

SALIVARY DETECTION OF *Porphyromonas gingivalis* VIA PCR AND ITS ASSOCIATION WITH PERIODONTITIS IN SRI LANKA

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Porphyromonas gingivalis, a keystone periodontal pathogen, drives oral microbial dysbiosis and tissue destruction in periodontitis. While current subgingival diagnostics for periodontitis are invasive and limited, saliva offers a potential alternative for microbe-based diagnosis for this disease. For the first time in a Sri Lankan cohort, this study emphasises the utilisation of PCR-based salivary detection of *P. gingivalis* and its association with periodontitis. In this study, unstimulated saliva from 102 subjects (80 periodontitis patients and 22 healthy controls) were collected at the Dental Teaching Hospital, Peradeniya. Using an optimised DNA extraction protocol followed by conventional PCR targeting the *16S rRNA* gene of *P. gingivalis*, pathogen detection was achieved with sequence validation using NCBI BLAST confirming specificity. Prevalence of *P. gingivalis* was 50.0% in periodontitis patients versus 22.7% in healthy controls ($p = 0.026$). This represents a 2.2-fold higher occurrence in periodontitis. Multivariate analysis revealed strong associations between salivary detection and periodontitis status (adjusted OR = 3.98, 95% CI: 1.25 – 14.90) and increasing age (OR = 1.14/year, 95% CI: 1.02 – 1.31). This analysis revealed a noteworthy pattern among middle-aged subjects, showing increased detection rates approaching significance (OR = 3.13, $p = 0.068$), which should be studied further. These findings demonstrate that salivary PCR effectively distinguishes periodontitis patients and correlates with established risk factors such as age. This work lays the foundation for the process of developing non-invasive diagnostic tools using *qPCR* or *FimA* genotyping. Thus, it establishes salivary PCR as a viable diagnostic strategy and reveals unique epidemiological trends that could inform targeted preventive care for the Sri Lankan population.

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