Salivary Biomarkers of Gingivitis: Information Important for Personalized Decision-Making

Alexandria, Va., USA – 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, Craig Miller, University of Kentucky, Lexington, will present research titled “Salivary Biomarkers of Gingivitis: Information Important for Personalized Decision-Making.”

Salivary biomarkers have been studied to help determine the presence, risk, and progression of periodontal disease. However, clinical translation of salivary biomarkers from bench to chairside requires studies that identify biomarkers associated with the continuum of phases between health and periodontal disease. Thus, the objective of this study was to identify salivary biomarkers associated with gingivitis.

Forty gingivitis subjects and 40 persons with gingival health who had more than 20 teeth were studied. Unstimulated saliva was collected from all subjects at baseline and seven to 30 days later, an additional sample was collected from gingivitis subjects seven to 30 days post-dental prophylaxis. Clinical parameters of periodontal disease were recorded at baseline and the final visit. Salivary concentrations were measured using Luminex®.

Gingivitis subjects had significantly higher bleeding on probing (BOP), plaque index and gingival index than healthy subjects (P<0.002). All gingivitis subjects showed a significant drop in BOP post-treatment, with 90% of subjects falling below 12% affected sites. Concentrations of MIP-1α and PGE₂ were significantly higher in the gingivitis group than the healthy group (2.4X and 2.1X, respectively; P<0.003). IL-1 was the only biomarker that showed a significant decrease in mean concentration after dental prophylaxis in the gingivitis group. Individuals with elevated levels of PGE₂ +/- the other biomarkers were > 35.3X more likely to have gingivitis as determined by odd ratio analyses (P=0.001).

These findings indicate that salivary PGE₂ has the potential for discriminating gingivitis from health. Also, patients who return to health clinically after dental prophylaxis appear to continue to produce inflammatory mediators for weeks. These findings have potential important implications on the decision-making process in the emerging field of personalized oral health care. This research is supported by NIGMS P20GM103538, UL1TR000117 and the IADR Innovation in Oral Health Award.

This is a summary of abstract #834, “Salivary Biomarkers of Gingivitis: Information Important for Personalized Decision-Making,” which will be presented on Friday, March 21, 2014, 10:45 a.m. – 12:15 p.m. at the Charlotte Convention Center, room 203A.

About the American Association for Dental Research
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