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Salivary Biomarkers: New Frontiers in Periodontitis Diagnosis

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Objectives The aim of this study was to investigate new periodontal diagnosis analyzing salivary biomarkers in periodontitis patients. The study is intended to reveal novel diagnosis factors of periodontal disease analyzing correlation between periodontitis patients with healthy patients comparing salivary biomarkers evolution.

Methods The study goal is to explore new methods for periodontal disease diagnosis by analyzing salivary biomarkers. Various databases, including Elsevier, Ncbi, Wiley Online Library, PubMed, Google Scholar. The search focused on articles published between 2020 and 2024 using keywords and Medical Subject Headings such as "Salivary biomarkers periodontitis", "Periodontitis diagnosis", "Salivary biomarkers," and "Salivary interleukins." All 30 articles included in the study were in English.

Results Salivary MMP-9 and S100A8 are strong biomarkers associated with periodontitis ($p < 0.05$), displaying high screening ability (AUC = 0.86) for detection. Post-treatment, S100A8 significantly decreased by 83.7%, surpassing MMP-9 in monitoring treatment efficacy. Furthermore, salivary IL-6 levels were elevated in periodontitis ($p < 0.001$), correlating with disease severity parameters (CAL, PPD, FMBS). Salivary IL-1 β , IL-6, sCD40L, and TNF- α offer diagnostic promise, with IL-1 β exhibiting the highest diagnostic value (AUC = 0.88) for distinguishing healthy, gingivitis, and periodontitis subjects.

Conclusions This review shows that salivary S100A8 and MMP-9 are effective biomarkers to detect periodontitis, especially S100A8 which declines in a significant way after periodontal treatment.

Severe cases of periodontitis have prominent levels of salivary IL-6 showing IL-6 role as a marker of disease severity. Periodontitis condition can be diagnosed testing the combination of IL-1 β , IL-6, sCD40L, and TNF- α in saliva chiefly by IL-1 β (AUC = 0.88). Salivary biomarkers testing approach will innovate periodontal diagnosis approaches