INVESTIGATION OF DYNAMIC THIOL-DISULPHIDE STATUS IN AGE-RELATED CATARACT PATIENTS WITH A NOVEL AND AUTOMATED ASSAY

H. M. Sagdik¹, F. Ucar², M. Tetikoglu¹, S. Aktas¹, F. Ozcura¹, H. Kocak³, S. Neselioglu⁴, F. Eren⁴

¹Department of Ophthalmology, Dumlupinar University School of Medicine, Turkey
²Department of Clinical Biochemistry, Diskapi Yildirim Beyazit Training and Research Hospital, Turkey
³Department of Clinical Biochemistry, Dumlupinar University School of Medicine, Turkey
⁴Department of Clinical Biochemistry, Ataturk Training and Research Hospital, Turkey

Purpose: The aim of the study is to determine the plasma thiol-disulphide status by using a novel and automated assay in patients with age-related cataract (ARC) and compare the results of patients with healthy subjects. We also aimed to measure the malondialdehyde (MDA) level and the catalase (CAT) activity. Methods: We worked with 53 cataract patients and 52 healthy volunteers. Thiol- disulphide homeostasis was determined by measuring native thiol and reducible dynamic disulphide amounts. Other parameters were also calculated. CAT activity was determined by using the method described by Aebi. MDA levels were calculated by using the thiobarbituric acid method. Results: Native thiol and total thiol levels were significantly lower in cataract patients compared to controls (p<0.001, p<0.05, respectively). Disulphide levels of cataract patients were significantly higher than controls (P<0.05). The ratio of disulfide/native thiol and disulfide/total thiol were statistically higher in cataract patients according to the control group (p<0.001). Besides, CAT activity was significantly lower in cataract group compared to the control group (P<0.001). MDA levels were insignificantly higher in patient group (p>0.05). Conclusions: Our study indicates that the dynamic thiol-disulphide homeostasis measured with the new method has shifted to the oxidative side in ARC patients. Our study is the first to show the oxidative status with a novel automated assay thiol-disulphide homeostasis in ARC patients. This study supports the hypothesis which claims that cataract is an oxidative disorder. Studies will be required in order to examine the relationship between the oxidative stress and the development of cataract formation.