عنوان مقاله:

Surface Activation of Ni-Ti Alloy Using Electrochemical Process for BiomimeticDeposition of Hydroxyapatite Coating

محل انتشار:

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خلاصه مقاله:

Electrochemical depositions of calcium phosphide layer on Ni-Ti alloy in concentrated simulated bodyflood (SBF×5) were carried out by cathodic electrodeposition. This layer was deposited on Ni-Ti alloysubstrate under 10mA/cm2 current density for 2 hours at room temperature. Then, in order toinvestigate the bioactivity of the pre-calcified samples, they were put in SBF for 1 and 3 days at roomtemperature. The microstructure, chemical composition, and bioactivity of the coatings were evaluatedusing scanning electron microscopy(SEM), energy dispersive spectroscopy(EDS), X-raydiffraction(XRD) and Fourier transform infrared spectroscopy(FTIR) techniques. Results showed thatthe activation of the surface of the Ni-Ti alloy by electrochemical process can significantly enhance thebiomimetic deposition during time. On the other hand, by increasing immersion time of pre-calcifiedsamples in SBF from 1 to 3 days, the biomimetic coating uniformly covered the surface of the sample.The ratio of the Ca/P for the pre-calcified sample after immersion in SBF for 3 days was about 1.5which is very close to the Ca/P ratio of stoichiometric hydroxyapatite

کلمات کلیدی:

Ni-Ti alloyElectrodepositionBioactivity, BiomimeticCalcium Phosphide LayerHydroxyapatite