Detection of Analytes in Saliva: Correlates with Human Disease

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The broad objectives of this proposal are to determine if saliva contains biomarkers of human disease. Saliva is an easily obtained oral fluid that contains many diverse molecules. We were the first to detect a key inflammatory biomolecule, C-reactive protein, in the saliva and showed that levels of CRP were elevated in patients who had periodontal disease compared with healthy controls. This proposal focuses on the detection of biomarkers associated with inflammatory diseases. In Aim 1, we will determine if saliva contains analytes that correlate with periodontal disease. Levels of inflammatory biomarkers will be assessed to determine if a correlation with disease severity and progression exist. In Aim 2, we will determine if the salivary biomarker fingerprint of periodontal disease is modulated by rheumatoid arthritis, a systemic inflammatory disease. This study is important to determine if the biomarker profile of periodontal disease is accurate and specific. In Aim 3, we will determine if a salivary biomarker fingerprint of myocardial infarction (i.e., heart attack) exists. Whole expectorated saliva and parotid saliva will be collected from heart attack victims and analyzed for a panel of inflammatory and cardiac-specific biomarkers. Blood will also be obtained to identify salivary and serum biomarker correlates. Simultaneously, a point-of-care device for the analysis of saliva is being developed by our collaborators (under the direction of Dr. John McDevitt) at the University of Texas at Austin as a novel approach for the assessment of human disease in clinical and non-clinical setting. These studies could allow for earlier detection of common human diseases in out-patient settings.