CLAIMS

1. A method of manufacturing a formulated pharmaceutical powder, said method comprising:

a. atomizing an aqueous solution comprising:

i. a thermal stabilizer and a receptor-Fc-fusion protein with a mass ratio at or between 1:5-2:5; and

ii. 0.03- 0.1% (w/v) polyoxyethylenesorbitan monolaurate;

wherein the spray drying occurs at an inlet temperature of 100°C to 130°C and an outlet temperature of 55°C, and

b. applying heat to said atomized aqueous solution to form said formulated pharmaceutical powder

wherein said formulated pharmaceutical powder is not subjected to secondary drying, the powder comprises spherical particles having a diameter of < 10 μm, and has an aggregation rate less than 5% per month ^ 1/2.

2. The method of claim 1, wherein said formulated pharmaceutical powder comprises between 3% and 10% (w/w) water.

3. The method of claim 1, wherein said thermal stabilizer comprises sucrose or trehalose.

4. The method of claim 1, wherein said thermal stabilizer does not comprise a molecule with a molecular mass greater than 200 g/mol.

5. The method of claim 1, wherein said thermal stabilizer is selected from the group consisting of mannitol, isoleucine, proline, and combinations thereof.

6. The method of claim 1, wherein said aqueous solution comprises 2 – 200 mg/ml of said receptor-Fc-fusion protein, and 0.1 – 2% (w/v) of said thermal stabilizer.

7. The method of claim 6, wherein said thermal stabilizer comprises (i) mannitol and (ii) isoleucine or proline.

8. The method of claim 6, wherein said aqueous solution does not comprise a buffer.

9. The method of claim 6, wherein said aqueous solution comprises 0.5 mM – 10 mM of a buffer.

10. The method of claim 1 further comprising suspending said formulated pharmaceutical powder in an organic solution comprising a biodegradable polymer; and spray drying said suspension to form a coated formulated pharmaceutical powder, wherein said formulated pharmaceutical powder is not subjected to secondary drying prior to forming said coated formulated pharmaceutical powder.

11. A method of manufacturing a formulated pharmaceutical powder, said method comprising:

a. atomizing an aqueous solution comprising:

i. a thermal stabilizer and a receptor-Fc-fusion protein at a molar ratio of less than 300 moles of said thermal stabilizer per mole of said receptor-Fc-fusion protein; and

ii. 0.03- 0.1% (w/v) polyoxyethylenesorbitan monolaurate;

wherein the spray drying occurs at an inlet temperature of 100°C to 130°C and an outlet temperature of 55°C, and

b. applying heat to said atomized aqueous solution to form said formulated pharmaceutical powder,

wherein said formulated pharmaceutical powder is not subjected to secondary drying, the powder comprises spherical particles having a diameter of < 10 μm, and has an aggregation rate less than 5% per month ^ 1/2.

12. The method of claim 11, wherein said formulated pharmaceutical powder comprises between 3% and 10% (w/w) water.

13. The method of claim 11, wherein said thermal stabilizer comprises sucrose or trehalose.

14. The method of claim 11, wherein said thermal stabilizer does not comprise a molecule with a molecular mass greater than 200 g/mol.

15. The method of claim 11, wherein said thermal stabilizer is selected from the group consisting of mannitol, isoleucine, proline, and combinations thereof.

16. The method of claim 11, wherein said aqueous solution comprises 2 – 200 mg/ml of said receptor-Fc-fusion protein, and 0.1 – 2% (w/v) of said thermal stabilizer.

17. The method of claim 16, wherein said thermal stabilizer comprises (i) mannitol and (ii) isoleucine or proline.

18. The method of claim 16 wherein said aqueous solution does not comprise a buffer.

19. The method of claim 16, wherein said aqueous solution comprises 0.5 mM – 10 mM of a buffer.

20. The method of claim 11 further comprising suspending said formulated pharmaceutical powder in an organic solution comprising a biodegradable polymer; and spray drying said suspension to form a coated formulated pharmaceutical powder, wherein said formulated pharmaceutical powder is not subjected to secondary drying prior to forming said coated formulated pharmaceutical powder.

21. A formulated pharmaceutical powder comprising 60%-97% (w/w) of a receptor-Fc-fusion protein, and 3%-40% (w/w) of a thermal stabilizer, and 0.03-0.1% (w/v)

polyoxyethylenesorbitan monolaurate, wherein said formulated pharmaceutical powder comprises at least 3% water, and the aggregation rate is less than 5% per month ^ ½.

22. The formulated pharmaceutical powder of claim 21 comprising between 3% and 10% (w/w) water.

23. The formulated pharmaceutical powder of claim 21 further comprising between 0.5-10 mM of a buffer.

24. The formulated pharmaceutical powder of claim 23, wherein said buffer is selected from the group consisting of phosphate, histidine and acetate.

25. The formulated pharmaceutical powder of claim 21, wherein said thermal stabilizer comprises sucrose or trehalose.

26. The formulated pharmaceutical powder of claim 21, wherein said thermal stabilizer does not comprise a molecule with a molecular mass greater than 200 g/mol.

27. The formulated pharmaceutical powder of claim 21, wherein said thermal stabilizer is selected from the group consisting of mannitol, isoleucine, proline, and combinations thereof.

28. The formulated pharmaceutical powder of claim 21 comprising 71-75% (w/w) receptor-Fc-fusion protein, 14-15% (w/w) mannitol, 14-15% (w/w) isoleucine or proline, 2-2.5% (w/w) buffer, and 3-8% (w/w) water.

29. The formulated pharmaceutical powder of claim 21 further comprising a polymer coating.