

Protective Effect of Gallic Acid Against 1,2-Dimethylhydrazine Induced Toxicity via Modulation of Oxidative Stress and Inflammation

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Abstract—The present study was carried out to investigate the protective effect of gallic acid (GA) against 1,2-dimethylhydrazine (DMH) induced toxicity. DMH is a potent toxicant that specifically targets to colon. GA, trihydroxybenzoic acid is a phenolic acid that has various health beneficial properties. Its anti-viral, anti-fungal and anti-oxidant properties help cells to overcome oxidative stress. In this study DMH was administered at the dose of [40 mg/kg body weight (b.w.) subcutaneously (s.c.)] on seventh day in wistar rats. GA was pretreated at two different doses (25 and 50 mg/kg b.w.) once a day for seven days. Protective effect of GA was assessed by lipid peroxidation, status of various anti oxidant enzymes and inflammatory markers (iNOS, COX-2, NF- κ B, IL-6). We observed that pretreatment with GA significantly ameliorates oxidative damage by diminishing tissue lipid peroxidation (LPO) accompanied by the increase in enzymatic activities of catalase, glutathione peroxidase (GPx), glutathione reductase (GR), superoxide dismutase (SOD) and reduced glutathione (GSH) content in the colon tissue of wistar rats. Our results also shows that GA inhibits DMH induced expression of inflammatory markers such as iNOS, COX-2, NF- κ B and IL-6. Further, histopathological finding also revealed that pretreatment with GA reduced intense infiltration of inflammatory cells and significantly restore the architecture of colonic tissue. The data of the present study suggest that GA significantly suppress DMH induced toxicity by ameliorating oxidative stress, inflammation and restoring the architecture of colon tissue.

Keywords: Gallic acid, 1,2-Dimethylhydrazine, inflammation, oxidative stress.