, agar-agar and locust bean gum respectively.~~

~~28. The method according to any of claims 1 to 27 wherein the aqueous solution further comprises an antifreezing agent and/or an cryoprotective agent.~~

~~29. The method according to any of claims 1 to 28, wherein the cryoprotective agent is glycerol.~~

~~30. The method according to claim 29, wherein the glycerol content of the mixture is between 1% to 2% (w/w).~~

~~31. The method according to any of claims 1 to 30 wherein the oil is provided at a temperature of about 80-83ºC.~~

~~32. The method according to any of claims 1 to 31 wherein the aqueous solution containing the first hydrocolloid is provided at a temperature of between 85-87ºC, wherein the aqueous solution containing the second hydrocolloid is provided at a temperature of between 75-80ºC or wherein the single aqueous solution containing the first and second hydrocolloids is provided at a temperature of about 80-85ºC.~~

~~33. The method according to any of claims 1 to 32 wherein the processing step (ii) is carried out by shearing at a 1000 to 10.000 rpm.~~

~~34. The method according to any of claims 1 to 33 wherein step (ii) is carried out at a temperature of between 70-80ºC.~~

~~35. The method according to any of claims 1 to 34 wherein the method does not include a step of cross-linking the first or second hydrocolloid.~~

~~36. The method according to any of claims 1 to 35 wherein the structured oil is not dehydrated after the formation of the o/w emulsion.~~

~~37. The method according to any of claims 1 to 36, wherein the lipid or water phase contain one or more food additives.~~

~~38. The method according to any of claim 37, wherein the food additive is selected from the group consisting of preservatives, antifreezing agents, cryoprotective agents, aroma or flavouring compounds, food dyes, salts, sweeteners, pH regulators and antioxidants.~~

~~39~~2. A structured oil system in the form of an o/w emulsion comprising a lipid phase (o) and a water phase (w), the lipid phase being dispersed inside the water phase wherein the oil phase is stabilized in the water phase by an emulsifier and at least a first hydrocolloid dissolved or dispersed in the water phase wherein the emulsifier is a denatured polypeptide selected from gelatine, pea protein, denatured collagen, albumin, casein, serum protein, soybean protein and rice protein and wherein the at least one hydrocolloid is a gum.

~~40~~3. The structured oil system according to claim ~~39~~2, wherein the denatured polypeptide is pea protein.

~~41~~4. The structured oil according to ~~any of~~ claim~~s 39~~ 2 or ~~40~~3, wherein the lipid phase is at least 10% (w/w), at least 20% (w/w), more preferably at least 25% (w/w).

~~42~~5. The structured oil system according to any of claims ~~39~~ 2 to ~~41~~ 4, wherein the oil in the oil phase is a vegetable oil, an algal oil or a microbial oil.

~~43~~6. The structured oil system according to claims ~~41~~ 2 to ~~42~~5, wherein the emulsifier content is of between 0,1 and 3% (w/w).

~~44~~7. The structured oil system according to any of claims ~~39~~ 2 to ~~43~~ 6, wherein the hydrocolloid content is of between 0,1 and 2% (w/w).

~~45~~8. The structured oil system according to claim ~~44~~7, wherein when the hydrocolloid content is between 0.6% and 1% (w/w) then, the structured oil is a soft structured oil characterized by a hardness higher between 0.6 and 0.8 Kg/cm^2.

~~46~~9. The structured oil according to claim ~~45~~8, wherein when the hydrocolloid content is between 0.8% and 1.8% (w/w) then, the structured oil is a hard structured oil characterized by a hardness higher that 0.8 Kg/cm^2.

~~47~~10. The structured oil system according to any of claims ~~39~~ 2 to ~~46~~ 9, wherein the emulsifier is also a~~n~~ hydrocolloid.

~~48~~11. The structured oil system according to any of claims ~~1~~ 2 to ~~47~~ 10, wherein the gum is xanthan gum.

12. The structured oil system according to any of claims 2 to 11, wherein the structured oil system further comprises a second hydrocolloid dissolved or dispersed in the aqueous phase and, optionally a third hydrocolloid dissolved or dispersed in the aqueous phase.

~~49~~13. The structured oil system according to any of claims ~~39~~ 2 to ~~48~~ 12, wherein if a second hydrocolloid and/or a third hydrocolloid are~~is~~ used, then the second hydrocolloid and/or the third hydrocolloid are ~~is a~~ polysaccharide~~s~~ selected from xanthan gum, agar-agar and locust bean gum.

~~50. The structured oil system according to any of claims 39 to 49, wherein if a third hydrocolloid is used, then the third hydrocolloid is a polysaccharide selected from xanthan gum, agar-agar and locust gum.~~

~~51~~14. The structured oil system according to any of claims ~~39~~ 2 to ~~50~~ 13, wherein the aqueous solution further comprises an anti-freezing agent and/or a~~n~~ cryoprotective agent.

~~52~~15. The structured oil system according to any of claims ~~39~~ 2 to ~~51~~ 14 wherein the lipid or the water phase contain one or more food additives selected from the group consisting of aroma or flavouring compounds, food dyes, sweeteners, preservatives,

anti-freezing agents, cryoprotective agents, food dyes, salts, pH regulators and antioxidants.

~~53. The structured oil system according to claim 52 wherein the food additive is selected from the group consisting of aroma or flavouring compounds, food dyes, sweeteners, preservatives, antifreezing agents, cryoprotective agents, food dyes, salts, pH regulators and antioxidants.~~

~~54~~16. The structured oil according to claim ~~53~~15, wherein the cryoprotective agent is glycerol and wherein the glycerol content in the mixture is between 1% and 2% (w/w).

~~55. The structured oil according to claim 54, wherein the glycerol content in the mixture is between 1% to 2% (w/w).~~

~~56~~17. A foodstuff comprising ~~a structured oil obtained by a method according to any of claims 1 to 38 or~~ the structured oil according to any of claims ~~39~~ 2 to ~~55~~16, said foodstuff comprising one or more edible ingredients.

~~57. The foodstuff according to claim 56 wherein the foodstuff is selected from the group consisting of a spread, a shortening, a dairy product, a vegetable oil-based dairy alternative, a bakery product, a processed meat product and an edible ink.~~

~~58. The foodstuff according to claims 56 or 57 wherein the structured oil is used as coating or as filling of the foodstuff or is used as a spread.~~

~~59. Use of the structured oil obtained by a method according to any of claims 1 to 38 or the structured oil according to any of claims 39 to 55 for the preparation of a foodstuff.~~

~~60~~18. Use of ~~the structured oil obtained by a method according to any of claims 1 to 38 or~~ the structured oil according to any of claims ~~39~~ 2 to ~~55~~ 16 for reducing the content of trans-unsaturated fats or of hydrogenated fats in a foodstuff, wherein the structured oil comprises a high content in unsaturated oils.

~~61~~19. A process for the manufacture of a foodstuff characterized in that it comprises ~~a step of mixing a structured oil obtained by a method according to any of claims 1 to 38~~

~~or~~ the structured oil according to any of claims ~~39~~ 2 to ~~55~~ 16 with one or more edible ingredients.

~~62. The process according to claim 61 wherein said mixing is carried out by injecting the structured oil into the foodstuff and wherein the foodstuff is a meat product or a process meat product.~~

~~63~~20. A cosmetic composition comprising ~~a structured oil obtained by a method according to any of claims 1 to 38 or~~ the structured oil according to any of claims ~~39~~ 2 to ~~55~~ 16 and one more cosmetically-acceptable carrier.