

B-8. The effect of anodized titanium surfaces on osteoblastic cell proliferation & differentiation

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The surface characteristics of titanium have been shown to having important role in contact osteogenesis around the implant. Anodizing at high voltage produces microporous structure and increases thickness of surface titanium dioxide layer. The aim of present study was to analyse the rat osteoblast response to commercially pure titanium and Ti6Al4V anodized in 0.06 mol/l β -glycerophosphate와 0.03 mol/l sodium acetate. In this study, rat osteoblasts were used in short-term in vitro tests to assay for cell viability and cell proliferation at 1, 2, 4, 7 days.

1. The diameter of micropores and surface roughness increased with the increase of electrolyte voltage.
2. The increase of surface roughness enhanced the cell viability and proliferation.
3. There was no difference in cell viability and cell proliferation between commercially pure titanium and Ti6Al4V.

In conclusion, the titanium surface modified by anodizing was biocompatible, produced enhanced osteoblastic response. Maybe, the reasons of enhanced osteoblastic response were due to reduced metal ion release by thickened and stabilized titanium dioxide layer and microporous rough structures.