

CLAIMS

WHAT IS CLAIMED IS:

1. A particulate plug for removing a preservative from a solution, suspension, or emulsion comprising a drug, the particulate plug comprising microparticles of a hydrophobic polymer/fatty acid blend, wherein the microparticles form a particulate plug capable of being fitted to an outlet of a container for the solution, emulsion, or suspension, wherein the particulate plug rapidly and selectively removes a preservative from the solution, emulsion, or suspension.
2. The particulate plug of claim 1, wherein the microparticles have a dimension of 5 μM to about 10,000 μM .
3. The particulate plug of claim 1 or 2, wherein the preservative comprises benzalkonium chloride (BAK).
4. The particulate plug of any one of the preceding claims, wherein the drug is selected from Table 1, Table 2, Table 3, or Table 4.
5. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a hydrophobic polymer selected from isotactic polypropylene, low density polyethylene, or high density polyethylene.
6. The particulate plug of claim 5, wherein the isotactic polypropylene has an average MW of about 250,000.
7. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a hydrophobic polymer that is a thermoplastic.
8. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a hydrophobic polymer that is a thermoset.
9. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a product of a melt blend.
10. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a product of a solution blend.
11. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a product of a spray-dry blend.
12. The particulate plug of any one of the preceding claims, wherein the hydrophobic polymer/fatty acid blend comprises a fatty acid selected from a fatty acid having the structure:
 $\text{CH}_3(\text{CH}_2)_n\text{CO}_2\text{H}$, wherein n is 2 to 24.
13. The particulate plug of claim 12, wherein n is 6 to 24.
14. The particulate plug of claim 12, wherein n is 8 to 24.
15. The particulate plug of claim 12, wherein n is 8 to 20.
16. The particulate plug of claim 12, wherein n is 10 to 20.

17. The particulate plug of claim 12, wherein n is 12 to 20.
18. The particulate plug of claim 12, wherein n is 14 to 20.
19. The particulate plug of claim 12, wherein n is 14 to 18.
20. The particulate plug of claim 12, wherein n is 14 or 16.
21. The particulate plug of claim 12, wherein n is 16.
22. The particulate plug of any one of claims 1-11, wherein the fatty acid is selected from caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, arachidic acid, behenic acid, lignoceric acid, or cerotic acid.
23. The particulate plug of any one of claims 1-11, wherein the fatty acid is selected from Myristoleic acid, Palmitoleic acid, Sapienic acid, Oleic acid, Elaidic acid, Vaccenic acid, Linoleic acid, Linoelaidic acid, α -Linolenic acid, Arachidonic acid, Eicosapentaenoic acid, Erucic acid, or Docosahexaenoic acid.
24. The particulate plug of any one of claims 1-11, wherein the fatty acid is selected from a fatty acid having a melting point greater than 70 °C.
25. The particulate plug of any one of claims 5-24, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is from about 1:1 to about 1:20.
26. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:1.
27. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:2.
28. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:3.
29. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:4.
30. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:5.
31. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:6.
32. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:7.
33. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:8.
34. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:9.

35. The particulate plug of claim 25, wherein the weight-to-weight ratio of the hydrophobic polymer-to-fatty acid is about 1:10.
36. The particulate plug of any one of the preceding claims, wherein the microparticles have a dimension of 5 μM to about 50 μM .
37. The particulate plug of any one of the preceding claims, wherein the microparticles have a dimension of 50 μM to about 100 μM .
38. The particulate plug of any one of the preceding claims, wherein the microparticles have a dimension of 100 μM to about 500 μM .
39. The particulate plug of any one of the preceding claims, wherein the microparticles have a dimension of 500 μM to about 1000 μM .
40. The particulate plug of any one of the preceding claims, wherein the microparticles have a dimension of 1,000 μM to about 10,000 μM .
41. A hydrophobic polymer/fatty acid blend comprising a hydrophobic polymer and a fatty acid in a ratio from about 1:1 to about 1:20.
42. The blend of claim 41, wherein the hydrophobic polymer and the fatty are combined in a vessel suitable for chemical reaction; heated to above the melting point of each component forming a homogenous composition; and poured into cool water.
43. A particulate plug according to any one of claims 1-40, wherein the hydrophobic polymer/fatty acid blend comprises a hydrophobic polymer and a fatty acid in a ratio from about 1:1 to about 1:20.
44. The particulate plug according to claim 43, wherein the blend is prepared by the process of the hydrophobic polymer and the fatty are combined in a vessel suitable for chemical reaction; heated to above the melting point of each component forming a homogenous composition; and poured into cool water
45. A particulate plug for removing a preservative from a solution, suspension, or emulsion comprising a drug, the particulate plug comprising microparticles of a fatty acid, wherein the microparticles form a particulate plug capable of being fitted an outlet of a container for the solution, emulsion, or suspension, wherein the particulate plug rapidly and selectively removes a preservative from the solution, emulsion, or suspension.
46. The plug of claim 45, wherein the fatty acid is stearic acid.