Tumor suppression effect of Solanum nigrum polysaccharide fraction on breast cancer animal model via immunomodulation

ABSTRACT

A polysaccharide fraction from Solanum nigrum, SN-ppF3 was shown previously to have an immunomodulatory activity where it could possibly be used to enhance the host immune response in fighting cancer. The non-toxic SN-ppF3 was fed orally to breast tumor bearing-mice with concentrations of 250 and 500mg/kg for 10days. During the treatment period, size of the tumor and weight of the mice were monitored. At the end of the treatment, blood, tumor, spleen and thymus were harvested for physiological and immunological analyses. After the treatment, the tumor volume and tumor weight were significantly inhibited by 65% and 40%, respectively. Based on the histological observation, the treatment of SN-ppF3 resulted in the disruption of tumor cells morphology. The increase in infiltrating T cells, NK cells and macrophages were observed in tumor tissues of the treated mice, which partly explained the higher apoptosis tumor cells observed in the treated mice. Moreover, the level of TNF-α, IFN-γ and IL-4 were elevated, while the level of IL-6 was decreased significantly, in serum of the treated mice. These results suggested that tumor suppression mechanisms observed in SN-ppF3-treated mice were most probably due through enhancing the host immune response.

Keyword: Plant polysaccharide; Solanum nigrum; Immunomodulation