Micro Biotec'13

PORTUGUESE CONGRESS OF MICROBIOLOGY AND BIOTECHNOLOGY

6th – 8th December | Aveiro Portugal

Abstracts Book

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SPM
Sociedade Portuguesa de Microbiologia

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Environmental Microbiology and Biotechnology

P106

BACTERIA IMMOBILISED ON HYDROXYAPATITE SURFACE FOR WASTE WATER TREATMENT

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Heavy metals pollution in the environment is a big cause of concern, due to the toxicity of the metals themselves. In this work we propose an innovative method for heavy metals removal from contaminated waste water – a combination of hydroxyapatite (already used for water treatment) and microorganisms. Selected bacterial strains were immobilised on the surface of hydroxyapatite of natural origin (extracted from cod fish bones). These systems were used to tested on heavy metals, such as zinc and cadmium, from water solutions. The three strains used were *Pseudomonas fluorescens*, *Microbacterium oxydans* and *Cupravidus sp.*; they were selected as they showed high heavy metal resistance. SEM micrographies were used to study their immobilization on the hydroxyapatite surface. Solutions containing different concentrations of either Zn (II), Cd (II) or both metals at the same time were used. Results showed that the combination of hydroxyapatite and bacteria increases the metal uptake, indicating a synergistic action between the solid support and the bacteria biofilm. Particularly high removal rates were observed for higher heavy metal concentrations and for the *Pseudomonas fluorescens* strain. This work shows a promising way for environmental remediation, combining products of natural origin with microbiology.

Acknowledgements: This work was performed under the network iCOD (Inovadora Tecnologias para a Valorização de Subproductos do Processamento do Bacalhau, funded by FTC, contract QREN AdI Ij466). This work was also supported by FCT e Fundação para a Ciência e a Tecnologia, Fundo Social Europeu (III Quadro Comunitário de apoio), through project PEst-OE/EQB/LA0016/2011, and the FCT research grants of Ana Marques (SFRH/BPD/34585/2007) and Sofia Pereira (SFRH/BPD/65134/2009). R. C. Pullar would like to thank the FCT Ciência 2008 programme for supporting this work. The authors thank Pascoal & Filhos S.A. for supplying the cod fish bones.