



2nd International Conference on Dentistry

May 7-9, 2018 Rome, Italy

Advancing Small-Diameter Nano Crystalline Commercially Pure Titanium Dental Implant

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In the last decades, several researches have been carried out to improve the surface quality of dental implants without any change in the commercially pure titanium (cpTi). In the present work are presented results of the researches of dental implants of nanocrystalline CPTi grade 4 (Ti Hard). Mechanical tests of compression and fatigue, animal and human tests were used. The results showed that Ti Hard has higher mechanical strength than conventional microcrystalline cpTi grade 4 (TiG4) without loss of biocompatibility. Implants made with Ti Hard showed higher static compressive strength (588.9 ± 74.7 N) than implants made with TiG4 (308.8 ± 15.2 N) and higher fatigue strength for 5×10^6 cycles (280 N) than implants made with TiG4 (200 N). Based on this work it is possible to manufacture implants with small diameter without the need of ceramic materials such as zirconia, which does not present osseointegration.

Biography:

Carlos Nelson Elias completed degree in Metallurgy from the Military Engineering Institute and a PhD in Materials Science. He received twice an award Scientist from the State of Rio de Janeiro (2004 and 2008), researcher at the Foundation for Research Support of the State of Rio de Janeiro - Brazil. Has experience in Materials Science, with emphasis in Physical Metallurgy and Biomaterials. Researches with dental materials, dental implants, and modification of dental implants surfaces, endodontic instruments, orthodontic appliances, coronary stents and orthopedic prostheses

Works Quote: Web of Science 1014 citations, h-factor 18, Scopus: 1257 citations, h-factor 19; Google Scholar: 3170 citations, h-factor 29 and Mendely: 1569 citations, h factor 21.