

Republic of Iraq
Ministry of Higher Education
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University of Baghdad
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Oral Health Status in Relation to Salivary Antioxidants among a Group of Lead- Acid Batteries Factory Workers

**A Thesis Submitted to the College of Dentistry, University of
Baghdad in Partial Fulfillment of the Requirements for the
Degree of Master Science in Preventive Dentistry**

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2014

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Abstract

Background: Lead pollution that had many hazardous effects on the general health as well as oral health. Thus, lead-acid battery workers may be affected by different types of related diseases.

Aim of study: This study was conducted to assess selected salivary antioxidants and their relation with dental caries, oral hygiene status and periodontal diseases among lead acid battery factory workers in comparison with non-exposed group.

Materials and methods: The study group consists of thirty five males with an age range (35-45) years who worked in Babylon lead acid battery factory in Baghdad city and matching group (age, gender and socioeconomic status) that not exposed to lead were selected as a control. Plaque index of Silness and Loe and calculus index of Ramfjord were used for recording oral hygiene status. Periodontal diseases were evaluated by using the gingival index of Loe and silness and clinical attachment loss according to Ramfjord index. Dental caries was recorded by using DMFS index (WHO, 1987). Stimulated salivary samples were collected under standardized condition and chemically analyzed to detect salivary antioxidants (uric acid, total protein, catalase and glutathione peroxidase enzymes).

Results: The antioxidants levels (uric acid, catalase and glutathione peroxidase enzymes) were higher among the study group (2.67 ± 0.87 mg/dl, 21.84 ± 0.65 U/ml, 0.29 ± 0.18 U/ml respectively) than the control group (2.54 ± 0.92 mg/dl, 19.87 ± 1.07 U/ml, 0.21 ± 0.13 U/ml respectively) with non-significant difference for uric acid, highly significant difference for catalase enzyme and significant for glutathione peroxidase enzymes, whereas total protein level was significantly lower among the study group (59.26 ± 11.70 mg/dl) than the control group (66.92 ± 13.11 mg/dl). Salivary flow rate was found to be not significant between both groups.

The mean values of plaque, calculus, gingival indices and clinical attachment loss were significantly higher among the study group (1.06 ± 0.29 , 0.93 ± 0.43 , 1.25 ± 0.29 , 2.04 ± 0.74 respectively) than the control group (0.92 ± 0.26 , 0.16 ± 0.13 , 0.85 ± 0.28 , 1.09 ± 0.46 respectively). DMFS values were significantly higher among study group (25.69 ± 13.52) compared to control group (13.89 ± 11.36).

Plaque index showed positive strong highly significant correlation with the gingival index in both groups and positive non-significant correlations with clinical attachment loss in both groups, while a positive weak correlation was recorded with the calculus index with statistically highly significant for study group and non-significant for control groups. Calculus index showed positive correlations with clinical attachment loss in both groups with highly significant difference in the study group and non-significant difference in the control group and positive weak significant correlations with gingival index in both groups. Most of the correlations between salivary antioxidants with oral hygiene and periodontal diseases were weak non-significant in both groups. All the correlations between salivary antioxidants and dental carries (DMFS) found to be weak non-significant for both groups.

Conclusion: Selected salivary antioxidants were found to have little effects on the oral health status of the study group. Although dental caries and periodontal diseases revealed higher percentage of occurrence among lead exposed workers. Therefore, special oral as well as general health preventive and educational programs are needed for them.