CLAIMS

1. A pharmaceutical composition comprising:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of less than 0.1 mg/mL and a log P value greater than 2.5;

a permeation enhancer comprising at least one selected from the group of counterions, a pH modifier, a surfactant with a hydrophilic lipophilic balance (HLB) greater than 10, a bile salt, a micelle, or a fatty acid;

a matrix former; and

a structure former.

2. The pharmaceutical composition of claim 1, wherein the permeation enhancer comprises a surfactant with a hydrophilic lipophilic balance (HLB) greater than 10 and a molar ratio of API to the surfactant is 5:1 to 1:5 and/or the pharmaceutical composition comprises 0.5-20 wt.% the surfactant.

3. The pharmaceutical composition of claim 1, wherein the permeation enhancer comprises a bile salt and a molar ratio of API to the bile salt is 15:1 to 1:15 and/or the pharmaceutical composition comprises 1-20 wt.% the bile salt.

4. The pharmaceutical composition of claim 1, wherein the permeation enhancer comprises a fatty acid and a molar ratio of API to fatty acid is 3:1 to 1:3 and/or the pharmaceutical composition comprises 0.25-5 wt.% fatty acid.

5. The pharmaceutical composition of claim 1, wherein the permeation enhancer comprises counterions and a molar ratio of API to counterions is 6:1 to 1:6 and/or the pharmaceutical composition comprises 0.1-25 wt.% counterions.

6. The pharmaceutical composition of any one of claims 1-5, wherein the pharmaceutical composition comprises 1-35 wt.% the BCS Class II API or pharmaceutically acceptable salt or solvate thereof.

7. A pharmaceutical composition comprising:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 0.1-1 mg/mL and a log P value of 1-2.5;

a permeation enhancer comprising at least one selected from the group of counterions, a pH modifier, a surfactant with a hydrophilic lipophilic balance (HLB) greater than 10, a bile salt, or a micelle;

a matrix former; and

a structure former.

8. The pharmaceutical composition of claim 7, wherein the permeation enhancer comprises a surfactant with a hydrophilic lipophilic balance (HLB) greater than 10 and a molar ratio of API to surfactant is 5:1 to 1:5 and/or the pharmaceutical composition comprises 0.5-20 wt.% surfactant.

9. The pharmaceutical composition of claim 7, wherein the permeation enhancer comprises a bile salt and a molar ratio of API to bile salt is 15:1 to 1:15 and/or the pharmaceutical composition comprises 1-20 wt.% bile salt.

10. The pharmaceutical composition of claim 7, wherein the permeation enhancer comprises counterions and a molar ratio of API to counterions is 6:1 to 1:6 and/or the pharmaceutical composition comprises 0.1-25 wt.% counterions.

11. The pharmaceutical composition of any one of claims 7-10, further comprising 1-35 wt.% the pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 0.1-1 mg/mL and a log P value of 1-2.5.

12. A pharmaceutical composition comprising:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class III active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 1-10 mg/mL and a log P value of less than 1;

a permeation enhancer comprising at least one selected from the group of counterions, a pH modifier, or a bile salt;

a matrix former; and

a structure former.

13. The pharmaceutical composition of claim 12, wherein the permeation enhancer comprises a bile salt and a molar ratio of API to bile salt is 15:1 to 1:15 and/or the pharmaceutical composition comprises 1-20 wt.% bile salt.

14. The pharmaceutical composition of claim 12, wherein the permeation enhancer comprises counterions and a molar ratio of API to counterions is 6:1 to 1:6 and/or the pharmaceutical composition comprises 0.1-25 wt.% counterions.

15. The pharmaceutical composition of any one of claims 12-14, wherein the pharmaceutical composition comprises 1-35 wt.% the BCS Class III API or pharmaceutically acceptable salt or solvate thereof.

16. A pharmaceutical composition comprising:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class III active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 10-33 mg/mL and a log P value of less than 1;

a permeation enhancer comprising at least one selected from the group of counterions or a pH modifier;

a matrix former; and

a structure former.

