

Plasma Malondialdehyde Level and Erythrocytes Catalase Activity in patients with Type 2 Diabetes Mellitus

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Abstract

Lipid peroxidation is the oxidative destruction of lipids by free radicals. The evidence of lipid peroxidation within biological system is usually determined by malondialdehyde (MDA) formation. Diabetes mellitus is associated with increased lipid peroxidation and impaired antioxidant defense mechanisms which exacerbate oxidative stress. Therefore, this study was aimed to study plasma malondialdehyde level and erythrocytes catalase activity in patients with type 2 diabetes mellitus and controls. In this study, 30 type 2 diabetes mellitus patients from diabetic clinic at Mandalay General Hospital and 30 apparently healthy controls were studied. The subjects were female, 35-50 years of age. The plasma MDA was determined for lipid peroxidation. The erythrocytes catalase activity was represented as antioxidant enzyme. The mean plasma MDA level ($9.7 \pm 4.88 \mu\text{mol/L}$) in patients with type 2 diabetes mellitus was significantly higher than that of controls ($4.09 \pm 2.17 \mu\text{mol/L}$) ($p < 0.001$) and mean erythrocytes catalase activity ($2332.84 \pm 936.54 \text{ U/G Hb}$) in patients was significantly higher than that of controls ($976.59 \pm 591.28 \text{ U/G Hb}$) ($p < 0.001$). Positive correlation between plasma MDA and erythrocytes catalase in type 2 diabetes mellitus patients ($r = 0.62$) ($p < 0.01$) was found. These results suggested that diabetes mellitus is associated with enhanced lipid peroxidation and increased activities of antioxidant enzymes in erythrocytes to combat the oxidative stress. Hence, the present study revealed that there is increased oxidative stress in diabetes mellitus which may be due to increased lipid peroxidation and the body tries to compensate the oxidative stress by raising the activities of antioxidant enzymes.