Rashmi S. Tupe, J Diabetes Metab 2012, 3:8
http://dx.doi.org/10.4172/2155-6156.S1.018

OMICS Group Conferences
Accelerating Scientific Discovery

3rd World Congress on
Diabetes & Metabolism

September 24-26, 2012 Marriott Convention Center, Hyderabad, India

Prevention of glycation induced albumin modifications and consequent toxicity to erythrocytes by few antidiabetic plants

Rashmi S. Tupe
Biochemical Sciences Division, Rajiv Gandhi Institute of IT and Biotechnology, Bharati Vidyapeeth University, India

Diabetes and vascular complications appear to be multi-factorial in origin, but the accelerated biochemical process of glycation as a result of chronic hyperglycemia has been postulated to play a central role in it. Albumin, the most abundant plasma protein undergoes glycation leading to clinical implications. The aim of the present study was to comprehensively and comparatively investigate the antiglycation potential of the plants which are commonly used in Indian system of traditional medicine and their possible protective effect against glycated albumin mediated toxicity to erythrocytes. Antiglycation activities of these plant extracts was measured by co-incubation of plant extract with albumin-fructose glycation model. The multistage glycation markers- fructosamines (early stage), protein carbonyls (intermediate stage) and AGEs (late stage) were investigated along with measurement of thiols and β aggregation of albumin using amyloid-specific dyes. Protection of erythrocytes from glycated albumin induced toxicity by these plant extracts was assessed by measuring erythrocytes hemolysis, lipid peroxidation, reduced glutathione and intracellular antioxidant capacity. Total phenolics, reducing power and antioxidant activities of the plant extracts were also measured. In vitro glycation assays showed that plant extracts exerted site specific inhibitory effects at multiple stages, with T. bellirica showing maximum attenuation. In erythrocytes, along with the retardation of glycated albumin induced hemolysis and lipid-peroxidation, T. bellirica considerably maintained cellular antioxidant potential. Significant positive correlations were observed between erythrocyte protection parameters with total phenolics. These plant extracts especially T. bellirica prevents glycation induced albumin modifications and subsequent erythrocytes toxicity which might offer additional protection against diabetic complications.

Biography

Rashmi S. Tupe is currently Assistant Professor in Biochemical Sciences Division, Rajiv Gandhi Institute of IT and Biotechnology (RGITBT), Bharati Vidyapeeth University. She is recipient of Woman Scientist Fellowship from Department of Biotechnology, Government of India. She is actively involved in teaching and research. She has published more than 11 papers & book chapter in reputed journals. Her research interests are focused on understanding the molecular mechanism of diabetes and diabetic nephropathy, especially elucidating the role of glycation induced protein modifications. She is currently doing research project funded by Department of Science and Technology, Government of India on "Effects of nutraceuticals on diabetic nephropathy" in RGITBT, Pune.

rashmitupe@gmail.com