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Oral Immune Profile and Dental Decay: a Case-Control Study

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Objectives Dental decay is the most common oral disease worldwide, linked to the onset of oral dysbiosis. However, the inflammatory changes associated with this dysbiosis remain still poorly explored. The aim of this study was to compare the immune salivary changes in healthy young adults with or without active carious lesions using an electrochemiluminescence ELISA technology.

Methods Thirty-four patients (18-30 years old) underwent oral exams and provided unstimulated saliva samples. A multiplex ELISA assay from MSD technology was used to detect nine salivary cytokines (IL-1 β , IL-2, IL-4, IL-6, IL-10, IL-12p70, IL-17A, IFN- γ , TNF- α ,) with femtogram-level sensitivity. The patients were divided into two groups based on the absence (Gr1, n=17) or presence (Gr2, n=17) of active carious lesions. Statistical analyses of the data were done using Mann-Whitney test for quantitative variables and Fisher exact test for qualitative variables.

Results No difference was observed between the two groups regarding average age (25.35 \pm 3.22 vs 23.71 \pm 3.55, p=0.193), salivary flow (p=0.889), plaque index (p=0.216) and gingival inflammation (p=0.481). Salivary concentration of all cytokines was higher in patients with caries, the difference was significant for five of them: IL-2 (p=0.041), IL-6 (p=0.048), IL-10 (p=0.013), IFN- γ (p=0.024) and TNF- α (p=0.016).

Conclusions Oral health reflects a complex interplay between the host immune response and diverse microbial communities within distinct oral niches. This study explores the potential of salivary cytokines as biomarkers for caries development. Saliva's accessibility and non-invasiveness for collection make it a valuable tool. We aim to establish a comprehensive oral immune profile to identify specific salivary signatures associated with oral health and disease.