

Study on Biochemical Perspectives of Antioxidant and Oxidant Indices in Oral Squamous Cell Carcinomas (OSCCs) and Other Oral Potentially Malignant Disorders (OPMDs)

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ABSTRACT:

Background-Oxidative stress in biological systems is a complex process that is characterized by an inequity between the production of free radicals (FR) and the ability of the body to eliminate these reactive species through the use of endogenous and exogenous antioxidants. The pathogenesis of oral cancer has been linked to alterations in the antioxidant defense mechanism.

Materials & Methods- Saliva from twenty patients with OSCC, forty patients with OPMDs and twenty healthy subjects in the age group of thirty five to seventy five years was analyzed for levels of nitric oxide, vitamin C, total sialic acid and GSH using spectrophotometry.

Results - The levels of salivary vitamin C and glutathione were significantly reduced and those of nitric oxide and sialic acid were raised in patients having OPMD's and oral squamous cell carcinoma. The co-relation between the AOI and calculated ratios indicated that antioxidant potential of the saliva was decreased and was statistically related to ($p < 0.001$) development of OPMD, which further may progress to oral cancer, notably OSCC.

Conclusion- The current study demonstrated that the estimation of vitamin C, nitric oxide, sialic acid and GSH in saliva could be used as an early potential diagnostic biomarker in the screening of oral cancer. The antioxidant-oxidant indices (AOI's) can be used as a reliable tool for predicting the oral microenvironment and its predicted change towards development of oral cancer. This optimized developed protocol was also found to be simple and cost effective.

KEYWORDS: oral cancer; saliva; AOI; spectrophotometry