Tejashri R. Jagtap et al., J Diabetes Metab 2012, 3:8
http://dx.doi.org/10.4172/2155-6156.S1.019

OMICS Group Conferences
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3rd World Congress on
Diabetes & Metabolism

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

Increased levels of plasma protein glycation markers in type 2 diabetic patients

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The prevalence of diabetes threatens the health of large number of individuals all over the world which is associated with serious micro and macrovascular complications. Glycation is one of the important causative factor for secondary complication in diabetes. In this complex process reducing sugars reacts non enzymatically with amino groups of proteins to form early glycation adduct–fructosamine which undergo further complex reactions to become heterogenous fluorescent derivatives termed as advanced-glycation end-products (AGEs). The present study aimed to investigate the levels of plasma protein glycation markers-fructosamine, AGEs, amyloids in 70 type 2 diabetic patients and 40 healthy subjects.The fructosamine levels were estimated by nitroblue tetrazolium assay, fluorescence intensity of AGEs was recorded at λ_{Ex} 350 nm and λ_{EM} 440 nm whereas amyloids were evaluated by using amyloid specific dye - Congo Red. At the end mean values were compared between diabetic and control groups and correlations were determined. It was found that all plasma glycation markers were notably higher in diabetic patients than from healthy subjects: fructosamine 578 vs. 525 µmol/ml; AGEs 213.94 vs.178.27 AU/mg protein ($P<0.001$) and amyloid 0.53 vs. 0.40 A530nm ($P<0.001$) respectively. Plasma amyloid content was correlated with fructosamine ($R =0.350$, $p<0.01$) and AGEs ($R = 0.070$). Our data suggests the enhanced plasma protein glycation in diabetes and thus the strategies of blocking the formation of glycation holds promise as a valuable therapeutic adjunct for the prevention and thereby treatment of diabetes and subsequent complications.

Biography

Tejashri R.Jagtap is a final year M.Sc. Biotechnology student doing her thesis / dissertation project under Dr. Rashmi Tupe at Rajiv Gandhi Institute of Information technology and Biotechnology, Bharti Vidyapeeth Deemed University Pune.

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