Nephrotoxicity Induced Mercuric Chloride in Male Wistar Rats: the Evaluation of Protective Effect of the Eriobotrya Japonica Flower Extract (EJFE)

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Mercuric chloride an important factor nephrotoxic that can enter the body through marine diet and amalgam. Oxidative stress and Reactive Oxygen Species (ROS) is main responsible of HgCl₂-induced renal toxicity [1]. Today, the use of herbal extracts with chelating activities, antioxidant, restoration of GSH level [2] and no side effects can be effective in treat and control damages caused by toxic metals.

The hydroalcoholic extract of EJFE were used as freshly prepared. Adult male rats used to range 180 ± 20 g and divided as following groups: group I (normal control), group II (mercury stress), group III (normal control under the administration of 200mg EJFE / kg. bd.w rate as IP) and group IV (stress group with mercury were like group III under the administration of EJFE). Amount of MDA [3] and GSH [4] in rat renal homogenized and the level of Total Antioxidant Capacity (TAC) [5], BUN, Creatinine (Cr) and Uric Acid (UA) were determined in plasma. Pathological effects of mercury on rat renal and protective effect of extracts of the plant were analyzed after sampling and staining with Hematoxylin – Eosin. Also, mercury levels in different groups of renal tissue were measured by AAS.

The results show that oral administration of 5mg / kg.bd .w HgCl₂ induced renal damage evident as elevation in BUN, Cr, UA plasma (mg / dl) and TAC (μmole / L) in plasma decreased. In rat renal homogenate (1g) levels MDA (nmole MDA / g tissue) increased but Levels of GSH (nmole / mg protein) decreased. Histopathological changes such as watery degeneration and infiltration of mononuclear inflammatory cells in interstitial matter and blood filled with hyaline casts (interstitial nephritis) were observed. Amount mercury (μg Hg/g tissue) in the renal (1g) by AAS in Group II (14.98±1.20) than group I showed accumulation about 21.24% and this case in group IV (11.81±1.86) than group II adjusted was 7.91% (P<0.05). Administration of the EJFE to rats as IP afforded a significant protection against HgCl₂ induced nephrotoxicity in all these diagnostic parameters.

In conclusion, use of this plant flowers extract increases antioxidant levels and through scavenging free radicals (ROS), Performance toxic metals chelating have protective activity on nephrotoxicity and increased GSH levels in the body can be effective reduce oxidative stress induced by toxins, drugs and toxic metals.

REFERENCES