

**ANTIOXIDANT LEVELS IN RELATION TO MALIGNANT
TRANSFORMATION OF ORAL SUBMUCOUS FIBROSIS (OSF)
A PRELIMINARY STUDY**

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Oral sub-mucous fibrosis (OSF) is a highly potent pre-cancerous condition characterised by progressive fibrosis of the sub-mucosal tissues. Biochemical cancer predictive markers for the malignant transformation of OSF into oral cancer have not been identified yet. Reactive oxygen species (ROS) are well known to be cytotoxic and have been implicated in the etiology of cancer through DNA damage. Antioxidants act as ROS scavenging systems in cells which counteract the oxidative damage caused by ROS. Therefore, we hypothesize that the levels of blood antioxidants can be used as a measure of oxidative stress caused by ROS, which would reflect the malignant transformation potential of OSF into oral cancer. The expected hierarchy of malignant transformation (decreasing order of antioxidant capacity) is as follows; normal controls, betel chewers, OSF patients without dysplasia, OSF patients with dysplasia, oral cancer patients. The objectives of this study were to analyze and compare the total antioxidant levels of appropriate subjects in the relevant clinical and histopathological stage, and to determine the relationship between antioxidant levels and the stage of malignant transformation of OSF into oral cancer.

Blood plasma of 121 patients from the five categories mentioned attending the Oral Medicine Clinic, Faculty of Dental Sciences were analyzed for antioxidant levels using the spectrophotometric assays (2,2-diphenyl-1-picrylhydrazyl), radical scavenging assay, ferric reducing ability of plasma assay, thiobarbituric acid reactive substances assay, and total protein thiol content (5,5'-dithiobis-2-nitrobenzoic acid) assay. The data were analyzed using One Way ANOVA in SPSS 17.

The antioxidant levels varied. Betel chewers showed lower antioxidant levels than normal-controls. An increase in the antioxidant levels with the malignant transformation of OSF into oral cancer was noted indicating that the body may be maintaining higher levels of endogenous antioxidants when compared to normal cells to counteract the effects of ROS produced by cancer cells.

Thus, an imbalance in the antioxidant levels in relation to malignant transformation is evident. However, to determine the exact relationship between antioxidant levels and malignant transformation potential, factors such as the dietary habits of the patients and their medications that could contribute to the total antioxidant levels should be evaluated.

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