

Attenuation of Oxidative Stress by EGCG in DMH Exposed Colon of Wistar Rats

Shekh Mohammad Afzal¹, Abul Vafa, Summya Rashid, Preeti Barnwal and Sarwat Sultana*

*Section of Molecular Carcinogenesis and Cancer Chemoprevention, Department of Medical Elementology & Toxicology, Faculty of Science, Jamia Hamdard New Delhi -110062
E-mail: ¹smafzal@jamiahamdard.ac.in, *ssultana@jamiahamdard.ac.in*

Introduction

Colon cancer is the third common cause of cancer deaths in America and diseased condition involves persistent oxidative stress in the colon. EGCG is a naturally occurring flavone having antioxidant, anti-inflammatory, free-radical scavenging properties and has been found to possess numerous therapeutic properties. In this study protective effect of EGCG was evaluated against the DMH-induced oxidative stress in Wistar rats.

Methods: 30 male Wistar rats were randomly allocated to five groups of six rats each. The rats of Group I (control group) received an intraperitoneal injection of PBS (vehicle) once daily for 7 days. Group III rats received EGCG by intraperitoneal injection at the dose of 10 mg/kg body weight once daily for 7 days. Groups IV and V rats received EGCG at the dose of 20 mg/kg body weight once daily for 7 days. Groups II, III and IV rats received a single injection of DMH (dissolved in 1 mM EDTA) at the dose of 40 mg/kg body weight, subcutaneously in the groin on day 7 after 1 h of the last treatment of EGCG. Groups I and V rats also received a subcutaneous injection of 1 mM EDTA solution. All the rats were sacrificed by CO₂ inhalation after 24 h of the DMH injection. Colon was excised out for various biochemical and histological parameters

Results: DMH administration significantly increased the level of MDA (LPO) and decreased activities of GSH, GR, GST, CAT, and SOD. However, EGCG supplementation decreased MDA level and also replenished antioxidant enzymes significantly. Treatment of EGCG also restored the normal histoarchitecture of colon tissues in compare to DMH treatment.

Conclusion: EGCG showed protection against DMH induced colon toxicity by preventing the generation of oxidative stress and restoring the normal histoarchitecture of colon tissue.

Keywords: Epigallocatechin gallate, 1, 2-Dimethylhydrazine, oxidative stress.