CLAIMS

1. Use of stabilized amorphous calcium phosphate (ACP) and/or stabilized amorphous calcium fluoride phosphate (ACFP) in the manufacture of a medicament for treating or preventing halitosis in an individual in need thereof.

2. The use according to claim 1, wherein the individual has been identified as having halitosis.

3. The use according to claim 1 or 2, wherein the individual has moderate halitosis or severe halitosis.

4. The use according to any one of claims 1 to 3, wherein the individual has an intra-oral volatile sulphur compound (VSC) level of, or about, 150 ppb (parts per billion) or greater.

5. The use according to any one of claims 1 to 4, wherein:

(i) the individual has halitosis with a Rosenberg score of 3;

(ii) the individual has halitosis with a Rosenberg score of 4; or

(iii) the individual has halitosis with a Rosenberg score of 5.

6. The use according to any one of claims 1 to 5, wherein the individual has not been diagnosed with periodontal disease or wherein the individual does not have periodontal disease.

7. The use according to any one of claims 1 to 6, wherein the individual has not been diagnosed with periodontitis or severe gingivitis or wherein the individual does not have periodontitis or severe gingivitis.

8. The use according to any one of claims 1 to 7, wherein the individual has not been diagnosed with gingivitis or wherein the individual does not have gingivitis.

9. Use of stabilized amorphous calcium phosphate (ACP) and/or stabilized amorphous calcium fluoride phosphate (ACFP) in the manufacture of a medicament

reducing the production of volatile sulphur compounds (VSCs) in the oral cavity of an individual.

10. Use of stabilized amorphous calcium phosphate (ACP) and/or stabilized amorphous calcium fluoride phosphate (ACFP) in the manufacture of a medicament inhibiting the activity of enzymes from oral bacteria.

11. The use according to claim 10, wherein the enzymes are proteases.

12. The use according to claim 10 or 11, wherein:

(i) the oral bacteria are those involved in the production of VSCs; or

(ii) the oral bacteria are Gram-negative oral bacteria associated with halitosis.

13. The use according to any one of claims 9 to 12, wherein the intra-oral volatile sulphur compound (VSC) levels in the individual have been determined.

14. The use according to any one of claims 9 to 13, wherein the individual has not been diagnosed, or does not have, gingivitis or periodontal disease.

15. The use according to any one of claims 1 to 14, wherein the stabilized amorphous calcium phosphate (ACP) and/or stabilized amorphous calcium fluoride phosphate (ACFP) is phosphopeptide stabilized.

16. The use according to claim 15, wherein the phosphopeptide is selected from casein phosphopeptide, phosvitin phosphopeptide, osteoponin phosphopeptide and a chemical or recombinantly synthesised phosphopeptide comprising the sequence –A-B-C-.

17. The use according to claim 16, wherein the phosphopeptide is a casein phosphopeptide.

18. The use according to any one of claims 1 to 17, wherein the stabilized amorphous calcium phosphate (ACP) and/or stabilized amorphous calcium fluoride phosphate (ACFP) is a zinc-associated stabilized amorphous calcium phosphate (ACP) and/or a zinc-associated stabilized amorphous calcium fluoride phosphate (ACFP) complex.

19. The use according to claim 18, wherein the zinc-associated stabilized amorphous calcium phosphate (ACP) and/or a zinc-associated stabilized amorphous calcium fluoride phosphate (ACFP) complex is phosphopeptide stabilized.

20. The use according to claim 19, wherein the zinc-associated stabilized ACP or ACFP complexes has a zinc ion content of about, or at least, 0.5 mole of zinc per mole of phosphopeptide;

21. The use according to claim 20, wherein:

(i) the zinc ion content is in the range of about 0.5 moles to about 100 moles per mole of phosphopeptide;

(ii) the zinc ion content is in the range of about 0.5 moles to about 50 moles per mole of phosphopeptide;

(iii) the zinc ion content is in the range of about 0.5 moles to about 20 moles per mole of phosphopeptide;

(iv) the zinc ion content is in the range of about 0.5 moles to about 10 moles per mole of phosphopeptide; or

(v) the zinc-associated stabilized ACP or ACFP complexes has a zinc ion content of about, or at least, 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 moles of zinc per mole of phosphopeptide.

