

Breast cancer prevention with *Morinda citrifolia* (noni) at the initiation stage

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Submission date: January 7, 2013; Acceptance Date: May 6, 2013; Publication date: June 21, 2013.

ABSTRACT

Background: It has been reported that noni has multiple health benefits for over 2000 years. In this study, the cancer preventive effects of Tahitian noni® juice (TNJ) at the initiation stage on DMBA-induced mammary tumorigenesis in female SD rats was investigated.

Objective: We took advantage of the DMBA-induced mammary carcinogenic model to study the preventive effects of TNJ at the initiation stage of mammary carcinogenesis in female SD rats by using clinical observation, pathological examination, and ³²P-postlabeling assay.

Methods: One hundred and sixty female SD rats were divided into eight groups with 20 rats in each group. Three doses of TNJ or placebo was given to the animals at the age of 35 days until the end of the experiment. When the animals were 55 days old, 25 mg/kg DMBA was fed to the animals in the DMBA group, placebo, and TNJ groups. The 20 rats were kept at age-matched controls. Palpable tumors were examined twice a week after DMBA administration in each group by an experienced professional. The size of tumor was measured by a graduated caliper. A piece of tumor, vascularization area, and mammary glands in the thoracic and abdomen areas of each rat were dissected respectively and fixed in 10% neutral buffered formalin for light microscope examination. The DMBA-DNA adduct formation in mammary tissues was detected by ³²P-postlabeling assay.

Results: The tumor latency in TNJ groups was delayed about 60-90 days when compared with positive controls. The number of palpable tumors per group was significantly reduced by 73%, 72% and 80% in 3%, 5%, and 10% TNJ groups respectively when compared with positive controls at the end of 330 days after DMBA administration. The number of palpable tumors in the placebo groups was slightly reduced in the early stage, but much less than that in the TNJ groups. The multiplicity and malignancy of lesions were significantly reduced and the survival rate of animals in the TNJ groups was significantly increased compared with positive controls at

different time points. Histological examination showed that the malignancy of lesions in TNJ groups did not show a significant change when compared with that in positive and placebo groups.

Conclusion: In conclusion, this is the first study which indicates that TNJ possesses a cancer preventive effect at the initiation stage of chemical carcinogenesis induced by DMBA in female SD rats.

Key words: *Morinda citrifolia*, Tahitian noni® juice, breast cancer, cancer prevention