**CLAIMS**

1. A powder composition comprising microparticles with a volume diameter of less than 10μm comprising a matrix of at least one water-soluble pharmaceutically acceptable carrier embedding at least one nanoparticle with a volume diameter of less than 300nm of calcium phosphate comprising one or more therapeutic/diagnostic compounds, for use as a medicinal product in which the powder composition is to be administered by inhalation, wherein said at least one pharmaceutically acceptable carrier is a polyalcohol.

2. The powder composition for use according to claim 1, wherein said one or more therapeutic/diagnostic compounds are selected from the group consisting of: a nucleic acid, a peptide, a protein, an antibody, and a synthetic compound having a molecular weight not exceeding 700 Daltons.

3. The powder composition for use according to claim 2 wherein the one or more therapeutic/diagnostic compounds are a peptide.

4. The powder composition for use according to any one of claims 1 to 3, wherein the weight ratio (calcium phosphate):(pharmaceutically acceptable carrier) in the microparticles is between 1:2.5 and 1:7.

5. The powder composition for use according to any one of claims 1 to 4, wherein the composition has a fraction of microparticles with an aerodynamic diameter of less than 5.0 microns (FPF) greater than 0.5, wherein FPF is the FPD/ED ratio, in which:

- "aerodynamic diameter" is the diameter of a sphere of unit density that has the same sedimentation rate as the actual particle under consideration, measured by applying the method described in the European Pharmacopoeia 9.0 chapter 2.9.18;

- FPD is the quantity of fine particles (particles with an aerodynamic diameter of less than 5.0μm) of the powder composition; and

- ED is the amount of pre-dosed dose emitted, measured according to the method of the European Pharmacopoeia 9.0 chapter 2.9.18.

6. The powder composition for use according to any one of claims 1 to 5, wherein the composition has a median volume diameter ($Dv_{50}$) of less than 5.0 μm, wherein “volume diameter” is the diameter of a perfect sphere having the same volume as the particle, measured by a laser light diffraction method.

7. The powder composition for use according to any one of claims 1 to 6, wherein said microparticles have a porous internal structure.

8. The powder composition for use according to claim 7, wherein said microparticles with a porous structure have pores having a projection diameter less than 50 nm, wherein "projection diameter" is the equivalent spherical diameter corresponding to the diameter of the circle having the same projection area on a plane as the particle, determined by Scanning Electron Microscopy.

9. The powder composition for use according to any of claims 1 to 7, wherein the pharmaceutically acceptable carrier is mannitol.

10. Use of a powder composition comprising microparticles with a volume diameter of less than 10μm comprising a matrix of at least one water-soluble pharmaceutically acceptable carrier embedding at least one nanoparticle with a volume diameter of less than 300nm of calcium phosphate comprising one or more therapeutic/diagnostic compounds, for the preparation of a medicament for the treatment of cardiovascular diseases by inhalation;

wherein said at least one pharmaceutically acceptable carrier is a polyalcohol; and

wherein the one or more therapeutic/diagnostic compounds are selected from one or more therapeutic compounds.

11. The use according to claim 10, wherein the pharmaceutically acceptable carrier is mannitol.

12. The use according to claim 10 or 11, wherein the one or more therapeutic/diagnostic compounds are a peptide.

13. The use according to any one of claims 10 to 12, wherein the weight ratio (calcium phosphate):(pharmaceutically acceptable carrier) in the microparticles is between 1:2.5 and 1:7.

14. An inhalation device comprising a container containing a powder composition comprising microparticles with a volume diameter of less than 10μm comprising a matrix of at least one water-soluble pharmaceutically acceptable carrier embedding at least one nanoparticle with a volume diameter of less than 300nm of calcium phosphate comprising one or more therapeutic/diagnostic compounds.

15. The inhalation device according to claim 14, wherein the pharmaceutically acceptable carrier is mannitol.

16. The inhalation device according to claim 14 or 15, wherein the one or more therapeutic/diagnostic compounds are a peptide.

17. The inhalation device according to any one of claims 14 to 16, wherein the weight ratio (calcium phosphate):(pharmaceutically acceptable carrier) in the microparticles is between 1:2.5 and 1:7.

18. A powder composition comprising microparticles with a volume diameter of less than 10μm comprising a matrix of at least one water-soluble pharmaceutically acceptable carrier embedding at least one nanoparticle with a volume diameter of less than 300nm of calcium phosphate comprising one or more therapeutic/diagnostic compounds, in which the ratio by weight of calcium phosphate to said at least one pharmaceutically acceptable carrier in the microparticles is between 1:2.5 and 1:7, wherein said at least one pharmaceutically acceptable carrier is a polyalcohol.

19. The powder composition according to claim 18, wherein the pharmaceutically acceptable carrier is mannitol.

20. The powder composition according to claim 18 or 19, wherein the one or more therapeutic/diagnostic compounds are a peptide.

21. A method for the preparation of a powder composition comprising microparticles with a volume diameter of less than 10μm comprising a matrix of at least one water-soluble pharmaceutically acceptable carrier embedding at least one nanoparticle with a volume diameter of less than 300nm of calcium phosphate comprising one or more therapeutic/diagnostic compounds, comprising the steps of:

a) providing a first aqueous dispersion of calcium phosphate nanoparticles comprising of one or more therapeutic/diagnostic compounds;

b) dissolving in the dispersion of step a) at least one pharmaceutically acceptable water-soluble carrier in order to obtain a second aqueous dispersion; and

c) spray drying the second aqueous dispersion of step b).

22. The method according to claim 21, wherein said step a) comprises the steps of:

1) providing a mixture having a pH in the range of 7 to 10 and comprising of an aqueous solution of calcium ions, an aqueous solution of phosphate ions, a solution of citrate ions, and an aqueous solution of one or more therapeutic/diagnostic compounds at a temperature in the range of 20°C to 40°C for a period of 30 seconds to 10 minutes;

2) removing the non-reacted ions from the solution obtained in step 1) by obtaining a suspension of calcium phosphate nanoparticles; and

3) recovering the product of one or more calcium phosphate nanoparticles from the suspension of step 2).