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Correlation of periodontal health status with salivary matrix metalloproteinase-9 levels and total salivary peroxidase activities in smokers and non smokers (a comparative study)

A thesis

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Abstract

Background Periodontal diseases are inflammatory diseases affecting the tissues supporting the teeth. Tobacco smoking is known as a serious global public health problem, also it considered as an important risk factor for oral diseases. Smoking had potential effects on the bacterial challenge, host's periodontal tissues and immuno-inflammatory response .Smoking is well known to be the leading environmental factor that is closely related not only with the risk but also with the prognosis of periodontitis.

Aim of the study The purposes of this study were to evaluate the effects of smoking on: periodontal health status ,salivary matrix metalloproteinase-9 levels and on the activities of total salivary peroxidase ,also this study aimed to compare the levels of matrix metalloproteinase -9 and the activities of total salivary peroxidase in control and chronic periodontitis groups, and to test the correlations between these biomarkers and the clinical periodontal parameters in each group.

Material and method Five milliliters of un-stimulated salivary samples were collected from eighty subjects; systemically healthy males with an age range (35-55) years. The subjects were divided into four groups {20 control non smokers subjects (group 1), 20 control smokers subjects (group 2), 20 chronic periodontitis non smokers subjects (group 3) and 20 chronic periodontitis smokers subjects (group 4)}.Clinical periodontal parameters which include (plaque index, gingival index, bleeding on probing, probing pocket depth and clinical attachment level) were recorded for each subject. Salivary samples centrifuged and kept frozen till being analyzed for matrix metalloproteinase -9 levels and total salivary peroxidase activities.

Results The results of control groups showed that there were non significant differences in plaque index between smokers and non smokers groups but smokers associated with lower gingival index than non smokers. The results of chronic periodontitis groups also showed that there were non significant differences in plaque index between smokers and non smokers groups ,also smokers associated with lower gingival index and bleeding on probing than non smokers ;while they associated with greater probing pocket depth and clinical attachment level than non smokers .The mean of matrix metalloproteinase -9 levels were significantly lower in control non-smokers group compared to chronic periodontitis groups ,also the activities of total salivary peroxidase were significantly higher in chronic periodontitis groups when compared to control groups. Chronic periodontitis smokers group associated with higher matrix metalloproteinase -9 levels and lower total salivary peroxidase activities than chronic periodontitis non smokers group. Matrix metalloproteinase -9 levels and total salivary peroxidase activities correlated with (bleeding on probing, probing pocket depth and clinical attachment level) in chronic periodontitis groups.

Conclusion Smoking associated with increased levels of salivary matrix metalloproteinase -9 and it has a retardation effect on total salivary peroxidase activities in chronic periodontitis patients and subjects who had healthy periodontium.