5th INTERNATIONAL CONFERENCE ON DENTISTRY AND ORAL HEALTH

April 28-29, 2025 | VIENNA, AUSTRIA

Enrique Hernandez Sanchez

Instituto Politécnico Nacional, UPIBI, Laboratorio de Caracterización Física y Mecánica de Biomateriales, Avenida Acueducto s/n, Barrio La Laguna Ticomán, México City

Effect on Osteoarticular Cell Proliferation of the Ti-6Al-4V Alloy Surface Modified by Anodic Oxidation

Abstract: This investigation describes the formation of crystalline nanotubes of titanium oxide on the surface of a Ti-6Al-4V alloy and its biological evaluation. The formation of nanotubes was performed by the anodic oxidation technique with a constant work potential of 60 V but with diferent anodizing times of 10, 20, 30, 40, 50, and 60 min used to evaluate their e ects on the characteristics of the nanotubes and their biological activity. A mixture of ethylene glycol, water, and ammonium fluoride (NH4F) was used as the electrolytic fluid. Scanning electron microscopy (SEM) and X-ray difraction (XRD) were applied to determine the morphology and crystalline nature of the nanotubes, showing a well-defined matrix of nanotubes of titanium oxide with a crystalline structure and a diameter in the range of 52.5 ± 5.13 to 95 ± 11.92 nm. In contrast, the XRD patterns showed an increase of defined peaks that directly correlated with treatment times. Moreover, in vitro assays using an innovative cell culture device demonstrated that the inner diameter of the nanotubes directly correlated with cell proliferation.

Biography: Dr. Enrique Hernández Sánchez has completed his PhD at the age of 45 years from Instituto Politécnico Nacional-México and postdoctoral studies from metropolitan autonomous university of México in material science. He is the director of Laboratory for the Physical and Mechanical Characterization of Biomaterials of the Interdisciplinary Professional Unit of Biotechnology of the National Polytechnic Institute, México. He has published more than 45 papers in reputed journals in the biomaterials field and has been serving as reviewer in reputed journals.

doi.org/10.51219/URForum.2025.Enrique-Hernaindez-Sainchez

ISBN: 978-1-917892-00-1