Claims

1. A pharmaceutical composition, comprising:

   liposomes suspended in an external medium, said liposomes comprising:

   (a) an external lipid bilayer, comprising (i) a first phospholipid, (ii) a second phospholipid or a charged lipid and (iii) optionally a sterol; and

   (b) an internal aqueous medium, comprising a weak acid drug that is treprostinil or iloprost and a bicarbonate salt at a concentration of 50 mM±10% to 600 mM±10%,

wherein the liposomes have polydispersity index (PdI) of <0.2.

2. The pharmaceutical composition of claim 1, wherein the sterol is selected from the group consisting of cholesterol, cholesterol hexasuccinate, ergosterol, lanosterol, and combination thereof.

3. The pharmaceutical composition of claim 1, wherein the concentration of bicarbonate salt is about 200mM to about 600 mM.

4. The pharmaceutical composition of claim 1, wherein the weak acid drug is iloprost.

5. The pharmaceutical composition of claim 1, wherein the weak acid drug is treprostinil.

6. The pharmaceutical composition of claim 1, wherein the first phospholipid is phosphatidylcholine (PC), phosphatidylglycerol (PG), phosphatidylinositol (PI), phosphatidic acid (PA), phosphatidyethanolamine (PE), phosphatidylserine (PS) or any combination thereof, the second phospholipid is a PEG modified phospholipid, a positively charged or a negatively charged phospholipid, and the charged lipid is a positively charged or a negatively charged lipid.

7. The pharmaceutical composition of claim 1, wherein the first phospholipid is HSPC, DSPC, DPPC, DMPC or any combination thereof and the second phospholipid is DSPG, DPPG,

DMPG, PEG-DSPE, or any combination thereof.

8. The pharmaceutical composition of claim 1, wherein the first phospholipid is HSPC, DSPC, DPPC, DMPC or any combination thereof and the charged lipid is stearylamine, 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP), 3ß-[N-(N',N'-dimethylaminoethane)-carbamoyl]cholesterol (DC-Cholesterol), N^4-Cholesteryl-Spermine (GL67), dimethyldioctadecylammonium (DDAB), 1,2-di-O-octadecenyl-3-trimethylammonium propane (DOTMA), ethylphosphocholine (ethyl PC) or any combination thereof.

9. The pharmaceutical composition of claim 1, wherein the potency of the weak acid drug in the pharmaceutical composition is at least two times more than that of a free weak acid drug.

10. The pharmaceutical composition of claim 1, wherein the first phospholipid is HSPC, the sterol is cholesterol and the second phospholipid is PEG-DSPE or DSPG.

11. The pharmaceutical composition of claim 1, wherein the mole % of the first phospholipid: sterol: the second phospholipid or charged lipid 75-99: 0-14.9 :0.1-25.

12. The pharmaceutical composition of claim 11, wherein the first phospholipid is HSPC, sterol is cholesterol and the second phospholipid is PEG-DSPE.

13. The pharmaceutical composition of claim 12, wherein the weak acid drug is iloprost.

14. Use of the pharmaceutical composition of claim 1 in the manufacture of a medicament for the treatment of pulmonary hypertension.

15. The use of claim 14, wherein the medicament is to be administered at least every 6 hours.

16. The use of claim 14, wherein the medicament is to be administered once, twice or three times a day.

17. The use of claim 14, wherein the medicament is to be administered by inhalation.

18. The use of claim 17, wherein the therapeutic effect of the weak acid drug is maintained for at least 6 hours after administration of the medicament.

19. The use of claim 14, wherein the medicament is to be conjointly administered with at least one other agent effective to treat pulmonary hypertension.

20. The pharmaceutical composition of claim 1, for use in therapy.