Claims

1. Multi-particulate drug delivery system comprising microgel particles containing an active pharmaceutical ingredient, said microgel particles being dispersed in a liquid non-aqueous composition which contains less than 20 wt.-% of water and does not contain any paraffin oil.

2. Multi-particulate drug delivery system according to claim 1, wherein the microgel particles contain at least one gel-forming polymer selected from the group consisting of chitosan, chitosan derivatives that are alkylated and/or carboxylated and/or PEGylated chitosans wherein the hydroxyl and/or amino groups may be partially or totally alkylated and/or carboxylated, polyacrylic acids, alginate, carrageenan, gum Arabic, gellan gum, xanthan gum, albumin, whey protein, gelatin, pectin, hyaluronic acid and its salts.

3. Multi-particulate drug delivery system according to any of the preceding claims, wherein the non-aqueous composition is a lipid composition.

4. Multi-particulate drug delivery system according to claim 3, wherein the lipid composition comprises at least one glyceride derivative.

5. Multi-particulate drug delivery system according to claim 4, wherein the glyceride derivative is selected from mono-, di- and triglycerides of saturated and/or unsaturated C_{2-28} carboxylic acids, wherein the monoglycerides may additionally comprise one or two polyethylene oxide residues and the diglycerides may additionally comprise one polyethylene oxide residue.

6. Multi-particulate drug delivery system according to claim 4 or 5, wherein the glyceride derivative is selected from mono- and diglycerides of saturated C_{6-12} carboxylic acids or unsaturated C_{16-20} carboxylic acids, wherein the monoglycerides may additionally comprise one or two polyethylene oxide residues and the diglycerides may additionally comprise one polyethylene oxide residue.

7. Multi-particulate drug delivery system according to any of the preceding claims, wherein the non-aqueous composition further comprises a co-solvent for dissolving a divalent and/or trivalent metal ion salt in the non-aqueous composition.

8. Multi-particulate drug delivery system according to claim 7, wherein the co-solvent is selected from diethylene glycol monoethylether, ethanol, 2-pyrrolidone, caprylic acid, propylene glycol and N-methyl-2-pyrrolidone.

9. Multi-particulate drug delivery system according to any of the preceding claims, wherein the non-aqueous composition further comprises a filler selected from polyethylene glycol, propylene carbonate and natural oils.

10. Multi-particulate drug delivery system according to any of the preceding claims, wherein the microgel particles have a particle size distribution D_{90} of below 1000 µm.

11. Multi-particulate drug delivery system according to any of the preceding claims, wherein the microgel particles have an elongation factor in the range of 1.27 to 2.60 wherein the elongation factor is the max Feret diameter (the linear segment connecting the two perimeter points that are the furthest apart) divided by the Feret equivalent rectangular short side (the shortest side of the rectangle with the same area as the particle and the longest side equal in the length to the max Feret diameter).

12. Process of preparing the multi-particulate drug delivery system according to any of claims 1-11, comprising the steps of

a) providing a mixture of a gel-forming polymer and an active pharmaceutical ingredient,
b) forming the mixture obtained in step a) into microdroplets,
c) gelling the microdroplets obtained in step b) in a liquid non-aqueous composition to form microgel particles dispersed in the liquid non-aqueous composition which contains less than 20 wt.-% of water and does not contain any paraffin oil.

13. Process according to claim 12, wherein step b) is carried out by using vibrating nozzle technique or prilling.

14. Process according to claim 12 or 13, wherein the gelling in step c) is carried out in a liquid lipid composition.

15. Process according to any of claims 12-14, further comprising the step of filling the dispersion obtained in step c) into capsules without isolating the microgel particles from the liquid composition.

16. Microgel particle obtainable by the process according to any of claims 12-15.

17. Multi-particulate drug delivery system obtainable by the process according to any of claims 12-15.

18. Capsule containing the multi-particulate drug delivery system according to any of claims 1-11 or 17 or microgel particles according to claim 16.