304-205 Mechanical characterization of Ti–12Mo–13Nb alloy for biomedical application hot swaged and aged

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Beta titanium alloys were developed for biomedical applications due to the combination of its mechanical properties including low elasticity modulus, high strength, fatigue resistance, good ductility and with excellent corrosion resistance. With this perspective a metastable beta titanium alloy Ti-12Mo-13Nb was developed with the replacement of both vanadium and aluminum from the traditional alloy Ti-6Al-4V. This paper presents the microstructure, mechanical properties of the Ti-12Mo-13Nb hot swaged and aged at 500°C for 24h under high vacuum and then water quenched. The structure alloy was characterized by X-ray diffraction and transmission electron microscopy. Tensile tests were carried out at room temperature. The results show a microstructure consisting of a fine dispersed θ phase in a β matrix and good mechanical properties including low elastic modulus. The results indicate that Ti-12Mo-13Nb alloy can be a promising alternative for biomedical application.