

**Republic of Iraq
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**Oral findings, serum and salivary analysis of lactate
dehydrogenase and aminotransferases in
uncontrolled diabetic patients**

A Thesis

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By

Dunya Malhan Hanweet

(B.D.S)

Supervised By

Assist. Professor

Dr. Ameena Ryhan Diajil

B.D.S, M.Sc, Ph.D. (Oral Medicine)

Baghdad - Iraq

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Abstract

Background: Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Hyperglycemia may lead to serious damage to various organs in the body such as heart, blood vessels, eyes, kidneys and nerves, as well as damage to the salivary glands.

Aims and objectives: The aims of this study were to estimate and compare the levels of both salivary and serum lactate dehydrogenase, aspartate aminotransferase and alanine aminotransferase in uncontrolled diabetic patients. Also, to study the oral manifestation and physical properties of salivary secretion (PH and flow rate) of uncontrolled diabetic patients compared to the control group.

Subjects, Materials and Methods: Ninety adults subjects were included in this study. Patients were divided into two groups: 30 patients with type 1 diabetes and 30 patients with type 2 diabetes, and 30 healthy subjects as control group who were age and gender matched.

Salivary and serum samples were taken from the participants and then salivary lactate dehydrogenase, aspartate aminotransferase and alanine aminotransferase were estimated by standard spectrophotometer methods. The level of glycosylated hemoglobin (HbA1c) were measured using NycoCard kit to exclude controlled diabetic patients. The obtained data were analyzed using SPSS statistical analysis package.

Results

Xerostomia and halitosis were the most prevalent oral manifestation of both types diabetic patients. Oral candidiasis, burning mouth sensation, angular chilitis and aphthous ulcers were also reported in both diabetic groups.

Saliva flow rate and PH were found to be decreased in both diabetic patients compared to healthy control group.

There was a significant increase of salivary enzymes in both Diabetes type 1 and 2 compared to healthy control group ($p=0.000$), while there was no significant difference in the level of serum enzymes among all studied groups.

Considering Diabetes mellitus type 1, there was no correlation between serum and salivary lactate dehydrogenase ($r=0.189$), serum and salivary aspartate aminotransferase ($r=0.201$) and between serum and salivary alanine aminotransferase ($r=0.223$). Similarly, in Diabetes mellitus type 2, no correlation was found between serum and salivary lactate dehydrogenase ($r=0.154$), serum and salivary aspartate aminotransferase ($r=0.166$) and between serum and salivary alanine aminotransferase ($r=0.193$).

Regarding the correlation between salivary enzymes lactate dehydrogenase, aspartate aminotransferase and alanine aminotransferase with the duration of type 1 diabetes group, a significant negative correlation was found (LDH: $r=-0.398$; AST: $r=-0.517$, ALT: $r=-0.612$). while no correlation was found in case of serum enzymes with disease duration of the type 1 diabetes group .

There was a strong significant positive correlation between salivary aspartate aminotransferase and salivary alanine aminotransferase in all studied groups (Diabetes type 1: $r=0.839$, Diabetes type 2: $r=0.697$) and healthy control group($r=0.937$).

Conclusions

Xerostomia and halitosis were the most prevalent oral findings in both types of diabetes mellitus.

Both salivary flow rate and PH both were decreased in two diabetic groups. There was an elevation in salivary value of lactate dehydrogenase, aspartate aminotransferase and alanine aminotransferase in both types of diabetes compared to healthy group. salivary level of lactate dehydrogenase, aspartate aminotransferase and alanine aminotransferase were higher in type1 compared to type 2 and healthy control group.