EFFECTS OF PYRROLIDINEDITHIOCARBAMATE ON EXPERIMENTAL COLITIS IN RATS

Hanan H Hagar1*, Eman El Etter2, Azza EL-Medany1 And Maha Arafa3

Departments of Pharmacology*1, Physiology 2 and Pathology 3, College of Medicine & KHUH, King Saud University, P.O. BOX 2925, Riyadh 11461, Saudi Arabia

Purpose. Ulcerative colitis is a chronically recurrent inflammatory bowel disease (IBD) of unknown origin. The present study examined the effect of NF-κB inhibitor and antioxidant, pyrrolidinedithiocarbamate (PDTC) on experimental ulcerative colitis in rats. Methods. Animals were randomly divided into 4 groups, each consisting of 6 animlas; normal control group, acetic acid group, PDTC–treated group and sulfasalazine-treated group as positive control group. Results. Induction of colitis by intracolonic administration of 3% acetic acid induced severe macroscopic inflammation in the colon 24 h after acetic acid administration as assessed from the colonic damage score. Microscopically, colonic tissues showed ulceration, oedema and inflammatory cells infiltration. Biochemical studies revealed increased serum levels of lactate dehydrogenase (LDH) and nitrie/nitare, and elevated colonic concentrations of the inflammatory cytokine; tumor necrosis factor- α (TNF-α) and neutrophil infiltration index, myeloperoxidase (MPO). Oxidative stress was indicated by elevated lipid peroxides formation (measured as thiobarbituric acid reactive substances, TBARS) and depleted reduced glutathione (GSH) in colonic tissues. Immunohistochemical studies of colonic sections revealed upregulation of inducible nitric oxide synthase (iNOS). PDTC pretreatment at a dose of (200 mg/kg/day, i.p.), 48, 24 and one hour before induction of colitis reduced serum levels of LDH and nitrite / nitrate, and colonic concentrations of TNF-α, MPO and TBARS and increased colonic GSH content. Moreover, PDTC pretreatment attenuated iNOS expression. Finally, histopathological changes were nearly restored by PDTC pretreatment. Conclusion. PDTC produced gastro-protective effect and may offer therapeutic benefit in ulcerative colitis.