WASTE WATER TREATMENT USING FISH BY-PRODUCTS

C. PICCIRILLO,[1 *] S.I. PEREIRA,[1] A.P.G.C. MARQUES,[1] R.C. PULLAR,[2] M.E. PINTADO[1] and P.M.L. CASTRO[1]

[1]:Escola Superior Biotecnologia, Universidade Catolica Portuguesa, Porto, Portugal.

[2]: CICECO, Universidade de Aveiro, Aveiro, Portugal.

*Corresponding author: cpiccirillo@esb.ucp.pt.

Abstract

The bones from Atlantic cod fish (Gadus morhua), a by-product of the food industry, were used to extract hydroxyapatite $Ca_{10}(PO_4)_6(OH)_2$ and other phosphate-based compounds. These products were used, for the removal of heavy metals such as zinc (II) and cadmium (II) from contaminated wastewater.

To increase the uptake of the heavy metals, selected bacterial strains were immobilised on the hydroxyapatite surface. The microorganisms were chosen considering their resistance to a heavy metal polluted environment [1].An improvement in the efficiency of the metal removal was observed for the bacteria-immobilised material; the effect of the microorganisms was especially enhanced for higher heavy metal concentrations ($\geq$ 500 mg/L).

This study showed that valuable compounds can be obtained from fish by-products; furthermore, these products could be successfully used for heavy metal remediation processes.

References

[1] Pires, C., Marques, A.P.G.C., Guerreiro, A., Magan, N., Castro, P.M.L: Removal of heavy metals using different polymer matrixes for bacterial immobilisation. J. Hazardous Materials, 191(1-3), 277-286, (2011)