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Effect of Post and Pre Induced Treatment with Hesperidin in N-Methyl N-Nitrosourea Induced Mammary Gland Cancer in Female Sprague-Dawley Rats

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Abstract : The main objective of the study is to evaluate the effectiveness of hesperidin in the treatment of breast cancer and causing less (or) no bone marrow depression which is the major side effect of the present anticancer drugs treating breast cancer, also to evaluate the mechanisms through which these compounds are exerting their effect. Breast cancer is induced by administering N-methyl N-Nitrosourea (MNU) at a dose of 50mg/kg body weight. Upon the termination of the experiment, the animals were sacrificed by the method of cervical dislocation. The animals were dissected along the ventral midline and were grossly examined for the presence of tumors. Then the tumours were removed along with the stroma. Vascular endothelial growth factor (VEGF) levels were estimated by using ELISA method. The first occurrence of palpable tumors was eight weeks after carcinogen treatment and the final tumour incidence was 100% in the MNU alone and topical treated rats. Whereas in rats of other treatment groups there is decreased tumour incidence which might be due to their antitumour activity. Hesperidin therapy inhibited angiogenesis which can be evident from the significant reduction in serum as well as tumour VEGF concentrations in comparison to the untreated mammary carcinoma bearing rats. Hesperidin is promising agents that exert direct antitumor and also antiangiogenic, antiproliferative and anti-inflammatory activities. Even though the potency is little lesser than standard drug vincristine, it has been proved to be safe without effecting haematological count.

Keywords : hesperidin, VEGF, COX 2, N-methyl N-nitrosourea
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