Interaction between osteoblasts and titanium surfaces: application in dental implants”

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The bone integration of dental implants is dependent on type of material of implant, its superficial topography and also by the type of coating. Although there are many the materials used for the manufacture of dental implants, currently the titanium is the choice material by its inert behavior when it contact with biological tissues. As the superficial topography influenced on cellular adhesion and proliferation, the dental implants underwent treatments creating superficial irregularities in the micro and sub-micrometric scale. Likewise, the coats based on organic-origin minerals are used to improve the bone deposition on implant.

The aim of present paper is to carry out the osteoblasts cells culture on Ti-6Al-4V substrates using four different types surfaces typically used in dental implants to determine which of them have the better behavior in terms of cellular adhesion, cellular proliferation and biomineralization.

The osteoblasts cells were cultivated during 24 hr for the adhesion assay and during 1, 2, 5, 6 and 7 days for the proliferation assay. The biomineralization was assessed by characterization with estereozoom and SEM of the mineral depots colored using dying technique with red alizarin. The quantization of these mineralization depots was performed using a tool of images processing.

The results obtained showed that the rough surfaces and coated have a better behavior. None of the study surfaces had a toxic character for cells and all showed cellular adhesion profiles, cellular proliferation and biomineralization.

ABSTRACT.

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