CLAIMS

1. A pharmaceutical composition for delivery of an intra-articular (IA) steroid, wherein the pharmaceutical composition comprises:

(a) a lipid mixture comprising a first phospholipid, a second phospholipid and a cholesterol; and

(b) an effective amount of the IA steroid or a pharmaceutically acceptable salt thereof,

wherein the IA steroid is at a concentration ranging from about 15 mM to about 40mM.

2. The pharmaceutical composition of claim 1, wherein the cholesterol is at a molar percentage of about 10% to 33% of the lipid mixture.

3. The pharmaceutical composition of claim 1, wherein the first phospholipid is 1,2-dioleoyl-sn-glycero-3-phosphatidylcholine (DOPC), 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphatidylcholine (POPC), soy phosphatidylcholine (SPC), or egg phosphatidylcholine (EPC), and wherein the second phospholipid is polyethyleneglycol distearoylphosphatidylethanolamine (PEG-DSPE) or dioleoylphosphatidylglycerol (DOPG).

4. The pharmaceutical composition of claim 1, wherein the first phospholipid is DOPC and the second phospholipid is DOPG.

5. The pharmaceutical composition of claim 1, wherein the IA steroid is a water soluble steroid.

6. The pharmaceutical composition of claim 1, wherein the IA steroid is at a concentration ranging from about 15 mM to about 30 mM.

7. The pharmaceutical composition of claim 1, wherein the IA steroid is a corticosteroid.

8. The pharmaceutical composition of claim 1, wherein the IA steroid is dexamethasone sodium phosphate, dexamethasone, betamethasone, betamethasone sodium phosphate, betamethasone acetate, betamethasone dipropionate, betamethasone valerate, mometasone furonate, triamcinolone acetonide, triamcinolone hexacetonide, triamcinolone diacetate, methylprednisolone sodium succinate, methylprednisolone acetate, prednisolone tebutate, hydrocortisone acetate, alclometasone dipropionate, halcinonide, fluocortolone, fluocinolone acetonide or a combination thereof.

9. The pharmaceutical composition of claim 1, wherein the effective amount of IA steroid is about 0.1 to about 300 mg.

10. The pharmaceutical composition of claim 1, wherein the effective amount of IA steroid is about 0.1 to about 20 mg.

11. The pharmaceutical composition of claim 1, wherein the effective amount of IA steroid is about 4 mg to about 18 mg.

12. The pharmaceutical composition of claim 1, wherein the pharmaceutical composition is to be administered by articular injection.

13. The pharmaceutical composition of claim 1, wherein the pharmaceutical composition is to be administered by at least two articular injections.

14. The pharmaceutical composition of claim 13, wherein the at least two articular injections are to be administered at a dosing interval selected from the group consisting of two weeks, three weeks, four weeks, five weeks, six weeks, seven weeks, eight weeks, nine weeks, ten weeks, eleven weeks, twelve weeks, thirteen weeks, fourteen weeks, fifteen weeks, sixteen weeks, seventeen weeks, eighteen weeks, nineteen weeks, twenty weeks, twenty-one weeks, twenty-two weeks and twenty-three weeks.

15. The pharmaceutical composition of claim 13, wherein the at least two articular injections are to be administered at a dosing interval of about 10 to 14 weeks and the IA steroid per each articular injection is at a dose of 8 mg to 18 mg dexamethasone sodium phosphate.

16. Use of a pharmaceutical composition in the manufacture of a medicament for treating joint pain and reducing side effects induced by an intra-articular (IA) steroid, wherein the pharmaceutical composition comprising

(a) a lipid mixture comprising a first phospholipid, a second phospholipid and a cholesterol; and

(b) an effective amount of the IA steroid or a pharmaceutically acceptable salt thereof,

wherein the IA steroid is at a concentration ranging from about 15 mM to about 40 mM.

17. The use of claim 16, wherein the side effect is selected from the group consisting of chondrocyte damage, chondrocyte apoptosis, proteoglycan loss, cysts in articular cartilage, articular cartilage degradation, joint destruction or combinations thereof.

18. The use of claim 16, wherein the first phospholipid is DOPC, POPC, SPC, or EPC, and wherein the second phospholipid is PEG-DSPE or DOPG.
19. The use of claim 16, wherein the first phospholipid is DOPC, and the second phospholipid is DOPG.
20. The use of claim 16, wherein the IA steroid is a water soluble steroid.
21. The use of claim 16, wherein the IA steroid is at a concentration ranging from about 15 mM to about 30 mM.
22. The use of claim16, wherein the IA steroid is a corticosteroid.
23. The use of claim 16, wherein the IA steroid is dexamethasone sodium phosphate, dexamethasone, betamethasone, betamethasone sodium phosphate, betamethasone acetate, betamethasone dipropionate, betamethasone valerate, mometasone furonate, triamcinolone acetonide, triamcinolone hexacetonide, triamcinolone diacetate, methylprednisolone sodium succinate, methylprednisolone acetate, prednisolone tebutate, hydrocortisone acetate, alclometasone dipropionate, halcinonide, fluocortolone, fluocinolone acetonide or a combination thereof.
24. The use of claim 16, wherein the IA steroid is to be administered at a dose of about 0.1 to about 300 mg.
25. The use of claim 16, wherein the IA steroid is to be administered at a dose of about 0.1 mg to about 20 mg.
26. The use of claim16, wherein the IA steroid is to be administered at a dose of about 4 mg to about 18 mg.
27. The use of claim 16, wherein the joint pain is caused by rheumatoid arthritis, osteoarthritis, infectious arthritis, psoriatic arthritis, gouty arthritis, lupus-related arthritis, bursitis, tenosynovitis, epicondylitis or synovitis.
28. The use of claim 16, wherein the pharmaceutical composition is to be administered by at least two articular injections.
29. The use of claim 28, wherein the at least two articular injections are to be administered at a dosing interval selected from the group consisting of two weeks, three weeks, four weeks, five weeks, six weeks, seven weeks, eight weeks, nine weeks, ten weeks, eleven weeks, twelve weeks, thirteen weeks, fourteen weeks, fifteen weeks, sixteen weeks, seventeen weeks, eighteen weeks, nineteen weeks, twenty weeks, twenty-one weeks, twenty-two weeks and twenty-three weeks.

30. The use of claim 28, wherein at least two articular injections are to be administered at a dosing interval of about 10 to 14 weeks and the IA steroid per each articular injection is at a dose of 8 mg to 18 mg dexamethasone sodium phosphate.

31. Use of a fixed dose composition in the manufacture of a medicament for treating joint pain or inflammation, wherein the pharmaceutical composition comprises:

(a) a lipid mixture comprising DOPC, DOPG and cholesterol; and

(b) an IA steroid or a pharmaceutically acceptable salt thereof,

wherein the IA steroid is dexamethasone sodium phosphate at a dose ranging from 10 mg to 14 mg with a concentration ranging from about 15 mM to about 40 mM.