Titanium and its alloys have been widely used as implant materials, particularly due to its biocompatibility, corrosion resistance and mechanical properties. The present study investigates the effect of the heat treatment below (Ti6Al4V$_{800}$) and above (Ti6Al4V$_{1050}$) its transformation temperature (980°C) as well as Ti6Al4V alloy as received in a cell culture medium (DMEM 10%FBS+cells). Saos-2 osteoblastic cells were seeded on disks of 12.7mm of diameter and 2mm of thick. The samples were immersed in cell culture medium at 37ºC, pH 7.40, 5%CO$_2$ for 7 days. E$_{corr}$ evolution and Electrochemical Impedance Spectroscopy (EIS) were used in order to draw its advantages and drawbacks as implant material. The results show a steady and similar system, were the phase angle has a tendency to increase for the Ti6Al4V alloy as received, Ti6Al4V$_{800}$ and Ti6Al4V$_{1050}$ alloys becomes the immersion time is major. The last due to protein or/and cells adsorption on TiO$_2$ passive film. Cell adhesion was characterized by SEM, which shows differences in cell morphology this could be associate to the formation of defects in the passive oxide film, which apparently facilitates the osseointegration. Non-cell adhesion was observed on Ti6Al4V$_{800}$ after electrochemical test due to microstructural changes obtained after heat treatment and the electrical perturbation during the impedance measurement. The feasible biocompatibility of the alloy with the cell culture medium is discussed in terms of the formation of a partially hydrated defective titanium oxide. The presence of hydroxide ions on the surface facilitates the precipitation of calcium phosphate, and is influenced by the presence of alloying elements (i.e. Al).

**Keywords:** Biomaterials, Ti6Al4V, Cell culture medium

**References:**


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