Claims

1. A composition comprising micro particles of polyinosinic–polycytidylic acid (Poly (I:C)) and a carrier polymer selected from the group pea starch, pregelatinized potato starch, lactose, microcrystalline cellulose, hyaluronate or glucosamine.

2. The composition of claim 1 wherein said carrier polymer is pea starch.

3. The composition of claim 1 or 2 wherein Poly (I:C)-carrier-polymer micro particles are produced by means of a particle formation process such as a spray-dry process.

4. The composition of any of the claims 1-3 wherein the ratio Poly (I:C) / pea starch ranges from 1/200 (w/w) to 1 / 0.1 (w/w).

5. The composition of claim 4 wherein the ratio Poly (I:C) /pea starch is between 1/12 (w/w) and 1/9 (w/w).

6. The composition of any of the claims 3-5 wherein the $D_V50$ of the micro particle ranges from 0.1 micrometer to 200 micrometer.

7. The composition of any of the claims 1-6 wherein said composition is a liquid composition comprising an organic solvent.

8. The composition of claim 7 wherein the organic solvent is based on glycerol or ethanol or a combination thereof.

9. A composition according to any of the claims 1-8 for use in medicine.

10. A composition according to any of the claims 1-8 for use in treating and/or preventing infections or common cold.

11. Use of a composition according to any of the claims 1-8 for the manufacture of a medicament for preventing and/or treating upper respiratory infections by nasal administration.

12. Device, in particular a nasal delivery system, comprising a composition according to any of claims 1-8.

Claims

1. A microparticle, comprising polyinosinic acid, polycytidylic acid, and one or more carrier polymers comprising pea starch, pregelatinized potato starch, microcrystalline cellulose, or hyaluronate.

2. The microparticle of claim 1, wherein the microparticle is produced by a spray-dry particle formation process.

3. The microparticle of claims 1 or 2, wherein the average chain length of each of the polyinosinic acid and polycytidylic acid is approximately 300 bases to 6,000 bases.

4. The microparticle of claim 3, wherein the ratio of the combination of polyinosinic acid and polycytidylic acid to carrier polymer ranges from 1/200 (w/w) to 1/0.1 (w/w).

5. The microparticle of any preceding claim, wherein the ratio of the combination of polyinosinic acid and polycytidylic acid to carrier polymer in the microparticle is 1/100 (w/w) to 1/5 (w/w).

6. The microparticle of any preceding claim, wherein the ratio of the combination of polyinosinic acid and polycytidylic acid to carrier polymer is between 1/12 (w/w) and 1/9 (w/w).

7. The microparticle of any preceding claim, wherein the polyinosinic acid and polycytidylic acid are each present as a sodium salt.

8. The microparticle of claim 1, wherein the one or more carrier polymers comprise pea starch.

9. The microparticle of claim 8, wherein the pea starch is hydroxypropylated pregelatinized pea starch.

10. The microparticle of claim 1, further comprising water.

11. The microparticle of claim 1, wherein the microparticle consists essentially of polyinosinic acid, polycytidylic acid, the one or more carrier polymers, and water.

12. The microparticle of any preceding claim, wherein the microparticle comprises a single carrier polymer.

13. The microparticle of any preceding claim, wherein the $D_V50$ of the microparticle ranges from 0.1 µm to 200 µm.

14. The microparticle of any preceding claim, wherein the $D_V50$ of the microparticle ranges from 0.1 µm and 100 µm.

15. The microparticle of any preceding claim, wherein the $D_V50$ of the microparticle ranges from 1 µm to 50 µm.

16. The microparticle of any preceding claim, wherein the $D_V50$ of the microparticle ranges from 2 µm to 40 µm.

17. The microparticle of any preceding claim, wherein the $D_V50$ of the microparticle ranges from 2 µm to 20 µm.

18. The microparticle of any preceding claim, wherein the $D_V50$ of the microparticle ranges from 10 µm to 20 µm.

19. A composition comprising a plurality of microparticles according to any preceding claim.

20. The composition of claim 19, wherein the composition is a liquid.

21. The composition of claim 20, wherein the composition comprises an organic solvent.

22. The composition of claim 21, wherein the organic solvent is glycerol, ethanol, or a combination thereof.

23. The composition of claim 20, wherein the composition comprises phosphate-buffered saline.

24. The composition of claim 19, wherein the composition is a dry powder.

25. The composition of any one of claims 19-24, wherein the composition is suitable for nasal administration.

26. A composition of any one of claims 19-25, for use in medicine.

27. Use of a composition according to claim 26, for the manufacture of a medicament for preventing upper respiratory infections by nasal administration of the composition.

28. Use of a composition according to claim 27, for the manufacture of a medicament for prophylacting against a viral infection of the respiratory tract.

29. Use of a composition according to claim 28, wherein the viral infection is a human rhinovirus infection or an influenza virus infection.

30. A nasal delivery device, comprising the composition of any one of claims 19-26.

31. Use of a composition for the manufacture of a medicament for preventing upper respiratory infections by nasal administration of the composition, wherein

the composition comprises a plurality of microparticles;

the microparticles comprise polyinosinic acid, polycytidylic acid, and one or more carrier polymers comprising pea starch, pregelatinized potato starch, microcrystalline cellulose, or hyaluronate.

32. A nasal delivery device comprising a composition, wherein

the composition comprises a plurality of microparticles;

the microparticles comprise polyinosinic acid, polycytidylic acid, and one or more carrier polymers comprising pea starch, pregelatinized potato starch, microcrystalline cellulose, or hyaluronate.