Effect of *Streptococcus mutans* on the Corrosion Behavior of Nano-Coating Ni-Cr Dental Alloy

M.A. Ameer^{1,*}, A.M. Fekry¹ and, May M.A. Bahr²

¹ Chemistry Department, Faculty of Science, Cairo University, Giza 12613, Egypt

² National Research Center, 33 El Bohouth St. P.O. 12311, Egypt

*E-mail: mameer_eg@yahoo.com,

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Corrosion behavior of chitosan, hydroxyapatite and TiO₂ nanoparticles (CS/TiO₂/HA) nano-layer Ni-Cr (Wiroloy) casting dental alloy and unlayered one were studied with time after exposing the tested alloys to fluoridated artificial saliva media without and/or with *streptococcus mutans* (*S.mutans*). Techniques used for corrosion examination were electrochemical impedance spectroscopy (EIS) and potentiodynamic techniques. SEM and EDX analysis was studied to characterize the layered film in absence or presence of bacteria. All measurements indicated that CS/TiO₂/HA nano-coating has high antibacterial effectiveness. Surface coverage increases with immersion time reaching a constant value after 72h and it was found to be 0.987 and 0.925 for CS/TiO₂/HA Nano-coating calculated from EIS and potentiodynamic techniques, respectively, after 6 days in presence of bacteria indicating the inactive property of the layer.

Keywords: *Streptococcus mutans* ; Chitosan; TiO₂; Hydroxyapatite; Wiroloy.

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