Title: Saliva as a potential diagnostic medium: Identification and quantitation of fetuin-A secreted into saliva

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Description:
Blood is generally regarded as the best body fluid for evaluation of biomarkers, mirroring a person’s health status. However, blood sampling involves potential risks including discomfort, bruising, and infection, and may not be an ideal choice for screening of large populations, studies involving children, or anxious patients. As a diagnostic fluid, saliva offers advantages, since it can be obtained non-invasively. However, its use as a diagnostic fluid has been limited primarily due to our lack of understanding of the biomolecules present in saliva, and their relevance to the disease process. Recent salivary literature indicate that several analytes can be measured in saliva including certain drugs, antibodies, steroid hormones, such as cortisol, other non-peptide hormones, and inflammatory markers. The goal of this study was to validate a high-sensitive assay for fetuin-A in saliva, as an alternative medium to assess diabetes risk, in large epidemiological studies and among youth. We measured fetuin-A in saliva and serum in healthy adult volunteers, using a commercial ELISA kit (Biovendor LLC, Candler, NC). We demonstrate that saliva dilutions of 1:4 and 1:10 produced consistent, reliable, and reproducible results. The intra-assay and inter-assay coefficient of variation ranged from 2-8%, which was comparable with the fetuin-A assay in serum and comparable with other metabolites typically, assayed using ELISA technique. We report for the first time, that fetuin-A concentrations, in saliva, in healthy adults, ranged from 50 – 140 ng/ml. In comparison, serum fetuin-A concentrations, measured by ELISA ranged from 200-600 ug/ml. Since elevated serum fetuin-A concentrations have been identified as an independent risk factor for diabetes, salivary fetuin-A measurements make it feasible to expand such studies to childhood obesity and risk for type 2 diabetes.