CLAIMS

1. Use of phosphopeptide stabilized amorphous calcium phosphate (PP-ACP) and/or amorphous calcium fluoride phosphate (PP-ACFP) in the manufacture of a composition or medicament for mineralizing a dental surface or sub-surface,

wherein the phosphopeptide stabilized ACP and/or ACFP is provided in a liquid composition comprising equal to, or greater than, 30% w/v phosphopeptide stabilized amorphous calcium phosphate (PP-ACP) and/or amorphous calcium fluoride phosphate (PP-ACFP).

2. The use according to claim 1, wherein the dental surface or sub-surface to which the phosphopeptide stabilized ACP and/or ACFP has been, or is being, applied is simultaneously or subsequently heated to a temperature greater than 37°C.

3. Use of phosphopeptide stabilized amorphous calcium phosphate (PP-ACP) and/or amorphous calcium fluoride phosphate (PP-ACFP) in the manufacture of a composition or medicament for mineralizing a dental surface or sub-surface,

wherein the dental surface or subsurface to which the phosphopeptide stabilized ACP and/or ACFP has been, or is being, applied is simultaneously heated to a temperature of greater than 37°C.

4. The use according to claim 3, wherein the phosphopeptide stabilized ACP/ACFP is provided in a liquid composition comprising equal to, or greater than, 20% w/v phosphopeptide stabilized-ACP and/or ACFP, or equal to, or greater than, 25% w/v phosphopeptide stabilized-ACP and/or ACFP.

5. The use according to any one of claims 2 to 4, wherein the dental surface or subsurface to which the phosphopeptide stabilized ACP and/or ACFP has been, or is being, applied is heated to a temperature greater than or equal to 40°C, greater than or equal to 45°C, greater than or equal to 50°C, greater than or equal to 55°C, greater than or equal to 60°C, or greater than or equal to 65°C.

6. The use according to any one of claims 2 to 5, wherein the dental surface or subsurface is heated to a temperature that does not exceed 65°C.

7. The use according to any one of claims 2 to 6, wherein the dental surface or subsurface is heated for 1 to 60 minutes, or for 1 to 30 minutes.

8. The use according to any one of claims 1 to 2 and 4 to 7, wherein the liquid composition comprises equal to, or greater than, 35% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 40% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 45% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 50% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 55% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 60% w/v phosphopeptide stabilized-ACP and/or ACFP; or equal to, or greater than 65% w/v phosphopeptide stabilized-ACP and/or ACFP.

9. The use according to any one of claims 1 to 2 and 4 to 8, wherein the liquid composition comprises equal to, or greater than, 40% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 45% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 50% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 55% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 60% w/w phosphopeptide stabilized-ACP and/or ACFP; or equal to, or greater than, 65% w/w phosphopeptide stabilized-ACP and/or ACFP.

10. The use according to any one of claims 1 to 9, wherein the phosphopeptide comprises an amino acid sequence of -A-B-C-, where A is a phosphoamino residue, B is an amino acid residue and C is selected from a glutamyl, aspartyl or a phosphoamino residue.

11. The use according to any one of claims 1 to 10, wherein the phosphopeptide is a casein phosphopeptide.

12. The use according to any one of claims 1 to 11, wherein the dental surface or subsurface is a fluorotic lesion, a white spot lesion, a caries lesion or a lesion caused by erosion.

13. A liquid composition comprising equal to, or greater than, 30% w/v phosphopeptide stabilized amorphous calcium phosphate (ACP) and/or amorphous calcium fluoride phosphate (ACFP).

14. The liquid composition according to claim 13, wherein the composition comprises equal to, or greater than, 35% w/v phosphopeptide stabilized ACP and/or ACFP; equal to, or greater than 40% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 45% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 50% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 55% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 60% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 65% w/v phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than 70% w/v phosphopeptide stabilized-ACP and/or ACFP; or equal to, or greater than 75% w/v phosphopeptide stabilized-ACP and/or ACFP.

