

Author: [ADVANCED](#)

Volume Page

Keyword: [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

Dental Materials Journal

Vol. 27 (2008) , No. 3 p.340-346

[\[Image PDF \(715K\)\]](#) [\[References\]](#)**Type I Collagen Grafting on Titanium Surfaces Using Low-temperature Glow Discharge**[Wei-Jen CHANG^{1\)}](#), [Keng-Liang OU^{2\)}](#), [Sheng-Yang LEE^{3\)}](#), [Jin-Yu CHEN^{3\)}](#), [Yoshimitsu ABIKO^{4\)}](#), [Che-Tong LIN^{3\)}](#) and [Haw-Ming HUANG^{2\)}](#)

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(Received June 17, 2007)

(Accepted September 5, 2007)

Abstract:

To improve the bioactivity of titanium surfaces, glow discharge was used to facilitate collagen grafting on titanium disks. Titanium test specimens were pre-treated by glow discharge fed with a mixture of argon and allylamine (AA) gases. Treated titanium disks were then grafted with type I collagen using glutaraldehyde (GA) as a crosslinking agent. The surfaces of collagen-grafted titanium disks were evaluated using scanning electron microscopy-energy dispersive spectroscopy (SEM-EDS) and X-ray photoelectron spectroscopy (XPS). MG-63 osteoblast-like cells were cultured on the grafted titanium surfaces to examine the effect of collagen grafting in terms of cell morphology. Our results demonstrated that collagen component elements could be detected on the titanium surfaces. Morphology of the cells on the surfaces of collagen-grafted titanium disks indicated differentiation. These findings showed that type I collagen could be successfully grafted onto titanium surfaces using glow discharge technology, with enhanced biofunctionality demonstrated on osteoblastic cells.

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To cite this article:

Wei-Jen CHANG, Keng-Liang OU, Sheng-Yang LEE, Jin-Yu CHEN, Yoshimitsu ABIKO, Che-Tong LIN and Haw-Ming HUANG. Type I Collagen Grafting on Titanium Surfaces Using Low-temperature Glow Discharge . Dent. Mater. J. 2008; 27: 340-346 .

doi:10.4012/dmj.27.340

JOI JST.JSTAGE/dmj/27.340

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