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Antigenicity enhanced in glucosylated human serum albumin: A structural study

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The integrity of protein is essential for its biological properties. However, it is very well documented that structure and functions of endogenous proteins are changed under pathophysiological conditions. Human serum albumin is the most abundant serum protein. In this study, an attempt has been made to biophysical characterization of Amadori-albumin upon early glucosylation because albumin undergoes fast glycation under hyperglycemic condition. Amadori-albumin formation was determined by NBT assay and Amadori adducts in glycated samples were confirmed by LC–MS. Structural alterations in Amadori-albumin were characterized by loss in secondary and tertiary structures, exposure of hydrophobic patches, shifting in Amide bands and increment in hydrodynamic radius. Our results clearly demonstrate that *in vitro* modification of HSA with high concentration of glucose induced secondary and tertiary structural alterations in the protein. Further, immunogenicity of glucose modified albumin was analyzed in experimental rabbits. The immunogenicity of glucose modified albumin was directly proportional chemical modification of protein. This structurally impaired albumin exhibits neo-epitopes which are not ordinarily present on the native molecule and these epitopes project the physiologic protein as 'alien' for the immune system. Hence, we can conclude that Amadori type modification occurs in diabetic patients under hyperglycemic condition.

Biography

Km Neelofar is a PhD student in Rajiv Gandhi Center for Diabetes and Endocrinology, F/O Medicine, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh. Her research work is on diabetic nephropathy including biochemical, molecular and immunological aspects related to this. Her review article on Diabetic Nephropathy has been published in reputed journal and 2 research articles have been communicated.

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