(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :21/12/2024
(21) Application No.202441101601 A
(43) Publication Date : 10/01/2025

(54) Title of the invention : INJECTABLE NANO-HYDROXYAPATITE AND CHITOSAN COMPOSITE BONE GRAFT

(51) International classification :A61F0002280000, A61L0027580000, A61K0009000000, A61L0027120000, A61L0027540000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

(71)**Name of Applicant :**
1)JSS Academy of Higher Education & Research
Address of Applicant :SRI SHIVARATHREESHWARA NAGARA, MYSURU, KARNATAKA - 570015 Mysuru ---------- ----------
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr. Suman Basavaraju
Address of Applicant :SRI SHIVARATHREESHWARA NAGARA, MYSURU, KARNATAKA - 570015 Mysuru ---------- ----------
2)Dr. Rashmi Durga Kalyanam
Address of Applicant :SRI SHIVARATHREESHWARA NAGARA, MYSURU, KARNATAKA - 570015 Mysuru ---------- ----------
3)Dr. Ravindra S
Address of Applicant :SRI SHIVARATHREESHWARA NAGARA, MYSURU, KARNATAKA - 570015 Mysuru ---------- ----------

(57) Abstract :
ABSTRACT INJECTABLE NANO-HYDROXYAPATITE AND CHITOSAN COMPOSITE BONE GRAFT An injectable composite bone graft comprising nano-hydroxyapatite, chitosan nanoparticles, a stabilizing agent, at least one preservative, and a gelling agent dispersed in an aqueous vehicle is provided. The bone graft is formulated as a hydrogel suitable for injection and delivery to bone defect sites. The nano-hydroxyapatite is present in an amount ranging from 25% to 45% by weight, providing osteoconductive properties, while the chitosan nanoparticles are present in an amount ranging from 25% to 45% by weight, contributing biocompatibility, biodegradability, and antibacterial activity. The stabilizing agent, present in an amount ranging from 1% to 5% by weight, ensures stability, and the preservative, present in an amount ranging from 0.1% to 0.5% by weight, prevents microbial growth. The gelling agent, present in an amount ranging from 2% to 5% by weight, imparts the desired hydrogel consistency for ease of injection and delivery. The injectable bone graft can further incorporate growth factors, such as bone morphogenetic proteins, platelet-derived growth factors, and vascular endothelial growth factors, to enhance bone regeneration. The method of preparation involves solubilizing the preservative and stabilizing agent, dispersing nano-hydroxyapatite and chitosan nanoparticles, adding the gelling agent to form a hydrogel, and storing the hydrogel at 2°C to 8°C to facilitate polymer dissolution. The injectable composite bone graft finds application in periodontal regeneration and bone augmentation procedures, including intra-bony defects, furcation areas, socket preservation, ridge augmentation, peri-implantitis, and endo-perio lesions.

No. of Pages : 25 No. of Claims : 9