

WHAT IS CLAIMED IS:

1. A method of treating or ameliorating a viral infection comprising a coronavirus in a subject, comprising:
administering an effective amount of a recombinant human surfactant protein D (rhSP-D) or active fragment thereof to the subject.
2. The method of claim 1, wherein the viral infection comprises a virus selected from the group consisting of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), severe acute respiratory syndrome coronavirus (SARS-CoV-1), Middle East respiratory syndrome-related coronavirus (MERS-CoV), HCoV-229E, HCoV-NL63, HCoV-OC43, and HCoV-HKU1.
3. The method of claim 2, wherein the viral infection comprises SARS-CoV-2.
4. The method of claim 3, wherein the SARS-CoV-2 comprises an S1 protein variant.
5. The method of claim 4, wherein the S1 protein variant comprises a mutation selected from N501Y, D614G, HV69-70 del, K417N, and E484K.
6. The method of claim 4 or 5, wherein the S1 protein lacks a mutation selected from K417N, and E484K.
7. The method of any one of claims 1-6, wherein the administration comprises administering a pharmaceutical composition comprising the rhSP-D or active fragment thereof.
8. The method of claim 7, wherein the pharmaceutical composition comprises a buffer, a sugar, and a calcium salt.
9. The method of claim 8, wherein the buffer is selected from the group consisting of acetate, citrate, glutamate, histidine, succinate, and phosphate.
10. The method of claim 8 or 9, wherein the buffer is histidine.
11. The method of claim 10, wherein the concentration of the histidine is from about 1 mM to about 10 mM.
12. The method of any one of claims 8-11, wherein the sugar is selected from the group consisting of sucrose, maltose, lactose, glucose, fructose, galactose, mannose, arabinose, xylose, ribose, rhamnose, trehalose, sorbose, melezitose, raffinose, thioglucose, thiomannose, thiofructose, octa-O-acetyl-thiotrehalose, thiosucrose, and thiomaltose.

13. The method of claim 12, wherein the sugar is lactose.
14. The method of claim 13, wherein the concentration of the lactose is from 200 mM to 300 mM.
15. The method of claim 14, wherein the concentration of the lactose is about 265 mM.
16. The method of any one of claims 8-15, wherein the calcium salt is selected from the group consisting calcium chloride, calcium bromide, calcium acetate, calcium sulfate, and calcium citrate.
17. The method of claim 16, wherein the calcium salt is calcium chloride.
18. The method of claim 17, wherein the concentration of the calcium chloride is from about 1 mM to about 10 mM.
19. The method of claim 18, wherein the concentration of the calcium chloride is about 5 mM.
20. The method of any one of claims 7-19, wherein the pharmaceutical composition has a pH from about 5.0 to about 7.0.
21. The method of claim 20, wherein the pharmaceutical composition has a pH about 6.0.
22. The method of any one of claims 7-21, wherein the concentration of the rhSP-D is from about 0.1 mg/ml to about 10 mg/ml.
23. The method of any one of claims 7-22, wherein the pharmaceutical composition comprises a population of rhSP-D polypeptides having oligomeric forms, wherein greater than 30% of the oligomeric forms comprise dodecamers of rhSP-D.
24. The method of claim 23, wherein greater than 35% of the oligomeric forms comprise dodecamers of rhSP-D.
25. The method of claim 23 or 24, wherein greater than 40% of the oligomeric forms comprise dodecamers of the rhSP-D.
26. The method of any one of claims 7-25, wherein the pharmaceutical composition comprises a bulking agent.
27. The method of claim 26, wherein the bulking agent is selected from the group consisting of mannitol, xylitol, sorbitol, maltitol, lactitol, glycerol, erythritol, arabitol, glycine, alanine, threonine, valine, and phenylalanine.

28. The method of any one of claims 7-27, wherein the pharmaceutical composition lacks a chelating agent.
29. The method of claim 28, wherein the chelating agent is selected from EDTA and EGTA.
30. The method of any one of claims 1-29, wherein the rhSP-D comprises an amino acid sequence having at least 95% identity to the amino acid sequence of SEQ ID NO:02.
31. The method of any one of claims 1-30, wherein the subject is mammalian.
32. The method of any one of claims 1-31, wherein the subject is human.
33. A pharmaceutical composition for use in treating or ameliorating a viral infection comprising a coronavirus in a subject, wherein the pharmaceutical composition comprises a recombinant human surfactant protein D (rhSP-D) or active fragment thereof.
34. The pharmaceutical composition of claim 33, wherein the viral infection comprises a virus selected from the group consisting of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), severe acute respiratory syndrome coronavirus (SARS-CoV-1), and Middle East respiratory syndrome-related coronavirus (MERS-CoV).
35. The pharmaceutical composition of claim 34, wherein the viral infection comprises SARS-CoV-2.
36. The pharmaceutical composition of claim 35, wherein the SARS-CoV-2 comprises an S1 protein variant.
37. The pharmaceutical composition of claim 36, wherein the S1 protein variant comprises a mutation selected from N501Y, D614G, HV69-70 del, K417N, and E484K.
38. The pharmaceutical composition of claim 36 or 47, wherein the S1 protein lacks a mutation selected from K417N, and E484K.