Claims

1. A method of manufacturing a therapeutic agent in the form of nano- or micro-scale particles for the treatment of an infection of a human or animal comprising the steps of

preparing a homogeneous solution of poly(DL-lactide-co-glycolide acid) dissolved in acetonitrile or dimethyl carbonate;

adding a peroxygen donor and an acetyl donor to a quantity of the poly(DL-lactide-co-glycolide acid) solution to produce a resultant mixture;

preparing encapsulated nano- or micro-scale particles from said resultant mixture or mixtures using a microencapsulator;

collecting said nano- or micro-scale particles and subsequently subjecting said particles to a lyophilisation process.

2. The method of Claim 1, the step of preparing a homogeneous solution comprising dissolving the poly(DL-lactide-co-glycolide acid) in the dimethyl carbonate to produce a 4 wt% solution.

3. The method of Claim 1, wherein the peroxygen donor is sodium percarbonate.

4. The method of Claim 3, further comprising dissolving the sodium percarbonate in ultrapure water.

5. The method of Claim 4, the step of dissolving comprising dissolving the sodium percarbonate in ultrapure water at 100 mg/ml.

6. The method of Claim 3, wherein the nano- or micro-scale particles have a diameter of 200 x 10^{-3} μm and are loaded with 10% of sodium percarbonate.

7. The method of Claim 3, wherein the nano- or micro-scale particles have diameters in a range between 20 x 10^{-3} μm and 100 x 10^{-3} μm inclusive and are loaded with sodium percarbonate to a loading efficiency of 80%.

8. The method of Claim 3, wherein the nano- or micro-scale particles have a diameter of approximately 300 μm and are loaded with sodium percarbonate to a loading efficiency of between 50% and 80% inclusive.

9. The method of Claim 1, wherein the peroxygen donor is urea hydrogen peroxide.

10. The method of Claim 9, further comprising dissolving the urea hydrogen peroxide in methanol.

11. The method of Claim 10, the step of dissolving comprising dissolving the urea hydrogen peroxide in methanol at 100 mg/ml.

12. The method of Claim 10, wherein the nano- or micro-scale particles have diameters in a range between 100 μm and 1000 μm inclusive and are loaded with the urea peroxide to a loading efficiency of 75%.

13. The method of Claim 1, wherein the acetyl donor is tetraacetylethylenediamine (TAED).

14. The method of Claim 13, further comprising dissolving the tetraacetylethylenediamine (TAED) in acetonitrile.

15. The method of Claim 3, wherein the acetyl donor is tetraacetylethylenediamine (TAED) and the nano- or micro-scale particles are loaded in combination with sodium percarbonate and

tetra acetyl ethylene diamine to a loading efficiency between 0.1% and 50%.

16. The method of Claim 1, further comprising mixing the solutions of the peroxygen donor and of the acetyl donor with the poly(DL-lactide-co-glycolide) solution by vortexing.

17. The method of Claim 1, further comprising collecting the nano- or micro-scale particles from the microencapsulator in liquid nitrogen.

18. The method of Claim 1, further comprising PEGylating the nano- or micro-scale particles.

19. The method of Claim 18, the step of PEGylating comprising PEGylating the nano- or micro-scale particles by treatment with polyethylene glycol.

20. The method of Claim 18, wherein the peroxygen donor is sodium percarbonate and the PEGylated nano- or micro-scale particles have diameters in a range between 20 x 10^{-3} μm and 300 x 10^{-3} μm inclusive with a loading efficiency of 40%.

21. The method of Claim 1, further comprising treating the nano- or micro-scale particles with a targeting ligand.

22. The method of Claim 21, further comprising targeting the nano- or micro-scale particles with a biosensor.

23. The method of Claim 22, wherein the biosensor is a monoclonal antibody.

~~24. The method of treating an infection in a human or an animal by the administration of a micro- and/or nano-scale therapeutic agent prepared in accordance with the method claimed in Claim 1.~~