17. The pharmaceutical composition of claim 16, wherein the permeation enhancer comprises counterions and a molar ratio of API to counterions is 6:1 to 1:6 and/or the pharmaceutical composition comprises 0.1-25 wt.% counterions.

18. The pharmaceutical composition of any one of claims 16-17, further comprising 1-35 wt.% the pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 10-33 mg/mL and a log P value of less than 1.

19. The pharmaceutical composition of any one of claims 1-18, wherein the pharmaceutical composition is a solid dosage form.

20. The pharmaceutical composition of any one of claims 1-19, for use in therapy.

21. Use of the pharmaceutical composition of any one of claims 1-19, in the manufacture of a medicament for treating a patient, wherein the medicament is to be placed in an oral cavity of a person in need of the treatment.

22. The use of claim 21, wherein placement in the oral cavity is placement on or under the tongue or in the buccal or pharyngeal region.

23. A method of forming a solid dosage form, the method comprising:
dosing a pharmaceutical formulation into a preformed mold, wherein the pharmaceutical formulation comprises:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of less than 0.1 mg/mL and a log P value greater than 2.5;

a permeation enhancer comprising at least one selected from the group of counterions, a pH modifier, a surfactant with a hydrophilic lipophilic balance (HLB) greater than 10, a bile salt, a micelle, or a fatty acid;

1-10 wt.% matrix former; and

1-10 wt.% of a structure former;

freezing the dosed pharmaceutical formulation; and
freeze-drying the frozen pharmaceutical formulation to form the dosage form.

24. The method of claim 23, wherein the permeation enhancer comprises a surfactant with a hydrophilic lipophilic balance greater than 10 and the pharmaceutical formulation comprises 0.01-5 wt.% the surfactant, the surfactant has a concentration of 0.1-30 x its critical micellar concentrations (CMC) in the pharmaceutical formulation, and/or the pharmaceutical formulation has a molar ratio of API to the surfactant of 5:1 to 1:5.

25. The method of claim 23, wherein the permeation enhancer comprises a bile salt and the pharmaceutical formulation comprises 0.25-5 wt.% bile salt, the bile salt has a concentration of 0.5-5 x CMC in the pharmaceutical formulation, and/or the pharmaceutical formulation has a molar ratio of API to the bile salt of 15:1 to 1:15.

26. The method of claim 23, wherein the permeation enhancer comprises a fatty acid and the pharmaceutical formulation comprises 0.03-0.15 wt.% fatty acid and/or the pharmaceutical formulation has a molar ratio of API to fatty acid of 3:1 to 1:3.

27. The method of claim 23, wherein the permeation enhancer comprises counterions and the pharmaceutical formulation comprises 0.025-5 wt.% counterions and/or the pharmaceutical formulation has a molar ratio of API to counterions of 6:1 to 1:6.

28. The method of any one of claims 23-27, wherein the pharmaceutical formulation comprises 0.1-5 wt.% the BCS Class II API or pharmaceutically acceptable salt or solvate thereof.

29. A method of forming a solid dosage form, the method comprising:

dosing a pharmaceutical formulation into a preformed mold, wherein the pharmaceutical formulation comprises:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 0.1-1 mg/mL and a log P value 1-2.5;

a permeation enhancer comprising at least one selected from the group of counterions, a pH modifier, a surfactant with a hydrophilic lipophilic balance (HLB) greater than 10, a bile salt, or a micelles;

1-10 wt.% matrix former; and

1-10 wt.% of a structure former;

freezing the dosed pharmaceutical formulation; and

freeze-drying the frozen pharmaceutical formulation to form the dosage form.

30. The method of claim 29, wherein the permeation enhancer comprises a surfactant with a hydrophilic lipophilic balance greater than 10 and the pharmaceutical formulation comprises 0.01-5 wt.% the surfactant, the surfactant has a concentration 0.1-30 x its critical micellar concentrations (CMC) in the pharmaceutical formulation, and/or the pharmaceutical formulation has a molar ratio of API to the surfactant of 5:1 to 1:5.

