



BIOTRIBOCORROSION BEHAVIOR OF TITANIUM IN THE PRESENCE OF ORAL BIOFILMS

Júlio C.M. SOUZA^{1*}, Edith ARIZA¹, Mariana C.R. HENRIQUES², Domingas R. OLIVEIRA², Wim TEUGHEL³, Luís A. ROCHA^{1,4}, Jean-Pierre CELIS⁵

¹Centre for Mechanical and Materials Technologies, Research Group on Functionalized Materials and Surfaces Performance, Universidade do Minho, Guimarães, Portugal, jsouza@dem.uminho.pt

²Departamento de Engenharia Biológica, Universidade do Minho, Braga, Portugal, mcrh@deb.uminho.pt

³ Department of Periodontology, Katholieke Universiteit Leuven, B-3001 Leuven, Belgium, Wim.Teughels@med.kuleuven.be

⁴ Departamento de Engenharia Mecânica, Universidade do Minho, Guimarães, Portugal, lrocha@dem.uminho.pt

⁵ Dept. MTM, Katholieke Universiteit Leuven, B-3001 Leuven, Belgium, Jean-Pierre.Celis@mtm.kuleuven.be

* Presenting author

In the oral cavity, restorative surfaces such as of titanium-based implant systems are in contact with several acidic substances originated from dietary intake and microbial metabolism. During the mastication, a simultaneous corrosion-wear process known by Biotribocorrosion can take place on the surfaces which are in relative contact motion. The objective of this work is to investigate the *in-vitro* simultaneous corrosion-wear behavior of titanium in the presence of biofilms. Electrochemical tests of titanium surfaces covered or not by mixed oral biofilms (*Streptococcus mutans* and *Candida albicans*) were carried out in artificial saliva.

After stabilization of open circuit potential of titanium in artificial saliva, reciprocating wear sliding tests were performed against an alumina ball at different loads using a tribometer equipped with a test viewer software. Moreover, electrochemical measurements were carried during the wear sliding tests. Worn and unworn surfaces were analyzed by different SEM techniques. Biofilms decreased significantly the friction of titanium surfaces. However, the presence of biofilms affected negatively the corrosion resistance of titanium probably due to acids release from the biofilms.

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