

# Novel pro-resolving-medicines in periodontal regeneration

March 21 2014

---

Today during the 43rd Annual Meeting & Exhibition of the American Association for Dental Research, held in conjunction with the 38th Annual Meeting of the Canadian Association for Dental Research, Daniel Huy Nguyen, The Forsyth Institute, Cambridge, Mass., will present research titled "Novel Pro-Resolving-Medicines in Periodontal Regeneration."

Uncontrolled host defense mechanisms can significantly impede tissue engineering, regeneration and reconstruction of oral and craniofacial tissues. The anti-inflammatory and pro-resolving actions of lipoxins and resolvins have already been documented in several preclinical models of [inflammatory diseases](#) including [periodontal disease](#). The aim of this study was to evaluate the potential of Novel Pro-Resolving-Medicines (NPRMs) containing a lipoxin A4 (LXA4) analog in periodontal regeneration.

Polymorphonuclear leukocyte-derived NPRMs were developed to deliver the LXA4-analog to the site of surgery for the purpose of controlling inflammation and promoting tissue and [bone](#) growth. A mini-pig-model of chronic periodontitis was surgically created and progressed into chronic periodontal infrabony defects using wire ligatures. Sites (n=16) were treated with reflection of mucoperiosteal flaps, debridement of the periodontal defect and placement of 1) control, 2) NPRM, 3) LXA4 analog and 4) NPRM+LXA4 analog.

The animals were followed for three months. Clinical evaluations of

periodontal measures were obtained and bone blocks were harvested containing surgical sites and subjected to micro-CT, histological and histomorphometric analyses.

Periodic clinical evaluations revealed that LXA4-analog treated groups exhibited complete wound healing with reduced inflammation when compared to control and NRPM-alone. All treatments showed significant pocket depth reductions without any statistical difference. Hematoxylin and Eosin stained sections from NPRM+LXA4 showed a well-organized and newly-formed interproximal bone close to the notch marked at surgery. Linear measurement of the distance between notch and bone crest in NPRM+LXA4 group revealed significant bone fill compared to control ( $0.6 \pm 0.8\text{mm}$  vs.  $0.075 \pm 0.5\text{mm}$ , respectively; p

Citation: Novel pro-resolving-medicines in periodontal regeneration (2014, March 21) retrieved 27 April 2024 from

<https://medicalxpress.com/news/2014-03-pro-resolving-medicines-periodontal-regeneration.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.