



The effect of sand-blasting and hydrofluoric acid etching on Ti CP2 and Ti CP4 surface topography

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ABSTRACT

Titanium is widely used in biomedical applications from many years for its interesting properties, nevertheless there are a large number of researchers studying the way to improve the performances of biomedical devices. A large number of papers concern the study of "commercially pure titanium" (Ti CP) but, very often, no details are indicated regarding: 1) the type of Ti CP used; 2) the sandblasting process; and 3) the analytic evaluation of surface topography. In this paper, the effect of sandblasting duration (1, 2, 4, 8 min) and hydrofluoric acid (HF) etching, as well as their combined or synergic effect, on the surface topography of CP grade 2 and grade 4, have been investigated. Results obtained show that sandblasting treatment duration should be different for Ti CP grade 2 and Ti CP grade 4 to achieve similar topography. The shape of the surface is highly modified after acid etching. The latter produces "peaks" when applied to not sand-blasted coupons, whilst cuts the "top of the peaks" in the sandblasted samples. Further we confirm that, the roughness parameter Ra (or Sa), is not sufficient to describe "the surface status" and we propose to use additional parameters like: Sq, Sku and Ssk, to unequivocally describe surface topography of implants as well as well defined test procedures.

KEYWORDS

Titanium; Surface Treatments; Dental Implant; Roughness

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