22. The use according to claim 1, wherein the medicament is to be administered to the oral cavity in the form of a composition comprising the stabilized amorphous calcium phosphate (ACP) and/or stabilized amorphous calcium fluoride phosphate (ACFP).

23. The use according to any one of claims 22, wherein the composition is a dentifrice including toothpastes, toothpowders and liquid dentifrices, mouthwashes, mouthrinses, mouth sprays, varnish, dental cement, troches, chewing gums, dental pastes, gingival massage creams, gargle tablets, dairy products and other foodstuffs including yoghurt.

24. The use according to any one of claims 1 to 23, wherein:

(i) administration of the medicament results in a reduction of intra-oral VSCs level of at least 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 ppb; or

(ii) administration of the medicament results in a reduction in the individual's Rosenberg score measurement by at least 1.

25. A zinc-associated stabilized amorphous calcium phosphate (ACP) and/or a zinc-associated stabilized amorphous calcium fluoride phosphate (ACFP) complex.

26. The complex according to claim 25, wherein the zinc-associated stabilized amorphous calcium phosphate (ACP) and/or a zinc-associated stabilized amorphous calcium fluoride phosphate (ACFP) complex is phosphopeptide stabilized.

27. The complex according to claim 26, wherein the phosphopeptide is a casein phosphopeptide.

28. The complex according to any one of claims 25 to 27, wherein the zinc-associated stabilized ACP or ACFP has a zinc ion content of about, or at least, 0.5 mole of zinc per mole of phosphopeptide.

29. The complex according to claim 28, wherein:

(i) the zinc ion content is in the range of about 0.5 moles to about 100 moles per mole of phosphopeptide;

(ii) the zinc ion content is in the range of about 0.5 moles to about 50 moles per mole of phosphopeptide;

(iii) the zinc ion content is in the range of about 0.5 moles to about 20 moles per mole of phosphopeptide;

(iv) the zinc ion content is in the range of about 0.5 moles to about 10 moles per mole of phosphopeptide; or

(v) the zinc-associated stabilized ACP or ACFP has a zinc ion content of about, or at least, 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 moles of zinc per mole of phosphopeptide.

30. A composition comprising, consisting essentially of or consisting of, zinc-associated stabilized ACP and/or ACFP complexes according to any one of claims 25 to 29.

31. A composition according to claim 30, wherein the composition is a dentifrice including toothpastes, toothpowders and liquid dentifrices, mouthwashes, mouthrinses, mouth sprays, varnish, dental cement, troches, chewing gums, mints, dental pastes, gingival massage creams, gargle tablets, dairy products and other foodstuffs including yoghurt.

32. A composition according to claim 31, wherein the composition is a mint or chewing gum, preferably a sugar-free mint or sugar-free chewing gum.

33. A kit comprising:

(a) a composition according to claim 30 or 31, or

(b) a zinc-associated stabilized ACP or ACFP complex according to any one of claims 25 to 29,

wherein the kit further includes instructions for using the kit according to any one of claims 1 to 24.

34. A method or process for forming a zinc-associated phosphopeptide stabilized ACP or ACFP complex, the method or process comprising or consisting of:

(i) obtaining a solution comprising at least one phosphopeptide and;

(ii) admixing solutions comprising phosphopeptides, calcium ions, phosphate ions, hydroxide ions and optionally fluoride ions, while maintaining the pH at about 7 or above, preferably about 9, to form a solution comprising phosphopeptide stabilized ACP or ACFP; and

(iii) admixing a water-soluble zinc salt with the solutions comprising phosphopeptide stabilized ACP or ACFP,

thereby forming a zinc-associated phosphopeptide stabilized ACP or ACFP complex.

35. The method or process according to claim 34, wherein the solutions are added slowly at a rate of less than about 1% volume addition per minute with adequate mixing.

36. A method or process for forming a zinc-associated phosphopeptide stabilized ACP or ACFP complex, the method or process comprising or consisting of:

(i) providing a solution of phosphopeptide stabilized ACP or ACFP; and

(ii) admixing a water-soluble zinc salt with the solution,

thereby forming a zinc-associated phosphopeptide stabilized ACP or ACFP complex.

37. The method of process according to claim 34 to 36 , wherein the water-soluble zinc salt is in the form of zinc acetate, zinc lactate, zinc sulphate, zinc nitrate, zinc gluconate, zinc chloride, zinc citrate, or any other water-soluble zinc salt.