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Biomarkers of oxidative stress and antioxidant status in type 2 diabetic patients – A study among African diabetic patients on treatment

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The metabolic derangement in diabetes mellitus leads to increased oxidative stress in the body and consequent development of the disabling chronic complications. The aim of the present study was to evaluate oxidative stress parameters and total antioxidant status in type 2 diabetic patients in the region and to compare it with that of healthy non diabetic controls. 57 type 2 diabetic patients and 41 normal healthy controls consented and participated in the study. Fasting blood glucose (FBS), Glycosylated haemoglobin and lipid profile were assayed by routine laboratory methods. Serum total antioxidant capacity (TAO), thiobarbituric acid reactive substances (TBARS) and the antioxidant enzyme superoxide dismutase (SOD) and oxidized LDL levels were measured using standard commercial reagent kits employing ELISA technique. The results expressed as mean \pm SD. The results indicated statistically significant increases in FBS ($p < 0.000$), HbA1c ($p < 0.000$), triglycerides ($p < 0.031$), TBARS ($p < 0.004$) and oxidized LDL ($p < 0.022$) in type 2 diabetic patients as compared to control population, whereas total antioxidant activity ($p < 0.010$) and HDL cholesterol ($p < 0.008$) were significantly decreased in diabetic patients. Total cholesterol, LDL cholesterol and SOD enzyme activity did not show any significant changes among both groups. Oxidative stress indicators showed positive correlation with FBS and HbA1c while there was significant negative correlation with TAO and HDL cholesterol. The above results warrant intervention through a diet rich in antioxidants, antioxidant vitamins and life style modifications to prevent the debilitating complications of diabetes in these patients.

Biography

Grace George completed her PhD in 1980 from Central Food Technological Research Institute, Mysore, India. Currently she is working as a Professor and Head of the Division of Medical Biochemistry, Faculty of Health Sciences at Walter Sisulu University, South Africa. Many Post-graduate students graduated under her supervision and she has several publications and presentations to her credit.

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