

## Influence of topographic of a new implant surface on cell morphology

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A new titanium surface for implant was produced by argon ions bombardment. The present study aimed to evaluate the influence of the topographic (roughness, microstructure) of the bombarded surface on morphology of the MC3T3-E1 preosteoblasts. The bombarded surface was obtained by plasma processing in the argon atmosphere with the use of planar cathode. No-treated surfaces (smooth) were used as a control. The roughness parameter, Ra, were evaluated for both, smooth and bombarded surfaces. The levels of roughness observed in bombarded and smooth titanium surfaces were of 0.11 and 0.027  $\mu\text{m}$  respectively. Scanning electron microscopy (SEM) and atomic force microscopy (AFM) analysis were used to evaluate morphology cell. SEM and AFM images showed more cells attached and spread on the bombarded surface. The influence of the surface on the shape of the cells was evaluated by the shape factor  $[(\text{area}/ \text{perimeter}^2) \times 4\delta]$ . The number of elongated cells with numerous cytoplasmic extensions was significantly higher on the bombarded surface ( $p < 0.05$ ), nevertheless, rounded cells prevailed on the smooth. Cell morphology was affect by topographic of the titanium surface. The bombarded surface favored the adhesion and spreading of the preosteoblasts. Based on the results showed one can propose that the bombardment of titanium surfaces with argon ions is an excellent procedure for obtaining biomaterials and improve the osseointegration.

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