# Evaluation of Epithelial and Fibroblast Senescence in Oral Submucous Fibrosis Using a Novel Senescent Marker DEP-1

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Cellular senescence is a mechanism which has the potential to promote or suppress malignant transformation. Grade of oral epithelial dysplasia (OED) is being used to assess the probability of malignant transformation with variable success. The aim of this study was to evaluate the relationship between expression of senescence in the epithelium and fibroblasts at different grades of OED in oral submucous fibrosis (OSF) using the senescent marker-Density Enhanced Phosphatase-1 (DEP-1). Five micrometer sections of 106 formalin fixed- paraffin embedded OSF tissues were stained with anti-DEP-1 antibody according to the manufacturers' instructions. Quantification was done by counting fibroblasts with cytoplasmic and membranous positivity for DEP-1 and negative fibroblasts in 5 high power fields to obtain a mean value and by recording presence or absence of DEP-1 positivity of the epithelium. Statistical analysis (Chi square, ANOVA) was performed considering $p<0.05$ as significant. The results revealed that there is a statistically significant reduction ($x^2=7.019^a$, $p=0.043$) in DEP-1 expression in the epithelium in OSF cases with moderate and severe epithelial dysplasia (n=12/22) when compared to OSF cases without dysplasia and mild epithelial dysplasia (n=55/84). However, the number of senescent fibroblasts in the lamina propria did not show a significant relationship with OED ($p>0.05$). During early stages of OED and in cases of OSF without dysplasia, occurrence of senescence in the epithelium could be a mechanism which suppresses malignant transformation. In later stages of OED, epithelial cells which escapes the state of senescence may promote or/ undergo malignant transformation. Thus it could be worthwhile to explore further if DEP-1 expression in the epithelium is a more reliable predictor to identify OSF that may not undergo malignant transformation than the grade of OED.

**Keywords:** Senescence, Oral submucous fibrosis, Oral epithelial dysplasia, Density enhanced phosphatase-1

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