STUDIES ON THE PROPHYLACTIC AND CURATIVE EFFECTS OF GARLIC AND ONION OIL FRACTIONS AS COMPARED TO VITAMIN E ON RATS FED LEAD ACETATE SOLUTION

ABSTRACT

Heavy metal pollution is a global public health challenge due to its stable and persistent environmental contamination. Of these lead is considered to be one of the most common ubiquitous and industrial pollutants and at low concentration it exerts extensive damages to the tissues. Daily feeding of lead acetate solution (Dose: 10 mg/kg/day) to normal rats for a month adversely altered the levels of parameters of blood, serum and tissues, viz; RBC, WBC, Hb, hematocrit, MCV, MCH, α- ALAD, Pb content, lipids, oxidized lipids (TBARS), vitamins C and E and GSH levels and activities of AST, ALT and antioxidant enzymes viz; catalase, GR, Gpx and SOD. In order to study whether antioxidants have any effect to counteract the toxicity of lead we have selected polar and non polar fractions of garlic and onion oils for the curative study and for the prophylactic study we have selected comparatively better active polar fractions of these oils viz: polar fraction of garlic (PFG) and polar fraction of onion (PFO). On feeding of these fractions of garlic and onion oils i.e. their polar fractions and vitamin E (Dose 100 mg/kg/day) separately for a month along with lead acetate to rats each nutraceutical and vitamin E counteracted the adverse effects of Pb significantly (p≤ 0.05). Their effects are in the order of PFG>PFO>NPFG>NPFO>Vitamin E. All these results point out that garlic and onion oils contain natural di and poly sulfoxide compounds which act as antioxidant and anti toxic agents to lead compounds. Their comparative differences in action may be due to the presence and position of double bonds and poly and disulfide oxide bonds in their molecules. i.e., in PFG the allyl disulfide oxide group is present and in PFO saturated methyl and propyl groups and unsaturated propenyl group are present in place of allyl groups. The former group confers a better antioxidant activity on PFG, while the latter groups confer a lesser activity on PFO.