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COMPARATIVE CORROSION STUDY OF NON-PRECIOUS Ni/Cr-BASED SOFT ALLOYS IN VIEW OF DENTAL APPLICATIONS

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Abstract

Based on the polarization curves and electrochemical impedance spectroscopy (EIS) in the case of three commercial alloys (Wirolloy, NicromalSoft and VeraSoft) maintained in artificial saliva, it was established the type and the intensity of the corrosion process by means of the corrosion currents value. The passivation of all the samples occurred spontaneously at the open circuit potential. The corrosion currents value decrease after the alloys maintenance in the corrosive medium due their passivation. The corrosion currents have values of nA order for all the samples and decrease with the increase of the immersion time. The VeraSoft alloy presented a dangerous breakdown potential, around 200 mV. The EIS results show that all NiCr-based alloys exhibit passivity at open circuit potential. The Herenium alloy with dendritic microstructure shows the best electrochemical behaviour in artificial saliva. The Heraenium alloy is in the optimum corrosion resistant condition. In our opinion the VeraSoft alloy is not in an optimal corrosion resistant condition and NicromalSoft alloy is marginal.

Key words: corrosion current, EIS, NiCr-based alloys, open circuit potential, potentiodynamic polarisation curves

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