Efficacy of the surface electrodeposition treatment of the biodegradable AZ31 alloy on their *in vitro* bacterial respons

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The role of metals and metal alloys in implant design focuses mainly. However, it cannot be expected that rigid metallic devices can adapt to the physiological evolution of carrier, especially in the case of children, nor that long term safety can be guaranteed, as in the case of any foreign material within the human body.

In this scenario, biodegradable metals, mainly magnesium and their alloys have been introduced to suit resorption needs. However, both metals suffer from attack of chloride containing environment, such as human body fluids, but both are elements present in human body, ensuring its non-toxicity for a moderate release. The controlled corrosion rate can result in progressively decreasing mechanical support as implant is replaced by new tissue until the fracture heals. This advantage makes unnecessary any secondary surgery. On the other hand, metal implants are also susceptible to bacterial infection. The local defense system is highly affected by the surgical trauma after implantation, and it is highly susceptible time for bacterial infection.

Hydroxyapatite (HA), that is basically pure calcium phosphate, has favorable osteo-conductive and bioactive properties making it a preferred biomaterial for both biomedical applications. The purpose of this work is to evaluate the applicability of HA coating on biodegradable implant metal, AZ31, using electrodeposition treatment. After conditioning, the morphological and chemical changes of the surfaces are observed in SEM, AFM, Tofsims and hydrophobicity analyses, in addition the adhesion and viability of a strain of *Staphylococcus aureus*.

Biography

Miguel Ángel Pacha Olivenza has completed his PhD at the age of 28 years from Extremadura University School of Medicine. He is a Professor at the Department of Biomedical Sciences at the University of Extremadura. His research interest is focused on the physical-chemical characteristics of surfaces that are relevant for the biocompatibility of medical devices and in the interactions between bacteria and surfaces. He belongs to the research Group of Microbial Adhesion of the Networking Research Center on Bioengineering, Biomaterials and Nanomedicine, Instituto de Salud Carlos III. He has about 35 scientific articles and more than 80 contributions to congresses

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