

## ABSTRACT

Glutathione is a master antioxidant found in living organisms. It removes free radicals and toxic substances from body. Few heavy metals are necessary for human body in minute quantity but large amount of heavy metals in the blood may cause serious diseases in human body. Glutathione level in the blood has been reported to be associated with the heavy metals content in the blood. In this study, we correlated the amount of glutathione level with heavy metals found in blood serum of neurodegenerative diseases and normal persons. We collected 48 blood samples from different hospitals of District Lahore, out of which 38 belongs to different neurodegenerative diseases such as Parkinson's disease, Dementia, Huntington, Spinocerebellar Ataxia, HSNS and 10 were normal persons. Glutathione level was detected by ELISA method while heavy metals were detected by digesting serum with  $\text{HNO}_3$ ,  $\text{H}_2\text{O}_2$  and distilled water and were analyzed on Flame Atomic Absorption Spectrophotometer. It was found that the glutathione level in the patients of various neurodegenerative diseases was low in comparison with normal persons. For example, in the patients of Parkinson's disease glutathione level was found in the range 81 to 642 ng/L which was quite low in comparison to glutathione level in the normal persons which ranges from 300 to 950 ng/L. This difference in glutathione level is associated with the amount of lead (Pb) found in the blood of patients as it was found in the range of 0.637 to 0.899 ppm in the normal persons while in the Parkinson's patients it was found in the range of 1.890 to 63.750 ppm. Similar results were found for other diseases and relationship was found between the glutathione level and heavy metal content in the blood. It was found that Huntington is related to the amount of iron (Fe) in the blood, HSNS with zinc (Zn), Spinocerebellar ataxia with copper (Cu) and Dementia with lead (Pb). Hence, heavy metals exposure must be reduced to avoid neurological diseases and to attain healthy life style.