

INFLUENCE OF SPACE HOLDER ON THE BIOCOMPATIBILITY OF Ti-34Nb-6Sn ALLOY PREPARED BY POWDER METALLURGY

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Development of metallic materials for dentistry and orthopedic area have been increasing, due to in world life expectancy and the significantly numbers of accidents. Due to problems of failure in available commercial materials implantation, as well as the discomfort of patient because the high elastic modulus, these devices need to be improved or new implants should be sought. This study was intended to develop a porous alloy, Ti-34-Nb-6Sn/Mg which can help the ingrowth bone tissue when implanted, by the powder metallurgy. After the milling powders in the high energy mill, were compacted and sintered. Both, powders and sintered materials were characterized by X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM) and semi-quantitative compositional analysis (EDS). The apparent porosity was measured through the Archimedes' Method. The toxicity this material was evaluated by MTT assay, using the equine mesenchymal stem cells derived of bone marrow (bmMSC) according to ISO 109935. The bmMSCs morphological analysis in contact on the material surface using SEM. The Mg evaporation was confirmed by EDS and XRD after sintering. The XRD indicate there is predominantly beta phase than alpha. The apparent porosity was higher in alloy with Mg space holder. The materials do not presented particular cytotoxic in direct and indirect contact. Metallurgical powder technique promoted effectively macropores formation in Ti-34Nb-6Sn/Mg alloy, which possibly further bmMSCs adhesion.

Keywords: porosity, titanium alloy, magnesium

Acknowledgment:

Financial support was received from CAPES and FAPESP (2017/13876-2), Institute for Technological Research State of Sao Paulo for materials development.

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