Salivary Biosensors: Diagnosing the Nano-Way

Revolutionary genome-wide research tools have spawned remarkable advances in human genomics and proteomics. Human saliva contains a repertoire of proteins, glycoproteins, lipids, metabolites, RNA & genomic information, making up some diagnostic analytes inherent in other body fluids like blood, CSF & urine. The possibility to identify and measure biomarkers in saliva via biosensors opens the avenue for diagnosis, early detection, monitoring progression of disease and compliance to treatment modalities.

CLINICAL APPLICATIONS
- Detection and Measurement of Drugs (e.g. marijuana, cocaine, alcohol)
- Detection and Measurement of Hormones
- Detection of Cardiovascular Diseases
- Detection of Oral Cancer
- Viral Infections
- Early Diabeties

ADVANTAGES
- Non-invasive
- Ease of collection
- Early detection of malignancies
- Bioterrorism surveillance

Transport of proteins and ions from serum

Oral Fluid NanoSensor Test
Vantis-biosensor

Fluorescence signatures of a control and nine protein markers of CVD

Lab-on-a-chip - a device that integrates several lab functions on a single chip millimeters in size

Integrated probe for identification of pathogen embedded in the chip

For a valid gene expression measurement the perfect match stick and the mismatch does not

Various biosensing approaches for the detection of salivary biomarkers: (a) Local Surface Plasmon Resonance; (b) Enzyme sensor; (c) Surface Plasmon Resonance; (d) DNA chip

Salivary biosensors could propel the oral Physician's entry into primary health care