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NATURAL CALCIUM PHOSPHATES FROM FISH BONES AND THEIR POTENTIAL BIOMEDICAL APPLICATIONS

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ABSTRACT

The treatment and recovery of bio-wastes have raised considerable attention both from the environmental and economic point of view. Every year, a remarkable amount of fish processing by-products are generated and dumped as waste from all over the world. Fish bones can serve as a raw material for the production of high value-added compounds that can be used in various sectors including agrochemical, biomedical, food and pharmaceutical industries. The calcination of fish bones results in a single phase (hydroxyapatite) or bi-phasic (hydroxyapatite-tricalcium phosphate) bioceramics depending on the processing conditions as well as the content of the fish bones. This review summarizes the literature on the production of hydroxyapatite from fish bones and discusses their potential applications in biomedical field. The effect of processing conditions on the properties of final products including Ca/P ratio, crystal structure, particle shape, particle size and biological properties are presented in the light of X-ray diffraction, scanning electron microscopy, transmission electron microscopy, thermogravimetric-differential thermal analysis, bioactivity and biocompatibility investigations.

Keywords: Bioceramic, Fish Bone, Calcination, Natural Hydroxyapatite, β -tricalcium phosphate

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