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PREPARATION AND MICROSTRUCTURAL CHARACTERIZATION OF Zr-Ti ALLOYS

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Zirconium has favorable characteristics to be used as biomaterial because it has good mechanical and corrosion resistance, it is biocompatible and has greater contact between the bone and the implant when compared to titanium implants [1]. Titanium presents chemical properties similar to zirconium and its addition to the alloy results in the improvement of the mechanical and corrosion resistance, besides helping in the biocompatibility [2]. The aim of this work was the preparation and characterization of binary alloys of the Zr-Ti system, for biomedical application. The alloys were prepared by means of an arc-melting furnace. The samples were characterized by x-ray diffraction using the powder method, optical and scanning electron microscopy. The three samples showed the desired stoichiometry and good chemical homogeneity. The x-ray diffractograms indicate the presence of characteristic peaks of the martensite α' and α'' phases. The micrographs showed the presence of intra-grain needles characteristic of the martensitic phases α' and α'' . The micrographs and the results obtained in the measurements of x-ray diffraction corroborate with the results of the mechanical characterization, indicating low elastic modulus when compared to the alloys currently used in biomedical applications. (Financial Support: CNPq and FAPESP)