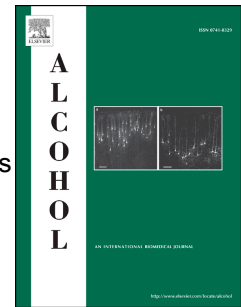


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Decreased Glucose-6-Phosphate Dehydrogenase Activity along with Oxidative Stress affects visual Contrast Sensitivity in Alcoholics

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ABSTRACT:

Objective: To evaluate oxidative stress and Glucose-6-phosphate dehydrogenase (G6PD) status of alcoholics and find out their association, if any, with visual contrast sensitivity function. **Methods:** Forty male alcoholic subjects and 36 non alcoholic subjects with same age and nutritional status were enrolled in this study. Serum malondialdehyde (MDA) level and Glucose-6-phosphate dehydrogenase (G6PD) activity of erythrocytes were determined by spectrophotometric assay. Contrast Sensitivity (CS) function of study subjects was measured using 'Rabin Contrast Sensitivity Test' (Precision Vision®, La Salle, IL, USA). **Results:** Serum MDA level was significantly higher ($p < 0.0001$) and erythrocytes G6PD activity was significantly lower ($p = 0.0026$) in alcoholic subjects compared to the controls. CS score of both eyes was also found to be decreased significantly in alcoholic subjects (both at $p < 0.0001$) than control subjects. On the other hand CS score of the alcoholic subjects was inversely correlated with serum MDA level ($r = -0.746$, $p < 0.0001$) and directly correlated with erythrocytes G6PD activity ($r = 0.78$, $p < 0.0001$). A strong inverse correlation ($r = -0.84$, $p < 0.0001$) was also observed between serum MDA level and erythrocytes G6PD activity of alcoholic subjects. **Conclusion:** Reduced G6PD activity and increased serum MDA level might be the key cause of the early visual abnormalities like reduced CS function of the alcoholic subjects.

Keywords: Alcoholism, visual contrast sensitivity, G6PD, MDA, oxidative stress, visual dysfunction

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