

# EFFECT OF ETHANOL CONSUMPTION ON COLON OF NORMAL RATS AS WELL AS RATS WITH EXPERIMENTALLY-INDUCED ULCERATIVE COLITIS

## Abstract

The concept that environmental factors may alter disease pattern has been an area of controversy in inflammatory bowel diseases (IBD), including ulcerative colitis (UC) and Crohn's disease. Ethanol consumption is associated with oxidative stress in multiple tissues *in vivo*. Ethanol and its metabolites are known to affect the gut barrier function, being a potential trigger for flare in IBD. The present study was conducted to evaluate the effect of moderate ethanol consumption on normal colon and on N-ethylmaleimide (NEM)-ulcerated colon in rats. To achieve this goal, rats were classified into four groups, namely normal control group receiving only vehicles, ethanol control group receiving only ethanol, UC control group receiving only NEM, and ethanol/UC group receiving both ethanol and NEM. At the end of the experiment, animals were sacrificed and colons isolated. A portion of each colon was allowed to harden in formalin solution in saline for histopathological study, and another portion was homogenized in normal saline and tissue homogenates were used for determination of reduced glutathione (GSH), total nitrate/nitrite (NO<sub>x</sub>), myeloperoxidase (MPO) and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) contents. Ethanol consumption in normal rats significantly decreased colon length and GSH content, and significantly increased NO<sub>x</sub> and TNF- $\alpha$  contents as compared to normal control rats. Additionally, ethanol consumption in rats with experimental UC significantly increased colon NO<sub>x</sub> and TNF- $\alpha$  contents as compared to UC control rats. Results of histopathological study strongly supported results of biochemical estimations. Although ethanol consumed in moderate doses was reported to offer protection against some diseases, these data suggested that ethanol consumption even in moderate doses has harmful effects on normal colon and may worsen UC disease progression.

## **Keywords**

Ethanol

Inflammatory bowel disease

Oxidative stress

Ulcerative colitis