CLAIMS

1. A method for producing microparticles containing a poorly soluble drug, wherein the poorly soluble drug is naltrexone, donepezil, finasteride, aripiprazole, olanzapine, palonosetron, minocycline, memantine, alendronate, deoxycholate, risedronate, ibandronate, zoledronate, liraglutide, exenetide, lanreotide, octreotide, deslorelin, leuprorelin, goserelin, triptorelin, or dutasteride, the method comprising steps of:

1) preparing an oil phase solution by dissolving a poorly soluble drug and a biodegradable polymer in a mixed solvent comprising at least two organic solvents;

2) preparing a water phase solution by dissolving a surfactant in water; and

3) producing microparticles using the oil phase solution and the water phase solution,

wherein the mixed solvent comprises a first solvent and a co-solvent, wherein the first solvent is dichloromethane, and the co-solvent comprises diethyl ether.

2. The method according to claim 1, wherein the co-solvent has a density of 1.3 g/cm^3 or less.

3. The method according to claim 1, wherein the co-solvent has a polarity index of 3 or less.

4. The method according to claim 1, wherein the co-solvent has a boiling point of 50°C or lower.

5. The method according to claim 1, wherein the co-solvent has a water solubility of 2^{20} to 8^{20} g/100 g water.

6. The method according to claim 1, wherein the first solvent and the co-solvent are comprised at a weight ratio of 1:0.5 to 1:10.

7. The method according to claim 1, wherein the poorly soluble drug and mixed solvent in step 1) are mixed together at a weight ratio of 1:7 to 1:30.

8. The method according to claim 1, wherein the poorly soluble drug and biodegradable polymer in step 1) are comprised at a weight ratio of 1:0.5 to 1:10.

9. The method according to claim 1, wherein the biodegradable polymer is selected from the group consisting of polylactide, polylactic acid, polylactide-co-glycolide, polylactic-co-glycolic acid, polyphosphazine, polyiminocarbonate, polyphosphoester, polyanhydride, polyorthoester, polycaprolactone, polyhydroxyvalate, polyhydroxybutyrate, polyamino acid, and combinations thereof.

10. The method according to claim 1, wherein the surfactant is selected from the group consisting of polyethylene glycol sorbitan monooleate, sorbitan oleate, sodium lauryl sulfate, polyvinyl alcohol (PVA), methylcellulose, polyvinylpyrrolidone, lecithin, gelatin, polyoxyethylene sorbitan fatty acid esters, polyoxyethylene castor oil derivatives, sodium stearate, ester amines, linear diamines, fatty amines, and combinations thereof.

11. The method according to claim 1, wherein the microparticles in step 3) are produced using the oil phase solution and the water phase solution by an emulsion method, a porous membrane method, a spray-drying method, or a microfluidic method.

12. The method according to claim 1, further comprising a step of removing residual organic solvents from the microparticles produced in step 3).

13. The method according to claim 12, wherein the step of removing the residual organic solvents comprises adding the microparticles containing the residual organic solvents to the water phase solution and performing a stirring process to remove the residual organic solvents.

14. The method according to claim 13, wherein the stirring process comprises:

a first stirring step which is performed at 200 to 400 rpm at 10°C to 20°C for 30 minutes to 2 hours;

a second stirring step which is performed at 200 to 400 rpm at 25°C to 35°C for 30 minutes to 2 hours; and

a third stirring step which is performed at 200 to 400 rpm at 45°C to 55°C for 30 minutes to 2 hours.

15. Microparticles containing a poorly soluble drug, produced by the method for producing microparticles according to any one of claims 1 to 14.

16. The microparticles according to claim 15, which have an encapsulation efficiency of 90% or more for the poorly soluble drug, a smooth surface, and a perfectly spherical shape.