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Surface modifications in Ti-Zr alloys for use as dental implants

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The alloys used for making dental implants must display properties such as biocompatibility, biofunctionality and corrosion resistance. The titanium alloys are the most widely used due to their higher strength-to-density ratio, superior biocompatibility and corrosion resistance, good mechanical properties, low tensile modulus when compared to other metallic biomaterials. The main objective of this work was the preparation of titanium-zirconium alloys for implant dentistry. The work aimed to compare the results of melting during the various stages of furnace preparation and the corresponding mechanical and microstructural characterization of the obtained titanium-zirconium alloys. The prepared alloys showed a low carbon contamination, less than 0.03% by mass, indicating that clean melts can be obtained in the electric arc furnace with non-consumable electrode. Samples fused in the laboratory with the addition of 12% and 20% zirconium to titanium caused an increase in microhardness when compared to the commercial sample, which also has about 12% Zr.