

## Alterations of vegf, mmp-9 and caspase-3 expression in colonic tumors induced by 1, 2-dimethylhydrazine (DMH) in rats

**Neha Nanda**  
Punjab University, India

**Rationale:** 1,2-dimethylhydrazine (DMH)-induced colon carcinogenesis in rats is a reliable model to explore molecular mechanism involved in progression of colorectal cancer from adenoma to carcinoma sequence.

**Objective:** To study the transcriptional and translational levels of various genes involved in tumorigenesis pathway of DMH induced rat model.

**Methods:** Two groups of chow-diet-fed, male Sprague Dawley (SD) rats, aged 10 weeks (n=12/group) were fed a normal diet and injected subcutaneously for two time durations of 10 and 20 weeks DMH at a dose of 30mg/kg body wt/week or with Ethylene diamine tetra-acetic acid (EDTA)-saline. Macroscopic and microscopic analyses were performed for confirmation of adenoma and carcinoma. mRNA expression of VEGF, MMP-9 and Caspase-3 genes were determined by Real-Time PCR. Immunohistochemistry was also performed for expression of above proteins.

**Results:** Gross examination of 10 weeks DMH treated colon showed polypoid lesions and multiple tumors after 20 weeks of DMH treatment. Histopathological studies confirmed the colon carcinogenesis from adenoma-carcinoma sequence by type of tumor, degree of differentiation & invasion of tumors. In adenomatous and carcinomatous colonic tissues, mRNA expression of VEGF (3.2 and 5.4 fold respectively) and MMP-9 (2.3 and 8.2 fold respectively) was augmented, whereas expression of Caspase-3 was reduced by 13.2 and 4.5 fold respectively. These results were confirmed by Immunohistochemistry analysis.

**Conclusion:** The observed data strongly implicates that DMH induced colon carcinogenesis altered the apoptotic machinery by modulating the expression of various genes involved in this pathway.

neha\_slice@yahoo.com