CLAIMS

What is claimed is:

1. A method of fabricating a graft material from a tooth, comprising:

providing one or more root portion of the tooth only;

contacting the one or more root portion of the tooth with a first reagent comprising sodium hypochlorite or calcium hypochlorite at a predefined temperature for a predefined duration so as to disinfect the one or more root portion of the tooth; and

sterilizing the disinfected one or more root portion of the tooth at a predefined sterilization temperature and pressure, thereby obtaining said graft material.

2. The method of claim 1, further comprising reducing particle size of the sterilized one or more root portion of the tooth thereby obtaining said graft material.

3. The method of claim 1, wherein the first reagent comprising sodium hydroxide.

4. The method of any one of the preceding claims, wherein the predefined sterilization temperature is from about 110ºC to about 150ºC and the predefined sterilization pressure is from about 10 psi to about 50 psi.

5. The method of claim 4, wherein the predefined sterilization is not less than 121ºC.

6. The method of any one of the preceding claims, wherein said graft material is a tissue graft material or a bone graft material.

7. The method of any one of the preceding claims, wherein disinfection of the one or more root portion further comprising contacting the one or more root with a second reagent.

8. The method of claim 7, wherein the second reagent is an oxidizing agent comprising a compound having two oxygen atoms, wherein said two oxygen atoms are linked via a single covalent bond.

9. The method of claim 8, wherein said compound is a peroxide selected from the group consisting of hydrogen peroxide, peroxy acid, metal peroxide and organic peroxide.

10. The method of any one of claims 2-9, wherein the reduced particle size of the one or more root portion of the tooth is in a range from 100 μm to about 5,000 μm.

11. The method of any one of the preceding claims, further comprising disintegrating one or more cells from the one or more root portion of the tooth by contacting the one or more root portion of the tooth with a second oxidizing agent under ultrasound radiation.

12. The method of claim 11, further comprising washing the decellularized one or more root portion of the tooth with one or more acid with a predefined ratio between volume of the one or more acid used and volume of the portion of the tooth.

13. The method of claim 12, wherein the volume ratio is in a range from 1:2 to 20:1.

14. The method of any one of claims 11-13, further comprising lyophilizing the decellularized one or more root portion of the tooth under a predefined lyophilization condition.

15. The method of claim 14, further comprising a second sterilization step.

16. The method of claim 15, wherein the second sterilization step comprising using one of the following gases: ethylene oxide gas, vaporized hydrogen peroxide, chlorine dioxide gas, vaporized peracetic acid and nitrogen dioxide.

17. The method of claim 15, wherein the second sterilization step comprising using a gamma sterilization or an electron beam sterilization.

18. A graft material from a tooth obtained by a method of any one of claims 1-17.

19. The graft material of claim 18, wherein said tooth is a human tooth or an animal tooth.

20. The graft material of claim 18 or 19, comprising 30-85%(v/v) of hydroxyapatite.

21. A graft material from a tooth comprising 30-85%(v/v) of hydroxyapatite.

22. A graft material of claim 18 for use in regeneration of bone or tissue in a human, wherein the graft material is to be implanted to a damaged or loss portion of the bone or tissue.

23. The use of claim 22, wherein said damaged or loss portion of the bone or tissue is caused by a disease selected from the group consisting of periodontal disease, osteoarthritis, autoimmune diseases, osteoporosis, infection, tumors, developmental or congenital disorders, bone cancer and bone disease or by a condition or treatment selected from the group consisting of trauma or injury, tooth extraction, ill-fitting dentures, bruxism, sinus issues, radiation therapy, and administration of bisphosphonates.

24. The use of claim 23, wherein the periodontal disease is selected from the group consisting of gingivitis, periodontitis, aggressive periodontitis, chronic periodontitis, systemic periodontitis and necrotizing periodontal disease.