



## Prevention of 1,2-dimethylhydrazine-induced circulatory oxidative stress by bis-1,7-(2-hydroxyphenyl)-hepta-1,6-diene-3,5-dione during colon carcinogenesis

Thiyagarajan Devasena<sup>1</sup>, Venugopal P. Menon<sup>2</sup>, Kallikat N. Rajasekharan<sup>3</sup>

<sup>1</sup>Department of Biotechnology, Mother Teresa Women's University, Kodaikanal 624 102, Tamil Nadu, India

<sup>2</sup>Department of Biochemistry, Faculty of Science, Annamalai University, Annamalainagar 608 002, Tamil Nadu, India

<sup>3</sup>Department of Chemistry, University of Kerala, Trivandrum, India

**Correspondence:** Thiyagarajan Devasena, e-mail: tdevasenabio@yahoo.com

---

### Abstract:

We have performed this study to investigate the modulatory effect of bis-1,7-(2-hydroxyphenyl)-hepta-1,6-diene-3,5-dione, a bisdemethoxy curcumin analog (BDMCA) on circulatory lipid peroxidation (LPO) and antioxidant status during 1,2-dimethylhydrazine (DMH)-induced colon carcinogenesis in male Wistar rats. The effects were compared with that of the reference drug, curcumin. Increased tumor incidence as well as enhanced LPO in the circulation of tumor bearing rats was accompanied by a significant decrease in the level of reduced glutathione and activities of glutathione peroxidase (GPx), glutathione S-transferase (GST), superoxide dismutase (SOD) and catalase (CAT). Intra-gastric administration of BDMCA or curcumin to DMH-treated rats significantly decreased colon tumor incidence and the circulatory LPO, with simultaneous enhancement of GSH content and GPx, GST, SOD and CAT activities. We report that BDMCA exerts its chemopreventive effect by decreasing the colon tumor incidence as well as by modulating circulatory oxidative stress in DMH-treated rats through its influence on LPO and antioxidant status. The effects of BDMCA were comparable with that of the reference compound curcumin, a well known anticarcinogen and antioxidant. Thus, it would be suggested that the methoxy group is not responsible for the beneficial effects, however, the terminal phenolic moieties or the central 7-carbon chain may play a role.

### Key words:

colon cancer, curcumin analog, dimethylhydrazine, chemoprevention, lipid peroxidation, antioxidant

---