عنوان مقاله:

Proteolytic Sensitivity, In Vitro Glycation Efficiency of Diabetic and Non-diabetic Human Serum Albumin

محل انتشار:

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خلاصه مقاله:

Background: Glycation of human serum albumin (HSA) leads to disturbances in its stability, activity, and other properties which, in turn, affect the functional properties of HSA. Modification of albumin by glycation shows considerable potential as a significant biochemical biomarker for diagnosing diabetes. The characteristics of the glycation process in proteins have not been fully examined yet and, therefore, there is insufficient knowledge about them in the field. Objectives: This study aimed to clarify the differences between diabetic and non-diabetic HSA as well as their structure-function relationship. Methods: The physiological and laboratory characteristics of glycated albumin as well as HSA were explored. A total of ۳۰ subjects were enrolled in this study in which ۱۵ normal healthy individuals were assigned into the control group, and ۱۵ type-۲ diabetic patients were included in the diabetic group. Patients with type-۱ diabetes, pregnant women, and individuals with other diseases were excluded from the study. Protein estimation, polyacrylamide gel electrophoresis, ammonium sulphate fractionation, dialysis, glycation of HSA followed by gel electrophoresis of glycated samples, digestion of BSA, as well as HSA by α-chymotrypsin and their documentation and stoichiometry were all performed. Results: Various characteristic differences were observed between diabetic and non-diabetic HSA including proteolytic susceptibility and in vitro glycation efficiency. Hypoalbuminemia was, particularly, observed in diabetic patients, which was suggestive of a relationship between hyperglycemia and hypoalbuminemia. Conclusion: Peculiar contrariety between diabetic and non-diabetic HSA, specific differences in their glycation efficiencies, as well as proteolytic susceptibility and their innuendos were precisely traced out. It was concluded that albumin may have been regarded as a significant clinical biomarker for diagnosing diabetes.

کلمات کلیدی:

Diabetes, Human serum albumin, Glycation, Hypoalbuminemia, Proteolytic susceptibility