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**Salivary Tumor Marker CA15-3 and Selected
Elements in Relation to Oral Health Status
among a Group of Iraqi Breast Cancer Women**

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Abstract

Background: Breast cancer is the commonest type of malignancy worldwide and in Iraq. It is a serious disease that affects the general health and cause systemic changes that affect the physical and chemical properties of saliva leading to adverse effects on oral health.

Aims of the study: The aims of this study were to assess the oral health condition (including dental caries, oral cleanliness and periodontal health condition), to evaluate the changes in salivary flow rate and to assess the concentration of tumor marker CA15-3 and selected elements (calcium, phosphorus, zinc, copper, total proteins) in saliva and their relation to oral variables among breast cancer women in comparison to control group.

Subjects, Materials and Methods: The total sample consisted of 60 women aged 35-45 years attending Al-Kadhemyia Teaching Hospital. Those comprised 30 women newly diagnosed with breast cancer before starting treatment and 30 women without clinical signs and symptoms of breast cancer as a control group. Diagnosis and recording of dental caries was done by using DMFS index according to the criteria of WHO (1987). Plaque index of Silness and Loe (1964) and calculus component of Ramfjord index for periodontal disease (1959) were applied to assess oral cleanliness. Periodontal disease was evaluated using the gingival index (Loe and Silness, 1963) and loss of attachment level (Ramfjord, 1959). Stimulated salivary samples were collected and salivary flow rate, salivary CA15-3, calcium, phosphorus, zinc, copper ions and total proteins were determined.

Results: Results showed that caries experience (DMFS) was higher among the study group compared with the control group but the difference was statistically not significant.

The mean values of plaque index, calculus index, gingival index and loss of attachment were higher among the study group than the control group with a highly significant difference ($P < 0.01$).

The salivary levels of CA15-3 in breast cancer patients were higher than that of the controls with a highly significant difference ($P < 0.01$). All the correlations between salivary CA15-3 and dental caries and periodontal diseases were statistically not significant.

The salivary flow rate was lower among the study group than control group with a highly significant difference ($P < 0.01$). Higher concentrations of salivary phosphorus, copper and total proteins were recorded among study group compared to control with statistically highly significant differences concerning phosphorus and copper ($P < 0.01$). On the other hand, salivary calcium and zinc were lower among study group compared to control group with statistically highly significant difference concerning zinc ($P < 0.01$). All the correlations between the caries experience and salivary constituents in the study and control groups were weak and not significant except the correlation with total proteins in the control group which was significantly positive. Concerning the correlations of oral hygiene and periodontal disease with salivary constituents, the study showed that all the correlations were weak and not significant except the correlations between the total proteins with loss of attachment in study group and with dental plaque in control group which were significantly positive relations.

Conclusions: This study showed that the breast cancer patients had poor oral hygiene and higher rates of periodontal diseases and dental caries, therefore special preventive programs need to be designed for this group of patients. Also the results of this study could support the concept that salivary concentrations of CA15-3 might serve to be used in the detection of breast cancer and/or the post operative follow-up of patients under treatment for carcinoma of the breast.