

題名:Biological Response of Surface-modified Titanium

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摘要:Titanium (Ti) is currently the most widely used material for the manufacture of orthopedic and dental implants. Changes in the surface of commercial pure Ti (cp Ti) can determine the functional response of cells, and is therefore a critical factor for the success of the implant. However, the genotoxicity of titanium surfaces has been poorly studied. Thus, the purpose of this study was to evaluate the genotoxic potential of a new titanium surface developed by plasma treatment using argon-ion bombardment and compare it with an untreated titanium surface. Accordingly, comet assay, analysis of chromosomal aberrations (CAs), and Cytokinesis Block Micronucleus (CBMN) assay were carried out, using CHO-K1 (Chinese hamster ovary) cells grown on both titanium surfaces. Our results show that the untreated titanium surface caused a significant increase in % tail moment, in the number of cells with CAs, tetraploidy, micronucleus frequency, and other nuclear alterations when compared with the negative control and with the plasma-treated titanium surface. This difference may be attributed to increased surface roughness and changes in titanium oxide layer thickness.