

Salivary Transcriptomic Diagnostics: Findings from a Study in Sri Lanka on Oral Squamous Cell Carcinoma, Oral Submucous Fibrosis, and Oral Lichen Planus

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Oral cancers, encompassing tumors in the oral cavity, pharynx, and salivary glands, are increasingly prevalent globally, with oral squamous cell carcinoma (OSCC) representing over 90% of cases. Oral Potentially Malignant Disorders (OPMDs) are conditions affecting the oral mucosa, posing an increased risk of malignancy. These disorders often manifest as visible changes in oral mucosal color or thickness, detectable during oral examination. Early identification of OPMDs is crucial to minimize the risk of malignant transformation. This study evaluated the levels of extracellular *IL-1 β* , *IL-8*, *SAT*, *S100P*, and *OAZ1* mRNAs in saliva as a potential method for early detection of OSCC and selected OPMDs. The study involved nine OSCC, eleven Oral Lichen Planus (OLP), ten Oral Submucous Fibrosis (OSF) patients, and ten healthy controls. Expression levels of the aforementioned mRNAs were assessed in saliva samples using real-time reverse transcription polymerase chain reaction (RT-PCR) with sequence-specific primers. Statistical analyses and diagram creation were conducted using GraphPad Prism 4.0 software. As the dataset is not normally distributed, the Wilcoxon signed-rank test was utilized for two specific comparisons: OSCC versus controls and controls versus OPMD. Efficiently combining multiple significant biomarkers provides more discriminate ability when compared to single or not significant markers. Receiver operating characteristic curve (ROC) curve analysis determined the effectiveness of these biomarkers in OSCC and selected OPMD detection. The study found that when these five biomarkers were used together, they provided a 90% predictive probability for OLP patients (AUC = 0.945, p = 0.001), 80% for OSF patients (AUC = 0.96, p = 0.001), and an impressive 100% for OSCC patients (AUC = 1.000, p = 0.000). This underscores the efficacy of salivary transcriptome diagnostics in OSCC detection, offering a powerful, efficient, and reliable tool for early cancer detection.

Keywords: Saliva, Biomarkers, Oral Cancer, mRNA, Gene Expression Analysis

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