ONLINE ISSN : 1881-1361
PRINT ISSN : 0287-4547

Dental Materials Journal
Vol. 26 (2007) , No. 3 p.451-456

[PDF (321K)] [References]

Controlled Release of Simvastatin Acid Using Cyclodextrin Inclusion System

Masao YOSHINARI[1)2)], Kenichi MATSUZAKA[1)3)], Sadamitsu HASHIMOTO[1)4)], Kazuyuki ISHIHARA[1)5)], Takashi INOUE[1)3)], Yutaka ODA[2)], Takaharu IDE[6)] and Teruo TANAKA[6)]

1) Oral Health Science Center HRC7, Tokyo Dental College
2) Department of Dental Materials Science, Tokyo Dental College
3) Department of Clinical Pathophysiology, Tokyo Dental College
4) Department of Pathology, Tokyo Dental College
5) Department of Microbiology, Tokyo Dental College
6) Department of Oral Anatomy and Cell Biology, Graduate School of Dental Sciences, Kyushu University

(Received December 8, 2006)
(Accepted February 6, 2007)

Abstract:
Simvastatin acid (SVA) has been reported to stimulate bone formation by increasing expression of BMP-2 in osteoblasts. Due to their multi-functional characteristics and bioadaptability, cyclodextrins (CDs) are capable of forming inclusion complexes with many drugs by including a whole drug molecule inside their cavity. In the present study, we prepared SVA/CD inclusion complex solutions with different pH values. These were then used to determine their SVA release behavior after coating on titanium substrates, as well as to clarify the characteristics of SVA/CD complexes *per se*. Results showed that the lower the pH value of the solution, the lower the release kinetics of SVA. Besides, the amount of crystalline complexes in the coatings increased with decrease in pH. These results suggested that the release rate of SVA depended on two factors: pH of the solution and concomitant crystallinity of the coating.

Key words:
Simvastatin acid, Cyclodextrin derivative, Controlled drug release

To cite this article:

Masao YOSHINARI, Kenichi MATSUZAKA, Sadamitsu HASHIMOTO, Kazuyuki ISHIHARA, Takashi INOUE, Yutaka ODA, Takaharu IDE and Teruo TANAKA. Controlled Release of Simvastatin Acid Using Cyclodextrin Inclusion System . Dent. Mater. J. 2007; 26: 451-456 .

---

doi:10.4012/dmj.26.451

JOI JST.JSTAGE/dmj/26.451