31. The method of claim 29, wherein the permeation enhancer comprises a bile salt and the pharmaceutical formulation comprises 0.25-5 wt.% bile salt, the bile salt has a concentration of 0.5-5 x CMC in the pharmaceutical formulation, and/or the pharmaceutical formulation has a molar ratio of API to the bile salt of 15:1 to 1:15.

32. The method of claim 29, wherein the permeation enhancer comprises counterions and the pharmaceutical formulation comprises 0.025-5 wt.% counterions and/or the pharmaceutical formulation has a molar ratio of API to counterions of 6:1 to 1:6.

33. The method of any one of claims 29-32, wherein the pharmaceutical formulation comprises 0.1-5 wt.% BCS Class II API or pharmaceutically acceptable salt or solvate thereof.

34. A method of forming a solid dosage form, the method comprising:
dosing a pharmaceutical formulation into a preformed mold, wherein the pharmaceutical formulation comprises:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class III active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 1-10 mg/mL and a log P value less than 1;

a permeation enhancer comprising at least one selected from the group of counterions, a pH modifier, or a bile salt;

1-10 wt.% matrix former; and

1-10 wt.% of a structure former;

freezing the dosed pharmaceutical formulation; and

freeze-drying the frozen pharmaceutical formulation to form the dosage form.

35. The method of claim 34, wherein the permeation enhancer comprises a bile salt and the pharmaceutical formulation comprises 0.25-5 wt.% bile salt, the bile salt has a concentration of 0.5-5 x CMC in the pharmaceutical formulation, and/or the pharmaceutical formulation has a molar ratio of API to the bile salt of 15:1 to 1:15.

36. The method of claim 34, wherein the permeation enhancer comprises counterions and the pharmaceutical formulation comprises 0.025-5 wt.% counterions and/or the pharmaceutical formulation has a molar ratio of API to counterions of 6:1 to 1:6.

37. The method of any one of claims 34-36, wherein the pharmaceutical formulation comprises 0.1-5 wt.% BCS Class III API or pharmaceutically acceptable salt or solvate thereof.

38. A method of forming a solid dosage form, the method comprising:

dosing a pharmaceutical formulation into a preformed mold, wherein the pharmaceutical formulation comprises:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class III active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 10-33 mg/mL and a log P value less than 1;

a permeation enhancer comprising at least one selected from the group of counterions or a pH modifier,

1-10 wt.% matrix former; and

1-10 wt.% of a structure former;

freezing the dosed pharmaceutical formulation; and

freeze-drying the frozen pharmaceutical formulation to form the dosage form.

39. The method of claim 38, wherein the permeation enhancer comprises counterions and the pharmaceutical formulation comprises 0.025-5 wt.% counterions and/or the pharmaceutical formulation has a molar ratio of API to counterions of 6:1 to 1:6.

40. The method of any one of claims 36-39, wherein the pharmaceutical formulation comprises 0.1-5 wt.% BCS Class III API or pharmaceutically acceptable salt or solvate thereof.

41. A pharmaceutical composition comprising:

a pharmaceutically effective amount of a biopharmaceutics classification system (BCS) Class II active pharmaceutical ingredient (API) or pharmaceutically acceptable salt or solvate thereof having a solubility of 0.1-1 mg/mL and a log P value of 1-2.5;

a permeation inhibitor comprising at least one selected from the group of a surfactant with a hydrophilic lipophilic balance (HLB) less than 10 or a fatty acid;

a matrix former; and

a structure former.

42. The pharmaceutical composition of claim 41, wherein the permeation inhibitor comprises a fatty acid and the pharmaceutical composition comprises 0.25-0.5 wt.% fatty acid and/or the pharmaceutical composition has a molar ratio of API to fatty acid of 3:1 to 1:3.

43. The pharmaceutical composition of claim 41, wherein the permeation inhibitor comprises the surfactant with a HLB less than 10 and a molar ratio of API to surfactant is 5:1 to 1:5.