

GENOTOXICITY EVALUATION OF TITANIUM PLASMA TREATED SURFACE AND DIOXIDE TITANIUM PARTICLES

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Titanium surface is an important biomaterial for implant applications. Instead the controversial results for titanium genotoxicity, titanium plasma treated surfaces was never assessed. So, the aim of this study was to evaluate the genotoxic potential of different titanium surfaces and dioxide titanium particles. For this, untreated and titanium plasma treated surfaces were evaluated using an *in vivo* prokaryotic assay through the mutation reverse test with *Salmonella typhimurium* (AMES spot test) using TA98 (frame-shift mutation detector strain) and TA100 (point mutation detector strain). As the implant can liberate dioxide titanium particles in the body during the mechanic stress, we have also accessed the potential of these particles in generate DNA breaks using an *in vitro* plasmidial DNA test. The results had showed that neither titanium surface nor dioxide titanium particles is able to induce revertents in AMES test or generate breaks in the phosphodiester bound, respectively. All together, these results suggest that plasma treated surface can be regarded as a biologically safe implant material with many promising clinical applications. However, additional studies using another genotoxic systems must be done with titanium modified surface.