

Editorial

Saliva Biomonitoring: The Great Challenge for a Neglected Medical Branch

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Third millennium medicine will face difficult challenges, as fighting cancers and cardiovascular diseases and making therapies affordable for all people, among which perform early, accurate and non-invasive diagnoses will be of outstanding importance: ideally, the improvement of diagnostic methods will positively affect prevention, monitoring therapy and prognosis; furthermore, the development of more reliable diagnostic methods will produce significant benefits for economic systems, lowering the costs of clinical management. To better understand the importance of early diagnosis, both from a medical and economic point of view, Oral Squamous Cell Carcinoma (OSCC) can be taken as example: a 5-year mortality for early stages OSCC (stages 1 or 2) ranges from 5% to 27% and its therapeutic cost is estimated around 300 Euros; on the contrary, advanced stages (stages 3 and 4) have a dramatic drop down of the prognosis, with 65% to 94% mortality and its therapeutic cost is estimated around 6000 euro [1].

From this point of view, salivary diagnosis is considered as a promising diagnostic method: saliva is an incredible body fluid which contains proteins, electrolytes, hormones, infectious agents, antibodies, cytokines, cells, thus the rationale upon which salivary biomarkers can be interesting and promising stands in the presence of such biomarkers in relation to the presence/absence of specific diseases/conditions or to their variation, both for local and systemic conditions [2].

Recently, many studies tried to evaluate saliva biomarkers in local and systemic diseases: considering the use of saliva as diagnostic tool for local pathology, many studies highlighted the possibility to use salivary biomarkers for serious and live threatening local diseases (i.e., oral cancer, Sjogren's syndrome), as well as local dental diseases (i.e., caries and periodontal disease); furthermore, many systemic diseases and conditions, as autoimmune diseases, bone turnover, cardiovascular disease, endocrines diseases, monitoring drug levels, forensic medicine, genetic disorders, bacterial infections, viral

infections, fungal infections, tumors, occupational and environmental medicine, psychological research, renal diseases, can all benefit from salivary diagnosis. Recently, the application of genomics and proteomics techniques to saliva has enabled the development of more sensitive and specific tests. Never the less, such innovative diagnostic tools often suffer from the need to be accompanied by additional diagnostic tests to better define the extension, location and degree of pathologies [3-5].

Considering pros and cons of diagnostic salivary biomarkers, their points of force are the non-invasiveness technique, the good compliance for all ages of subjects, the possible correlation with some blood biomarkers and the easy transportation of the samples. On the other hand, possible drawbacks comes from the high cost of the diagnostic tools and machines, the circadian rhythm of saliva, lack of correlation between certain blood markers and saliva, insufficient sensitivity/specificity of some detection methods and the need for further diagnostic tests for ascertaining the diagnosis. These disadvantages, up to now, make salivary diagnostics a scientific reality still far from clinical practice.

Considering the enormous potentials of salivary biomarkers, in the next years, a great effort should be spent in developing more sensitive and affordable diagnostic tools in order to allow the passage from bench to bed-side.

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