

**PREPARATION AND CHARACTERIZATION OF HYDROXYAPATITE
POWDER FROM FISH BONES AND SCALES USING CALCINATION
METHOD**

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ABSTRACT

PREPARATION AND CHARACTERIZATION OF HYDROXYAPATITE POWDER FROM FISH BONES AND SCALES USING CALCINATION METHOD

Hydroxyapatite (HAp) is a calcium phosphate-based material that commonly used in biomedical and have the chemical similarity to human bone and teeth. The production of HAp powder from an environment friendly and cost-effective alternative to conventional routes. In this study, HAp was obtained from fish bones and scales using calcination method. Through the calcination method at 900°C at different durations (2 and 5 hours), the aims are to investigate the impact of calcination time on structural and chemical properties of HAp. The calcined fish bones and scales were characterized using X-Ray Diffraction (XRD) and Fourier Transform Infrared Spectroscopy (FTIR). The XRD analysis successfully confirmed the crystalline structure of hydroxyapatite synthesized from fish bones and scales. XRD analysis confirmed that 5 hours sample (SL5) had sharper and more and intense diffraction peaks and improved phase formation. The FTIR results confirmed that the hydroxyl group (OH^-), carbonate ions group (CO_3^{2-}) and phosphate group (PO_4^{3-}) indicate the presence of HAp. FTIR for SL5 showed well defined absorption band and indicating enhanced structural organization of HAp. Based on the study, the 2 hours sample (SL2) showed broader peaks and incomplete phase development than SL5 sample. This study confirms that fish waste can be effectively converted into high-purity HAp through optimized calcination.

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