Biodegradation Properties of Elektron 21 Magnesium Alloy Coated by Octacalcium Phosphate

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Biodegradation properties of magnesium and its alloys that can be used for implants are not satisfactory and cause serious problems. These problems can be solved by biodegradable surface coatings. Evaluation of biodegradation process of Mg-RE-Zr alloy surfaces after grinding and grinding followed by potential controlled electrodeposition of octacalcium phosphate (OCP) was investigated by electrochemical impedance spectroscopy measurements in this study. The potentiostatic electrodeposition treatment process was performed in water solution of 0.167 M $CaCl_2$ and 0.1 M $NH_4H_2PO_4$. The corrosion process on treated and nontreated samples after various exposure times was evaluated in 0.9% NaCl solution simulating body fluid environment at 37 °C. The significant increase of polarization resistance and time resistance against corrosion were found after electrochemical surface treatment.

Keywords: magnesium alloy, octacalcium phosphate, electrodeposition, corrosion resistance

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