World Academy of Science, Engineering and Technology
International Journal of Biotechnology and Bioengineering
Vol:8, No:02, 2014

Evaluation of the Efficacy of Titanium Alloy Dental Implants Coated by Bio-ceramic Apatite Wollastonite (Aw) and Hydroxyapatite (Ha) by Pulsed Laser Deposition

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Abstract : Introduction: After the initial enthusiasm and interest in hydroxyapatite products subsided due to dissolution of the coating and failure at the coating interface, this was a unique attempt to create a next generation of dental implant. Materials and Methods: The adhesion property of AW and HA coatings at various temperature by pulsed laser deposition was assessed on titanium plates. Moreover, AW/HA coated implants implanted in the femur of the rabbits was evaluated at various intervals. Results: Decohesion load was more for AW in scratch test and more bone formation around AW coated implants on histological evaluation. Discussion: AW coating by pulsed laser deposition was more adherent to the titanium surface and led to faster bone formation than HA. Conclusion: This experiment opined that AW coated by pulsed laser deposition seems to be a promising method in achieving bioactive coatings on titanium implants.

Keywords : surface coating, dental implants, osseo integration, biotechnology
Conference Title : ICABB 2014 : International Conference on Applied Bioscience and Biotechnology
Conference Location : Barcelona, Spain
Conference Dates : February 27-28, 2014