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Saliva Biomarkers for use in Alzheimer's Disease

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Current therapeutic strategies in Alzheimer's disease (AD) are focus on the elimination of Aβ plaques. However, clinical benefits are poor as they are applied when the disease is already advanced. To succeed, all these approaches and future emerging therapies should be applied at a very early stage of the disease (before clinical symptoms appear).

We have discovered and preliminary tested in a significant number of patients an accurate and non-invasive tool to identify candidates that suffer from mild cognitive impairment (MCI) and AD. This finding may revolutionize the fields of diagnostics, pharmaceutical development and decision making for patient care. We were able to detect a specific molecule (biomarker) in saliva that may help to identify those patients with MCI and/or AD from healthy status.

Detecting pathologies at their earliest stages can significantly affect patient discomfort, prognosis, therapeutic intervention, survival rates, and recurrence. Diagnosis and monitoring often require painful invasive procedures like biopsies and repeated blood draws, adding undue stress to an already unpleasant experience. What was once deemed merely a digestive fluid is now being considered a biological fluid capable of communicating a person's current health status. Continued efforts in this area may lead to the development of clinically acceptable assays throughout the body to detect and monitor separate disease states. Here we review the use of saliva in molecular diagnostics and its potential future as a preferred mode of patient evaluation.

First, so as for microbes to be considered disease-specific biomarkers, they need to be associated directly with, but not necessarily the explanation for , the condition in question. First, if microbial biomarkers accurately represent health status, a favorable therapeutic result will coincide with their reversal or eradication. In other words, the concentration or detectability of the associated biomarkers will diminish as a patient's condition improves. Thus far, most studies utilizing the aforementioned methods have focused on certain oral sites, including subgingival plaque, tongue epithelial scrapings, and buccal mucosa, to work out the role of bacteria in oral health and disease. the subsequent sections discuss early culture-based methods also as contemporary molecular methods as they apply to salivary diagnostics and microbial biomarker development. the worldwide burden of both acute and chronic infectious diseases continues to extend.

Reliable yet noninvasive and simply accessible diagnostic methods aren't available for many infections, and as a result, many patients experience poor health outcomes. Saliva-based diagnostic methods could solve these challenges and are established surely infections, but continued work is important.

Accurate and reliable early-stage disease detection combined with noninvasive modes of sample collection is that the grail of molecular diagnostics. Saliva may be a biofluid potentially rich in diagnostic indicators for both oral and systemic disorders. In recent years, numerous methodologies have emerged for evaluating the microbial and molecular constituency of saliva.

As detailed above, unique saliva-based biomarker profiles are often correlated to certain diseases and should provide critical information regarding a person's current physiologic state. Discovering, validating, and understanding saliva-based biomarkers could have a substantial role in establishing oral fluids as a reputable diagnostic biofluid. One objective shared among researchers and clinicians alike is to noninvasively assess and monitor the physiological status of healthy and diseased individuals. The exploration and establishment of saliva as a diagnostic tool may fulfill this objective by providing a secure and effective means by which to guage patients and personalize their treatment.

The recent advances and main challenges employed within the detection and quantification of salivary biomarkers by separation, immunological and electrochemical techniques and highlight the longer term perspectives of the point-of-care devices in diagnosing local or systemic pathologies. Saliva has been analyzed for diagnostic purposes .Salivary biomarkers is useful in the diagnosis of variety of diseases .It is a non-invasive, uncomplicated, diagnostic tool. Oral cancer that can be monitored by assaying salivary biomarkers opens to a wider view. More studies on salivary biomarkers may prove greater insight in to various systemic diseases in human population.

Here, we review the prevailing literature on salivary biomarkers and examine their validity in diagnosing and monitoring neurodegenerative and neuropsychiatric disorders like autism and Alzheimer's, Parkinson's and Huntington's chorea . supported the available research, amyloid beta peptide, tau protein, lactoferrin, alpha-synuclein, DJ-1 protein, chromogranin A, huntingtin protein, DNA methylation disruptions, and micro-RNA profiles display a reliable degree of consistency and validity as disease biomarkers.

Analysis of inflammatory biomarkers in saliva could offer a beautiful opportunity for the diagnosis of various systemic conditions specifically in epidemiological surveys. The aim of this study was to research if certain salivary biomarkers might be used for detection of common systemic diseases.

Some limitations that has got to be considered when interpreting the findings: the medical status is predicated on the participantś self-assessment and no verification of the answers from the anamnestic data. there's a clear risk for false negatives, as an example undiagnosed diseases. additionally, thanks to the massive number of comparisons in reference to different systemic conditions, compensation for this may eliminate all significances. However, this study is supposed as a survey to get hypotheses.

With the advancements in molecular diagnostics, days aren't thus far when our health status and sampling are going to be pain free and convenient. However, still the large challenge is to determine a typical, accurate and validated method to spot disease specific markers in saliva. Researchers are working to develop bio sensors capable of identifying salivary bio markers with high sensitivity and specificity. This is able to be a fantastic leap in health sector, reducing the diagnostic burden financially and creating new clinical opportunities of early diagnosis and prompt treatment.

In this presentation, the summary all our recent discoveries in the discovery and validation of the saliva biomarker and will compare them with other recently reported biomarkers such as blood biomarkers.

Our results may represent a giant step forward for developing more accessible, less invasive, and easier predictive and diagnostic methods, thus making sense to the current efforts being conducted by the pharmaceutical industry. Additionally, it may help to understand patterns of cognitive decline and to discover new therapeutic targets.