

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. 4 p.403-410

[\[PDF \(4017K\)\]](#) [\[References\]](#)**Effect of chondroitin sulfate-E on the osteoclastic differentiation of RAW264 cells**[Tatsuya MIYAZAKI](#)¹⁾²⁾, [Satoshi MIYAUCHI](#)²⁾, [Akira TAWADA](#)³⁾, [Takahisa ANADA](#)¹⁾
and [Osamu SUZUKI](#)¹⁾

1) Division of Craniofacial Function Engineering, Tohoku University Graduate School of Dentistry

2) PG Research Co., Ltd.

3) HYDROX, Inc.

(Received December 17, 2009)

(Accepted March 12, 2010)

Abstract:

The present study was designed to investigate whether chondroitin sulfate (CS)-E, a CS structural isomer variant, alter the differentiation of macrophage cell line RAW264 cells to osteoclast-like cells. CS-B, CS-E, low molecular weight CS-E, synthetic chondroitin polysulfate (CPS) and heparin significantly inhibited the formation of tartrate-resistant acid phosphatase-positive multinuclear cells and pit formation on calcium phosphate (CaP)-coated plates. CS-E pre-coated on the CaP plate also inhibited pit formation. Digestion of CS on the cell surface by chondroitinase showed no effect on the osteoclastic differentiation of RAW264 cells whereas inhibitory effect on the differentiation of osteoblastic cell line MC3T3-E1. On the other hand, exogenously added fluorescein-labeled CS-E directory bound to fibronectin and RAW264 cells. These results suggest that CS-E structure on the surface of osteoblasts or bone matrix binds to cell adhesion molecule such as integrin on the pre-osteoclastic cells and inhibits the differentiation into osteoclasts. CS-E may have a potential in treating bone defect if combined with CaP materials.

Key words:[Chondroitin sulfate](#), [Osteoclast](#), [Calcium phosphate](#)

To cite this article:

Tatsuya MIYAZAKI, Satoshi MIYAUCHI, Akira TAWADA, Takahisa ANADA and Osamu SUZUKI. Effect of chondroitin sulfate-E on the osteoclastic differentiation of RAW264 cells . Dent. Mater. J. 2010; 29: 403-410 .

doi:10.4012/dmj.2009-132

JOI JST.JSTAGE/dmj/2009-132

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

[View "Advance Publication" version \(July 2, 2010\).](#)



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

