Fabrication of bone scaffolds from cockle shell waste

Siti Hajar Saharudin[1], *Jun Haslinda Shariffuddin*[1,2*], *Noor Ida Amalina Ahamad Nordin*[1]

[1]Faculty of Chemical & Natural Resources Engineering, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia
[2]Centre of Excellence for Advanced Research in Fluid Flow, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia
*E-mail: junhaslinda@ump.edu.my

ABSTRACT

Bone scaffold is a three-dimensional structure composed of materials that could enhance bone regeneration. In this study, bone scaffolds were prepared using freeze dry method by varying the cockle shell powder concentration where sodium alginate acted as matrix. The scaffolds were then characterized using X-ray diffraction, Fourier transform infrared spectroscopy, scanning electron microscope, energy dispersive X-ray, texture analyzer, and liquid displacement method. Bioactivity of the scaffolds was evaluated by immersing it in simulated body fluid solution. Overall, this study proved that cockle shell powder concentrations affected the bone scaffold characteristics. The increment of the powder concentrations improved the physicochemical properties and bioactivity of the scaffolds.

KEYWORDS: Bone scaffold; Calcium carbonate; Cockle shell waste; Freeze dry

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