Chemopreventive effect of Ardisia crispa hexane fraction on the peri-initiation phase of mouse skin tumorigenesis

ABSTRACT

Objective: To investigate the chemopreventive effect of the hexane extract of Ardisia crispa during the peri-initiation phase of mouse skin tumorigenesis. Materials and Methods: This study was conducted for 12 weeks on two-stage 7,12-dimethylbenz(Ŭ)-anthracene (DMBA)-induced tumor initiation followed by croton-oil-induced tumor promotion in mice. A. crispa root hexane extract (ACRH) was applied at various doses (30, 100, 300 mg/kg) 7 days prior to and after DMBA treatment. Throughout the study, morphological observations, i.e., tumor incidence, tumor volume and tumor burden were measured for each of the treated groups. At the end of the experiment, the mice were sacrificed and their skin tissues were examined histopathologically. Results: The highest dose of ACRH (300 mg/kg) significantly delayed tumor formation (week 9, $p < 0.05$) and exhibited the lowest tumor volume (0.71 ± 0.00 mm3, $p < 0.05$), tumor burden (2.00 ± 0.00, $p < 0.05$), and tumor incidence (16.67%, $p < 0.05$) compared to other doses of ACRH. A 100-mg/kg dose produced tumor latency at week 7, tumor volume of 2.44 ± 0.88 mm3 ($p < 0.05$), tumor burden of 1.60 ± 0.60 ($p < 0.05$), and tumor incidence of 50%; 30 mg/kg produced tumor latency at week 8, tumor volume of 2.04 ± 0.45 mm3 ($p < 0.05$), tumor burden of 2.17 ± 0.54, tumor incidence of 60% and carcinogen control (tumor latency at week 7; tumor volume, 3.56 mm3; tumor incidence of 66.67%). Conclusion: The highest dose of A. crispa hexane extract delayed tumor development, thus showing a chemopreventive effect on mouse skin tumorigenesis.

Keyword: Ardisia crispa; 7,12-Dimethylbenz(Ŭ)-anthracene; Tumor burden; Tumor volume