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Effect of Andrographis Paniculata Extract on Mammary Carcinoma in Rats Induced by DMBA

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Abstract

It has been well documented that chemical carcinogen, DMBA (7,12 dimethylbenz(a)anthracene), plays a role in the incidence and growth of mammary cancer. The present study was designed to investigate histochemical alteration of epithelial cells in mammary gland influenced by DMBA in the female Sprague-Dawley rat. DMBA-inducing mammary cancer is a useful model to investigate the changes of epithelial cells that occur during mammary cancer progression. Mammary cancer model was induced 10 times twice a week orally by DMBA, with 20 mg/kg body mass. Mammary cancer occurred in 90% for nine weeks after oral administration of DMBA, and it was represented with nodule on the mammary gland and the increasing of mammary gland volume compared with normal control (F = 100.592; p < 0.001). This study was also designed to investigate the preventive and curative effect of Andrographis paniculata extract on mammary carcinoma induced by DMBA. Preventive administration of three different doses of Andrographis paniculata (100 mg/kg, 300 mg/kg and 1000 mg/kg) was to maintain the volume of mammary gland as good as that in the normal control and significantly different with that in the DMBA model group (F = 99.930; p < 0.001). Andrographis paniculata has the preventive effect on limiting the frequency of cancer initiation and growth. However, the volume of mammary gland in the curative administration with three different doses of Andrographis paniculata (100 mg/kg, 300 mg/kg and 1000 mg/kg) was not statistically different from that in the DMBA model group (F = 2.239; p > 0.05). This data indicated that the extract of Andrographis paniculata had no significant effect on the treatment of DMBA-inducing mammary carcinoma. The Epithelial cells then were harvested on the 90th day and stained on routine histology staining and hematoxylineosin for morphological qualitative analysis. After that, the lesions were observed from the removed samples ranged widely from benign to malignant. The results then showed that DMBA induced cell proliferation, nuclear irregularities, numerous mitoses, and cell necrosis. Furthermore, the preventive treatment of Andrographis paniculata inhibited the progression of cell proliferation, while the curative treatment of Andrographis paniculata induced apoptosis in cancer cells. Finally, we hope that the further studies will provide some clues towards early detection and, hopefully, the prevention and the treatment of breast cancer.

Keyword : DMBA, breast, cancer, epithelial, cells, Andrographis, paniculata,

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