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Glycation of serum albumin: Cause remarkable alteration in protein structure, immunogenicity and generation of early glycation end products

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Existing literature and research on diabetes mellitus describe that glycation of protein is very important as well as a harmful process, which may lead to development of DM in human body. Human serum albumin (HSA) is the most abundant protein in blood and it is highly prone to glycation by the reducing sugars. 2-deoxy d-Ribose (dRib) is a highly reactive reducing sugar which is produced in cells as a product of the enzyme thymidine phosphorylase. It is generated during the degradation of DNA in human body. It may cause glycation in HSA rapidly and it is involved in the development of DM. In present study, HSA was glycated with different concentrations of 2-deoxy d-ribose at 37°C for 4 hours. UV-spectroscopy, fluorescence spectroscopy and circular dichroism (CD) techniques have been done to determine the structural changes in HSA upon glycation. To check the immunogenicity of modified HSA, rabbits were immunized with native and dRib modified HSA individually. Modified HSA immune sera, show higher antibody titer as compare to pre-immune sera and also with the immune sera from the native HSA immunized rabbits. Results of this study suggested that dRib is the potential glycating agent that can cause alteration in protein structure. With the results of immunological study we can conclude that dRib modified HSA is more immunogenic than native HSA..

Biography

Ishrat Jahan Saifi is pursuing her research under the supervision of Dr. Sheelu Shafiq Siddiqi, Associate Professor and Director at Rajiv Gandhi Centre for Diabetes and Endocrinology, J N Medical College and Hospital, Aligarh Muslim University, Aligarh, India. She has completed her Post-graduation in Biochemistry from Integral University Lucknow, India. She has presented 3 research papers, and has participated in various seminars/conferences held in India and has won second prize in poster presentation in a seminar.

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