15. The liquid composition according to claim 13, wherein the liquid composition comprises equal to, or greater than, 40% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 45% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 50% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 55% w/w phosphopeptide stabilized-ACP and/or ACFP; equal to, or greater than, 60% w/w phosphopeptide stabilized-ACP and/or ACFP; or equal to, or greater than, 65% w/w phosphopeptide stabilized-ACP and/or ACFP.

16. The liquid composition according to any one of claims 13 to 15, wherein the composition further comprises fluoride.

17. The liquid composition according to any one of claims 13 to 16, wherein the phosphopeptide comprises an amino acid sequence of -A-B-C-, where A is a phosphoamino residue, B is an amino acid residue and C is selected from a glutamyl, aspartyl or a phosphoamino residue.

18. The liquid composition according to any one of claims 13 to 16, wherein the phosphopeptide is a casein phosphopeptide.

19. A kit for the treatment or prevention of one or more of dental caries, fluorosis and dental erosion, or mineralizing a dental surface or subsurface or lesion as described herein comprising a liquid composition comprising:

- equal to, or greater than, 30% w/v phosphopeptide stabilized amorphous calcium phosphate (ACP) and/or amorphous calcium fluoride phosphate (ACFP); and

- a label or package insert with instructions for use.

20. The kit according to claim 19, the kit further comprising a heat source.

21. A method or process for forming a liquid composition comprising equal to, or greater than, 30% w/v phosphopeptide stabilized ACP and/or ACFP, the method or process comprising or consisting of:

mixing a solvent and a powder comprising or consisting of phosphopeptide stabilized-ACP and/or ACFP, and

maintaining the pH below 9, preferably below 8 or 7,

thereby forming a liquid composition comprising equal to, or greater than, 30% w/v phosphopeptide stabilized ACP and/or ACFP.

22. A method or process for forming a liquid composition comprising equal to, or greater than, 30% w/v phosphopeptide stabilized ACP and/or ACFP, the method or process comprising or consisting of:

mixing a solvent and a powder comprising or consisting of phosphopeptide stabilized ACP and/or ACFP, and

lowering the pH below 9, preferably, the pH is lowered to, or below, 7 or 6, preferably 5.5,

thereby forming a liquid composition comprising equal to, or greater than, 30% w/v phosphopeptide stabilized ACP and/or ACFP.

23. The method or process according to claim 21 or 22, wherein:

- the pH is maintained at, or below, 6, preferably the pH is maintained at, or below, 5.5; and/or

- the pH is lowered or maintained using 1-10M HCl, or 11M HCl.

24. The method or process according to any one of claims 21 to 23, wherein the solvent is water.

25. The method or process according to any one of claims 21 to 24, wherein the powder:

- is mixed with the solvent at a rate of about 2.5% w/v / min; or

- is slowly mixed with the solvent over about 2-3 hours.

26. The method or process according to any one of claims 21 to 25, further comprising the step of stirring the liquid composition after the pH is lowered.

27. The method or process according to claim 26, wherein the stirring occurs for at least 5, 10, 15, 20, 25 or 30 minutes.

28. The method or process according to any one of claims 21 to 27, further comprising degassing the liquid composition.

29. The method or process according to any one of claims 21 to 28, wherein the powder comprising or consisting of phosphopeptide stabilized-ACP and/or ACFP is prepared by:

admixing one or more solutions comprising phosphopeptides, calcium ions, phosphate ions, hydroxide ions and optionally fluoride ions, while maintaining the pH at about 7.0 or above, preferably about 9, to form a solution comprising phosphopeptide stabilized-ACP and/or ACFP;

filtering the solution comprising phosphopeptide-stabilized ACP and/or ACFP to form a retentate; and

drying said retentate to obtain the powder consisting of phosphopeptide-stabilized ACP and/or ACFP.

30. The method or process according to claim 29, wherein the solutions are added slowly at a rate of less than about 1% volume addition per minute with adequate mixing.