Antioxidant activity of geraniol against diethyl nitrosamine (den) induced hepatocarcinogenesis in adult wistar albino rats.

Fouzia Banu
Department of Biochemistry, J.B.A.S. College for Women (Autonomous), Chennai, India.

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ABSTRACT

Hepatocellular carcinoma (HCC) is a malignant tumour that arises from hepatocytes, the major cell type in the liver. HCC is the most common primary hepatic tumour. One among the cause for HCC is due to Nitrosamines, chemical compounds produced from nitrites and secondary amines, which often occur in the form of proteins. They cause cancers in human beings due to their environmental presence and have high carcinogenic potential in animal models. Diethyl nitrosamine (DEN) is one of the most important environmental carcinogens in N-nitrosamines class, which primarily induces tumours of the liver. As rat liver is one of the most extensively studied organ of carcinogenesis, in the present study, DEN is used as a hepatocarcinogen to induce liver cancer in rats. Geraniol, an acyclic monoterpene and a potent antiproliferative drug which has cytostatic effect inhibiting DNA synthesis in cancer cells is used to study the antioxidant activity against DEN induced hepatocarcinogenesis in wistar albino rats.The enzymatic antioxidants like Superoxide dismutase, Catalase, Glutathione peroxidase as well as non-enzymatic antioxidants like Reduced glutathione, Ascorbic acid and Vitamin E were assayed in the hemolysate and liver homogenate. Significant results were obtained in enzymatic antioxidants like Superoxide dismutase ($p<0.001$), Catalase ($p<0.001$) and Glutathione peroxidase ($p<0.01$) in hemolysate of DEN induced rats treated with geraniol. In the liver homogenate of DEN induced rats treated with Geraniol, the enzymatic antioxidants also showed promising results ($p<0.001$). Similarly the non enzymatic antioxidants like Reduced glutathione, Ascorbic acid and Vitamin E in both hemolysate and liver homogenate showed significant ($p<0.001$) increase in the level after the treatment with Geraniol. Hence this study supports the possibility that Geraniol has significant antioxidant activity against DEN induced hepatocarcinogenesis in rats.

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