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Diagnostic role of salivary and GCF nitrite, nitrate and nitric oxide to distinguish healthy periodontium from gingivitis and periodontitis

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Background: Diagnosis of subclinical and early stage clinical periodontal dysfunction could prevent from farther socioeconomic burden and decrease from total DALY scores related to the oral conditions. Diagnostic applicability of nitric oxide and its end-metabolites in periodontal tissue health and disease is assessed.

Materials & Methods: Forty two patients were enrolled and divided into three groups: a healthy group (GI<1, CAL<1), b: gingivitis (GI>1, CAL>1) and c: periodontitis (CAL>1) with 14 patients in each group. Unstimulated saliva and GCF were collected. Samples were evaluated for nitrite, nitrate and total nitric oxide contents with the ELISA method. In addition, CAL, GI, PI, DMFT and BI scores were also recorded.

Results: Except for GCF nitrite content (p=0. 89), there was an increasing trend for measured biomarkers in both saliva and GCF (Periodontitis>gingivitis>healthy periodontium, P<0. 05). Data remained stable after simultaneous adjustment for DMFT and BI scores as confounding factors. Sensitivity, specificity, positive predictive value, negative predictive value, cut point and p value were as the followings: GCF nitrate (0. 71, 0. 11, 0. 29, 0. 43, 4. 97, P=0. 04), nitric oxide GCF (0. 64, 0. 18, 0. 28, 0. 5, 10. 12, P=0. 04), nitrite saliva (0. 93, 0. 96, 0. 93, 0. 96, 123. 48, P<0. 001), salivary nitrate (0. 93, 0. 96, 0. 93, 0. 96, 123. 6, P<0. 001), salivary nitric oxide (0. 93, 0. 96, 0. 93, 0. 96, 246. 65, P<0. 001).

Conclusion: Our results revealed that no plays an important role in the process of destruction of periodontal tissues. Within the limitation of our study, detecting no biomarker and its end metabolites in saliva is of more value to assess the periodontal health comparing to GCF.

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