

Author: [ADVANCED](#)

Volume Page

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

ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

Dental Materials Journal

Vol. 29 (2010) , No. 2 p.154-159

[\[PDF \(1546K\)\]](#) [\[References\]](#)**Effects of sintering temperature on physical and compositional properties of α -tricalcium phosphate foam**[Koh-ichi UDOH](#)¹⁾²⁾, [Melvin L. MUNAR](#)¹⁾, [Michito MARUTA](#)¹⁾, [Shigeki MATSUYA](#)¹⁾³⁾
and [Kunio ISHIKAWA](#)¹⁾

1) Department of Biomaterials, Faculty of Dental Science, Kyushu University

2) Institute of Biomedical Research and Education, Yamaguchi University Science Research Center

3) Section of Bioengineering, Department of Dental Engineering, Fukuoka Dental College

(Received September 3, 2009)

(Accepted November 13, 2009)

Abstract:

Effects of sintering temperature on the physical and compositional properties of α -TCP foam fabricated using the polyurethane foam method were examined. When a polyurethane foam coated with α -TCP slurry was sintered at 1,400–1,550°C, α -TCP foam having basically the same fully interconnected porous structure was produced although shrinkage occurred with increasing sintering temperature. On porosity of the α -TCP foam, a higher foam porosity of 95% was obtained when sintered at 1,400°C as compared to the 90% porosity obtained at a higher sintering temperature of 1,550°C. Further, at 1,500°C or higher temperature, frame became dense with disappearance of micropores. On compressive strength, it increased from approximately 50 to 250 kPa when sintering temperature was increased from 1,400 to 1,550°C. Nonetheless, no compositional changes were observed even when the α -TCP foam was cooled in the furnace without quenching process. In light of the results obtained, it was concluded that α -TCP foam fabricated using the polyurethane method was useful as a bone substitute and/or scaffolding material for tissue engineering. Besides, α -TCP foam could be useful as a precursor for the fabrication of other calcium phosphate foams.

Key words:

[[PDF \(1546K\)](#)] [[References](#)]

Download Meta of Article [[Help](#)]

[RIS](#)

[BibTeX](#)

To cite this article:

Koh-ichi UDOH, Melvin L. MUNAR, Michito MARUTA, Shigeki MATSUYA and Kunio ISHIKAWA. Effects of sintering temperature on physical and compositional properties of α -tricalcium phosphate foam . Dent. Mater. J. 2010; 29: 154-159 .

doi:10.4012/dmj.2009-079

JOI JST.JSTAGE/dmj/2009-079

Copyright (c) 2010 The Japanese Society for Dental Materials and Devices



[Japan Science and Technology Information Aggregator, Electronic](#)

