

CLAIMS

1. A solid composition comprising:
 - (a) an immobilized or non-immobilized peroxidase enzymatic catalysing agent;
 - 5 (b) an oxidizable substrate selected from:
 - (i) negatively charged halogens and their derivatives, or
 - (ii) pseudohalogens and their derivatives;
 - (c) at least one oxidising agent;
 - (d) optionally at least one inert filler; and
 - 10 (e) optionally a buffer system.
2. The solid composition according to claim 1, wherein the peroxidase enzymatic catalysing agent is selected from Lactoperoxidase, Myeloperoxidase, Eosinophil peroxidase, Urea peroxidase and plant-derived peroxidases, preferably wherein
15 the enzymatic catalysing agent is Lactoperoxidase.
3. The solid composition according to claim 1 or claim 2 wherein the oxidizable substrate is selected from:
 - (i) chlorides such as sodium chloride, iodides such as potassium iodide and
20 sodium iodide; or
 - (ii) sodium thiocyanate, potassium thiocyanate, sodium bisulfite, sodium hydrosulfite, sodium metabisulfite, sodium nitrite, potassium nitrite, sodium hypochlorite.
- 25 4. The solid composition according to any preceding claim, wherein the oxidizable substrate is selected from sodium thiocyanate, potassium thiocyanate and potassium iodide and combinations thereof, optionally wherein the oxidizable substrate is encapsulated.
- 30 5. The solid composition according to any preceding claim, wherein the oxidising agent is selected from calcium peroxide, sodium peroxide, sodium percarbonate and the combination of dextrose and glucose oxidase, optionally wherein the oxidising agent is encapsulated.
- 35 6. The solid composition according to any preceding claim, wherein the solid composition comprises at least one inert filler which is selected from

microcrystalline cellulose, calcium carbonate, dextrose monohydrate, magnesium stearate, dicalcium phosphate, lactose powder, multifunctional starch, partially depolymerized cellulose, partially pre-gelatinized starches, highly functional starch, bentonite, silica and combinations thereof.

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7. The solid composition according to any preceding claim, wherein the solid composition does not comprise:

- (i) a coagulant;
- 10 (ii) a thickening agent, preferably wherein the solid composition does not contain a clay such as bentonite; and/or
- (iii) a flocculant.

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8. The solid composition according to any preceding claim, wherein the buffer system is selected from citric acid: trisodium citrate; calcium lactate : citric acid; sodium L (+)-tartrate dehydrate: citric acid; calcium lactate : DL-malate : malic acid and Sodium L (+)- tartrate : tartaric acid.

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9. The solid composition according to claim 1, wherein the solid composition comprises

- (a) Lactoperoxidase,
- (b) sodium thiocyanate and/or potassium thiocyanate and/or potassium iodide;
- (c) , calcium peroxide;
- (d) microcrystalline cellulose; and
- 25 (e) a buffer system.

10. A kit comprising:

a first solid composition comprising:

- (a) a peroxidase enzymatic catalysing agent;
- 30 (b) an oxidizable substrate selected from:
- (i) negatively charged halogens and their derivatives, or
- (ii) pseudohalogens and their derivatives; and
- (c) optionally at least one inert filler;
- (d) optionally a buffer system

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a second solid composition comprising:

- (e) at least one oxidising agent; and
- (f) optionally at least one inert filler.

11. A kit comprising:

- 5 a first solid composition comprising:
- (a) a peroxidase enzymatic catalysing agent;
 - (b) optionally at least one inert filler,
- a second solid composition comprising:
- 10 (c) an oxidizable substrate selected from:
- (i) negatively charged halogens and their derivatives, or
 - (ii) pseudohalogens and their derivatives;
- (d) optionally at least one inert filler;
- (e) optionally a buffer system, and
- a third solid composition comprising:
- 15 (f) at least one oxidising agent; and
- (g) optionally at least one inert filler.

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

- 20 the peroxidase enzymatic catalysing agent is as defined in claim 2;
- the oxidizable substrate is as defined in claim 3 or claim 4;
- the inert filler is as defined in claim 6;
- the oxidising agent is as defined in claim 5; and
- the buffer system is as defined in claim 8.

25 13. The kit according to claims 10 to 12, wherein the kit does not comprise:

- (i) a coagulant;
- (ii) a thickening agent, preferably wherein the formulation does not contain a clay such as bentonite; and/or
- 30 (iii) a flocculant.

14. The kit according to any of claims 10 to 13 wherein each of the first and second and optionally third composition is contained separately in a sachet, container or capsule.

15. An aqueous system comprising the solid composition according to any one of claims 1 to 9 and water.
- 5 16. The aqueous system according to claim 15, wherein the water is tap water, de-ionised water, distilled water, reverse osmosis water or bottled water, a large body of water or continuous running water.
- 10 17. The aqueous system according to claim 15 or claim 16, for use as an antibacterial solution, disinfectant, antifungal solution or antiviral solution.
- 15 18. The aqueous system according to any one of claims 15 to 17, for use in:
- (i) cleaning, washing and disinfecting materials including surfaces;
 - (ii) the preparation of solutions intended for pharmaceutical and cosmetic products;
 - (iii) introducing into the air and applying on to surfaces to kill pathogens; and
 - (iv) creating fine spray or mist prior to inhalation by human and/or animals.
- 20 19. A method of sterilising water comprising the steps of:
- (i) adding the solid composition according to any one of claims 1 to 9 to the water to be sterilised, or
 - (ii) using the kit according to any one of claims 10 to 14, wherein the first, second and optionally third solid compositions are added to the water to be sterilised; or
 - 25 (iii) adding the aqueous system according to claims 15 and 16 to the water to be sterilised.
- 30 20. A method of preparing an antibacterial solution, disinfectant, antifungal solution and antiviral solution comprising the steps of:
- (i) adding the solid composition according to any one of claims 1 to 9 to water, or
 - (ii) using the kit according to any one of claims 10 to 14, wherein the first, second and optionally third solid compositions are added to the water,
 - 35 (iii) optionally adding further other anti-infectious, antimicrobial, antiviral, antibiotic, antifungal agents, preservatives or disinfection agents.