TECHNOLOGY DESCRIPTION

The invention involves a new method for regenerating periodontal tissues by using the lipoxin analog 9,12-LXA4 as an adjunct to periodontal flap surgery. In chronic periodontal lesions with significant bone loss, periodontal flap surgery is performed to debride the area and remove deposits from the teeth. At the time of surgery, 9,12-LXA4 is applied to the surgical wound under the flap to regulate inflammation. In addition to dampening postsurgery inflammation, application of 9,12-LXA4 also promotes regeneration of tissues – including bone – in the periodontal pocket. Lipoxins are naturally-occurring lipid mediators derived from the fatty acid arachidonic acid. Their appearance in cases of inflammation signals the resolution of inflammation, and they have been seen in a variety of pathological settings, including allergy response(s), nephritis, asthma, gastritis, cystic fibrosis, diabetes and periodontitis. There are several classes of lipoxin analogs that have been synthesized since the initial discovery of lipoxins by Serhan et al. in the 1980s. Benzo-lipoxins have been found to be thermally and metabolically more stable than either of the endogenous lipoxins (LXA4 and LXB4). 9,12-LXA4 is a member of this class of benzo-lipoxins.

VALUE PROPOSITION

This new technology would be a superior therapeutic that promotes synthesis of substantial amounts of new endogenous material – like bone – not seen with any current periodontal treatment(s).

DEVELOPMENT STATUS

9,12-LXA4 has been tested in a large animal model (pig) of periodontal disease and has shown promising results in bone regeneration (circled areas in figure below) two weeks after initial surgery and only one application of the LXA4 analog. Further characterization in the pig model is planned, as well as human trials, following an IND application with the FDA.

POTENTIAL APPLICATIONS

- Resolution of inflammation
- Accelerated wound healing
- Tissue bioengineering – bone, connective tissue, blood vessels
- Oral and craniofacial reconstruction

COMMERCIAL MARKETS

Dental decay and periodontal disease are some of the most common diseases worldwide. A 2009-10 study shows that nearly 1 out of 2 American adults – aged 30 and older – have mild to severe periodontitis. These statistics elevate the prevalence of periodontal disease to the same levels as other chronic diseases like cardiovascular disease and diabetes. Given the current U.S. adult population, more than 64 million individuals could benefit from this new technology. 2011 numbers from the Centers for Medicare & Medicaid Services put annual spending on dental services at $108.4 billion.

Intellectual Property


Inventors

Dr. Thomas Van Dyke, DDS, PhD
Dr. Hatice Hasturk, DDS, PhD
Dr. Alpdogan Kantarci, DDS, PhD

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Inventors

Dr. Thomas Van Dyke, DDS, PhD
Dr. Hatice Hasturk, DDS, PhD
Dr. Alpdogan Kantarci, DDS, PhD

Contact

Sean Cotton, MEng
Technology Development Manager
T 617.892.8360
scotton@forsyth.org

Dr. Thomas Van Dyke, DDS, PhD
Vice President of Clinical & Translational Research
Chair, Department of Applied Oral Sciences
T 617.892.8503
tvandyke@forsyth.org