

NMP. The mixture can then be injected to fill in a bone defect in a crushed cheekbone. The mixture coagulates in situ, conforming to the shape of the site, and filling in the damaged tissue. Healing and regeneration of bone tissue can be monitored over time.

EXAMPLE 14

Ovine follicle stimulating hormone, an ovulation stimulatory agent, may be added to form a liquid mixture containing about 2 wt. % ovine follicle stimulating hormone, about 41 wt. % DL-PLA, and about 57 wt. % NMP. The solution can be injected subdermally into a cow to form a solid microporous implant. The ovulation rate can be measured 4-6 days after oestrus.

What is claimed is:

1. A composition suitable for forming an in situ solid implant in an animal, comprising: a formulation of a biodegradable, thermoplastic polymer that is insoluble in aqueous or body fluid, and an organic solvent that is miscible to dispersible in aqueous or body fluid, the composition being capable of coagulating or solidifying to form a solid microporous implant upon its contact with an aqueous or body fluid, the implant being a core surrounded by a skin, and the core and skin both being porous.

2. The composition of claim 1, wherein the organic solvent is a mixture of a first organic solvent that is a good solvent for the thermoplastic polymer, and a second organic solvent that is a poorer solvent or a non-solvent for the thermoplastic polymer; said first and second solvents included in said mixture at a ratio such that the thermoplastic polymer is soluble therein and coagulates to form a solid matrix upon placing the composition within the body and the dissipation or diffusion of the solvent into body fluid.

3. A method of forming an implant suitable for altering a biological or physiological activity in an animal, comprising: administering to the animal composition in an amount effective to form in situ a solid implant, the composition being a liquid formulation of a biodegradable thermoset polymer that is insoluble in aqueous or body fluid and the composition undergoing curing to form a microporous matrix, the matrix being a core surrounded by a skin, the core and skin both being porous.

4. A composition according to claim 1, further comprising a pore-forming agent.

5. A composition according to claim 4, wherein the pore-forming agent is a sugar, salt, or water-soluble polymer, or water-insoluble substance that degrades to a water soluble substance.

6. A composition according to claim 1, wherein the thermoplastic polymer is selected from the group consisting of polylactides, polyglycolides, polycaprolactones, polyanhydrides, polyamides, polyurethanes, polyesteramides, polyorthoesters, polydioxanones, polyacetals, polyketals, polycarbonates, polyorthocarbonates, polyphosphazenes, polyhydroxybutyrates, polyhydroxyvalerates, polyalkylene oxalates, polyalkylene succinates, polyamino acids, polymethyl vinyl ether, and copolymers, terpolymers, and any combination thereof.

7. A composition according to claim 1, wherein the solvent is selected from the group consisting of N-methyl-2-pyrrolidone, 2-pyrrolidone, propylene carbonate, acetone, acetic acid, ethyl acetate, ethyl lactate, methyl acetate, methyl ethyl ketone, dimethylformamide, dimethyl sulfoxide, dimethyl sulfone, tetrahydrofuran, caprolactam, decylmethylsulfoxide, oleic acid, N,N-diethyl-m-toluamide, and 1-dodecylazacycloheptan-2-one, and any combination thereof.

8. A composition according to claim 1, further comprising at least one biologically-active agent.

9. A composition according to claim 8, wherein the biologically-active agent is a polypeptide derived from a natural, synthetic, or recombinant DNA source.

10. A composition according to claim 8, wherein the biologically-active agent is selected from a group consisting of anti-inflammatory agents, antibacterial agents, antiparasitic agents, antifungal agents, antiviral agents, anti-neoplastic agents, analgesic agents, anaesthetics, vaccines, central nervous system agents, growth factors, hormones, antihistamines, osteoinductive agents, cardiovascular agents, anti-ulcer agents, bronchodilators, birth control agents, and fertility enhancing agents.

11. A composition suitable for forming an in situ solid implant in an animal, comprising: a liquid formulation of a biodegradable thermoset polymer, the composition being capable of forming a solid microporous matrix, the matrix being a core surrounded by a skin, and the core and skin both being porous.

12. The composition according to claim 1, wherein the thermoplastic polymer is a copolymer of lactide with glycolide or caprolactone, or a terpolymer thereof.

13. A method of forming an implant suitable for altering a biological or physiological activity in an animal, comprising: administering to the animal a composition in an amount effective to form in situ a solid implant, the composition being a formulation of a biodegradable, bioerodable, biocompatible thermoplastic polymer that is insoluble in aqueous or body fluid, and an organic solvent that is miscible to dispersible in aqueous or body fluid, and the composition undergoing coagulation or solidification of the polymer and dispersion of the solvent into body fluid to form a solid microporous matrix, the matrix being a core surrounded by a skin, the core and skin both being porous.

14. A composition according to claim 11, further comprising a pore-forming agent, an organic solvent that is miscible to dispersible in aqueous or body fluid, or a combination thereof.

15. A composition according to claim 14, wherein the pore-forming agent is a sugar, salt, or water-soluble polymer, or water-soluble organic solvent.

16. A composition according to claim 11, wherein the polymer is an acrylic ester-terminated biodegradable prepolymer capable of cross-linking to form a polymer matrix.

17. A composition according to claim 16, wherein the acrylic ester-terminated biodegradable prepolymer is selected from the group consisting of poly(lactides), poly(glycolides), polycaprolactones, polyanhydrides, polyamides, polyurethanes, polyesteramides, polyorthoesters, polydioxanones, polyacetals, polyketals, polycarbonates, polyorthocarbonates, polyphosphazenes, polyhydroxybutyrates, polyhydroxyvalerates, polyalkylene oxalates, polyalkylene succinates, polymalic acid, polyamino acids, polymethyl vinyl ether, chitin, chitosan, and copolymers, terpolymers, and any combination thereof.

18. A composition according to claim 11, further comprising a curing agent.

19. A composition according to claim 11, further comprising at least one biologically-active agent that is free of functional groups that would interfere with the thermosetting reaction of the thermoset polymer.

20. A composition according to claim 19, wherein the biologically-active agent is a polypeptide derived from a natural, synthetic, or recombinant DNA source.

21. A composition according to claim 19, wherein the biologically-active agent is selected from a group consisting