



1. Characterisation and In Vitro Bioactivity of UV-treated Anodised Titanium

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Abstract

Anodic oxidation is an electrochemical method for the production of ceramic films on a metallic substrate. It has been widely used to deposit the ceramic coatings on the metals surface. Recently, ultraviolet (UV) light treatment is gaining recognition as a new potential surface treatment method. This study aims to investigate the effect of UV light treatment on the surface properties and *in vitro* bioactivity of anodised titanium. At first, the titanium foils were anodised in mixture of β -glycerophosphate disodium salt pentahydrate (β -GP) and calcium acetate monohydrate (CA). Subsequently, the anodised titanium was pre-treated with UVA lamp (peak wavelength of 365 nm) and immersed in simulated body fluid (SBF). Field emission scanning electron microscopy (FESEM), X-ray diffractometer (XRD) and goniometer were used to characterise the surface properties, crystallinity and surface wettability of untreated titanium (UT), anodised titanium (AT) and UV-treated anodised titanium (UTAT). UTAT became more hydrophilic if compared to the UAT. The result of SBF showed that bone-like apatite was precipitated on the surface of UTAT. The results indicated that hydrophilic surface is able to accelerate the growth of bone-like apatite.

Keywords: Anodic Oxidation; Titanium; UV light; Simulated body fluid; Apatite.

Acknowledgements

The authors gratefully acknowledge to Universiti Tun Hussein Onn Malaysia, Ministry of High Education Malaysia for the Research Acculturation Collaborative Effort (RACE Vot 1442) and Fundamental Research Grant Scheme (FRGS Vot 1212).