

## **EVALUATION OF THE OVERALL METABOLIC EFFECT OF NON-SURGICAL PERIODONTAL THERAPY IN CHRONIC PERIODONTITIS PATIENTS**

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### **Introduction:**

Metabolomics is a newly emerging field of research dealing with the high-throughput identification and quantification of small-molecule metabolites in biological fluids. The metabolomic analysis of saliva has demonstrated ability in discriminating patients with chronic periodontitis from healthy subjects by identifying specific signature of the disease. There are no data concerning the effect of scaling and root planing on individual metabolic phenotype.

### **Aims:**

Therefore, in this study the influence of scaling and root planing was determined on salivary metabolic spectra from generalized chronic periodontitis (GCP) patients, in relation to clinical parameters.

### **Methods:**

A total of 25 GCP subjects had periodontal clinical parameters measured and unstimulated saliva samples collected at baseline and 3 months after conventional staged non-surgical periodontal therapy. Metabolic profiling of saliva was performed with nuclear magnetic resonance (NMR), followed by a multilevel partial least square (PLS) approach in order to highlight the within-subject changes introduced by the therapy.

### **Results:**

The non-surgical periodontal therapy led to a statistically significant improvement in all the clinical parameters ( $P < 0.001$ ). The accuracy of the statistical model in discriminating the two time points of each patient was 92%. Despite the almost perfect separation in the multivariate analysis, no metabolite appeared statistically significant in the univariate analysis, even if some metabolites were clearly higher or lower in the pre versus post-therapy.

### **Conclusions:**

Based on these preliminary data, it can be hypothesized that the good classification accuracy for the multivariate analysis comes from a combination of variations of metabolites that is comprehensively discriminant, but none of them is per se statistically different. The complex multifactorial etiology of periodontitis will require clinical trials with larger sample size in order to add consistency and external validity to these results.