



The Protective Role of Glutathione in Cisplatin Induced Toxicity: *Ex Vivo* Studies as Proxy for *In vivo* Effects

Kifayatullah SHAH¹, Muhammad F. KHAN¹, Syed U. JAN^{2*}, Amir BADSHAH³,
Hadia BIBI³, Haroon KHAN¹, Kamran A. KHAN¹ & Naeem-Ur-REHMAN¹

¹ Faculty of Pharmacy, Gomal University, D.I. Khan, KPK, Pakistan

² Department of Pharmacy, University of Balochistan, Quetta, Pakistan

³ Department of Pharmacy, University of Peshawar, KPK, Pakistan

SUMMARY. Toxicity of metal based drugs is usually underestimated because of their therapeutic needs in serious conditions like cancer, but they cause serious damages by depleting our body defensive molecules like glutathione (GSH). GSH, a master antioxidant of human body plays critical roles in protecting cells from oxidative damage and the toxicity of xenobiotic electrophiles. Cisplatin is used therapeutically in the treatment of several pediatric malignancies. But the major limitations associated with cisplatin are its side effects so regular monitoring for toxicity is required. Therefore it was of great interest to evaluate the *ex vivo* effect of cisplatin on the chemical and metabolic status of GSH in the blood components of healthy human volunteers. Interaction of GSH with cisplatin was carried out in *ex vivo* as a substitute for *in vivo* effects. GSH concentration was measured with UV-Visible double beam spectrophotometer, using the Ellman's method. The level of GSH was lowered upon addition of cisplatin to plasma and cytosolic fractions; the lowering of GSH content was dependent upon cisplatin concentration and time of incubation. The reduction in GSH level may be either due to formation of Pt-SG complex or conversion of reduced GSH to its disulfide form (GSSG), which in turn predisposes us to numerous pathological conditions. Therefore decrease in the concentration of GSH becomes a significant nutritional problem in the world and emerging challenge to nutritional research.

KEY WORDS: Blood components, Cisplatin, Ellman's Method, Glutathione (GSH),

* Author to whom correspondence should be addressed. E-mail: suj55@yahoo.com