Short Communication

Electrodeposition of a YSZ–Yttria Stabilized Zirconia Composite Coating on a Titanium Bone Implant

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For load-bearing or bone-contacting applications, including renovation of congenital skeletal abnormalities, joint and tooth replacement, and fracture healing, metallic implants have gained extensive use and acceptance. Cathodic electrodeposition from zinc sulfate-based electrolytes containing gelatin was carried out to prepare composite coatings of zinc and nano-sized yttria-stabilized zirconia (YSZ) particles. Through immersion in simulated body fluid and cell proliferation performed separately several times, the apatite precipitation of the YSZ-coated Ti was studied to measure its biocompatibility and bioactivity. It can be seen that the developed YSZ-Ti showed decreased inflammatory response compared to bare Ti implants due to its excellent tissue attachment features, apatite formation capacity, and biocompatibility.

Keywords: Electrodeposition; Yttria stabilized zirconia; Coating; Adhesion strength; Bone implant

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