

**EXTRACTION AND CHARACTERIZATION OF HYDROXYAPATITE
FROM FISH BONES AND SCALES VIA CALCINATION METHOD**

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ABSTRACT

EXTRACTION AND CHARACTERIZATION OF HYDROXYAPATITE FROM FISH BONES AND SCALES VIA CALCINATION METHOD

Hydroxyapatite (HAp) is a family member of calcium phosphate that has similar component to human bones and teeth. It is commonly used in biomedical applications. The extraction of HAp from fish bones and scales is also cost-effective in comparison to the synthetic HAp that utilizes dangerous expensive chemicals. In this study HAp was extracted through calcination method. The calcination method was done at different temperatures which were 700°C, 800°C, and 900°C for 3 hours. The purposes of this study are to look into how calcination temperature affects the physical, chemical and structural characteristics of HAp. Characterization techniques such as X-ray diffraction (XRD), Fourier-transform infrared (FTIR), and scanning electron microscopy (SEM) were used to characterize the calcined fish bones and scales. XRD analysis revealed that sample calcined at temperature 900°C (S900 and T900) had sharper and more intense diffraction peaks. FTIR spectra verified the presence of the hydroxyl group (OH^-), carbonate ions group (CO_3^{2-}), and phosphate group (PO_4^{3-}), indicating the successful formation of HAp. SEM images demonstrated that a denser structure had resulted from increasing temperature. Based on this study, it confirms that high-purity HAp can be extracted from fish waste to be used in biomedical and wastewater treatment applications.

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