Protective Effect of Garcinone E antioxidant Against Acetaminophen Induced Hepatotoxicity in Rats

Karthigeyan V G[1], Prabhu Sukumaran[2*]
Final year M Tech student[1], Associate Professor[2]*
Department of Biotechnology,
Sri Venkateswara College of Engineering, Sriperumbudur- 602117, TN, India
[1]vgkarthigeyan2011@hotmail.com
[2]Corresponding author:sprabhu@svce.ac.in*

ABSTRACT

Garcinone E antioxidant is a xanthone derivative present in pericarp of *Garcinia mangostana* Linn (GML) fruit extract. Experimental studies have demonstrated that extracts of GML have antioxidant, anti-tumoral, antiallergic, anti-inflammatory, antibacterial, and antiviral activities. In this study, Acetaminophen (APAP) is used as a hepatotoxicant. N-acetyl P-benzoquinone imine (NAPQI) a metabolite of APAP is thought to interrupt mitochondrial calcium flux leading to cell damage by the formation of free radical oxygen species, hydroxyl radicals, nitrites and nitrate.Therefore the present study was aimed to explore the effect of Garcinone E against APAP induced hepatotoxicity in experimental rats. Male *Wistar* albino rats approximately weighing 100-120g were used in this study. The liver damage was induced by *i.p* administration of 50mg/100g of APAP. To determine the optimum dosage of the Garcinone E against liver damage induced by APAP, a pretreated dose of drug optimization study was conducted for 7 days and 14 days using 50mg/100g and 100mg/100g of Garcinone E drug through oral administration. After 24 h of last dose of the drug and APAP, all animals were sacrificed by anaesthesia using sodium pentobarbitone (Phenobarbital 20 mg/100g, ip) and the blood was collected by cardiac puncture. The liver were collected and homogenized. Both blood and liver samples were used to study the liver biochemical parameters such as liver marker enzymes (ACP and SGPT), bilirubin, total protein, lipid peroxidation (LPO) and antioxidant enzymes (CAT, GSH and SOD) in experimental group of rats. All the data were studied by statistical analysis and expressed as mean ± SEM using Student's t-test followed by Tukey's *post hoc* analysis. A probability of $p<0.05$, $p<0.01$ and $p<0.001$ were considered as significant. Garcinone E of 100mg/100g for 7 days showed effective dose in treating APAP induced liver damage in which the biochemical parameters and antioxidant enzymes were reversed to normal level.

Keywords: Garcinone E, Acetaminophen, Hepatotoxicity, Marker enzymes and Antioxidant enzymes.