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Antineoplastic Effect of Tridham and Penta Galloyl Glucose in Experimental Mammary Carcinoma Bearing Rats

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Abstract : Background: Breast cancer is arising as the most dreadful cancer affecting women worldwide. Hence, there arises a need to search and test for new drugs. Herbal formulations used in Siddha preparations are proved to be effective against various types of cancer. They also offer advantage through synergistic amplification and diminish any possible adverse effects. Tridham (TD) is a herbal formulation prepared in our laboratory consisting of Terminalia chebula, Elaeocarpus ganitrus and Prosopis cineraria in a definite ratio and has been used for the treatment of mammary carcinoma. Objective: To study the restorative effect of Tridham and penta galloyl glucose (a component of TD) on DMBA induced mammary carcinoma in female Sprague Dawley rats. Materials and Methods: Rats were divided into seven groups of six animals each. Group I (Control) received corn oil. Group II– mammary carcinoma was induced by DMBA dissolved in corn oil single dose orally. Group III and Group IV were induced with DMBA and subsequently treated with Tridham and penta galloyl glucose, respectively for 48 days. Group V was treated with DMBA and subsequently with a standard drug, cyclophosphamide. Group VI and Group VII were given Tridham and penta galloyl glucose alone, respectively for 48 days. After the experimental period, the animals were sacrificed by cervical decapitation. The mammary gland tissue was excised and levels of antioxidants were determined by biochemical assay. p53 and PCNA expression were accessed using immunohistochemistry. Nrf-2, Cox-2 and caspase-3 protein expression were studied by Western Blotting analysis. p21, Bcl-2, Bax, Bad and caspase-8 gene expression were studied by RT-PCR. Results: Histopathological studies confirmed induction of mammary carcinoma in DMBA induced rats and treatment with TD and PGG resulted in regression of tumour. The levels of enzymic and non-enzymic antioxidants were decreased in DMBA induced rats when compared to control rats. The levels of cell cycle inhibitory markers and apoptotic markers were decreased in DMBA induced rats when compared to control rats. These parameters were restored to near normal levels on treatment with Tridham and PGG. Conclusion: The results of the present study indicate the antineoplastic effect of Tridham and PGG are exerted through the modulation of antioxidant status and expression of cell cycle regulatory markers as well as apoptotic markers. Acknowledgment: Financial assistance provided in the form of ICMR-SRF by Indian Council of Medical Research (ICMR), India is gratefully acknowledged here.

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