

Fabrication and characterization of porous granular bone substitute from HAp and BCP powder with selective element doping

Swapan K. Sakar, Byong Taek Lee†, In Seon Byun*, Ho Yeon Song*

순천향대학교 의과대학 의공학교실; *순천향대학교 의과대학 미생물학교실
(lbt@sch.ac.kr†)

Granular porous materials with unidirectionally oriented pores were fabricated by multipass extrusion method from Hydroxyapatite (HAp) and Biphasic Calcium Phosphate powders. The powders were synthesized by ultrasonic assisted synthesis method. To improve the bio integration of the synthesized powder elements like Sr, Si were doped into the crystal structure of HAp and BCP at the time of synthesis. The fabricated porous bone substitutes had different pore arrangement and pore size. The material properties of the sintered bodies were evaluated. Microstructure and phase of the porous bone substitutes were characterized by SEM and XRD.

Keywords: Hydroxyapatite, Biphasic Calcium Phosphate, Sr, Si, bone substitute

Synthesis and Characterization of BCP powders with Sr and Si doping by the use of ultrasonic energy

Yang Hee Kim, Swapan Kumar Sarkar, Ho Yeon Song*, Byong Taek Lee†

순천향대학교 의과대학 의공학교실; *순천향대학교 의과대학 미생물학교실
(lbt@sch.ac.kr†)

BCP nano powder with a minute doping of Strontium (Sr) and Silicon (Si), was synthesized by the use of ultrasonic energy in aqueous medium. The synthesis condition was optimized in terms of pH and time of ultrasonic irradiation. Calcination temperature was optimized and powder characteristics like particle size and size distribution was evaluated. Phase and composition of the synthesized powder was characterized by XRD and ICP-AES. Powder morphology was investigated by SEM and TEM techniques.

Keywords: BCP, ultrasonic synthesis, Strontium, Silicon