

Preliminary study of the polymesoda expansa based hydroxyapatite for medical devices coating application

Abstract

Hydroxyapatite (HA) which is a group of calcium phosphate (CaP) is used as a medical devices coating due to its ability to increase the bioactivity and biocompatibility of the device surface. The attraction of using waste seashells products is interesting due to its sustainability and low cost solution especially in biomedical application. Polymesoda expansa or locally known as Lokan is potentially rich with calcium carbonate (CaCO_3). Here, the synthesis of HA was done via precipitation method by utilizing the Polymesoda expansa (Lokan) shells as the resource of calcium precursors. Hydroxyapatite synthesized from Polymesoda expansa was carried out with different pH solution (pH 9 and 13) in alkaline environment. The effects of pH on the morphological and chemical composition properties as well as the Ca/P ratio of HA powders were analyzed through Scanning Electron Microscopy (SEM), Fourier Transform Infrared Spectroscopy (FTIR), and Energy Dispersive X-ray Spectrometry (EDS). The finding demonstrates as the pH increases, the calcium apatite reduced and this had increases the Ca/P ratio.