Chemopreventive and immunomodulatory effects of Murraya koenigii aqueous extract on 4T1 breast cancer cell-challenged mice

ABSTRACT

Background: The progression of breast cancer is increasing at an alarming rate, particularly in western countries. Meanwhile, the lower incidence in Asian countries could be attributed to the heavy incorporation of green leaves vegetables or spices in their diets. Murraya koenigii (MK) or often times known as curry leaves are common spice used mostly in tropical countries. Anti-inflammatory and chemopreventive effects of MK aqueous extract on 4T1 breast cancer cell-challenged mice were evaluated. Methods: Herein, cytotoxic activity of MK was first tested on 4T1 cells in vitroby MTT assay. Then, in vivo chemopreventive study was conducted where mice were fed with extracts prior to and after inducing the tumor (inoculation). Tumor size was monitored post-4T1 inoculation. At the end of experiment, histopathology of tumor sections, T cell immunophenotyping, tumor nitric oxide level, serum cytokine level and qPCR analysis on expression of iNOS, iCAM, NF-kB and c-MYC were performed. Results: MK reduced the tumors' size and lung metastasis aside from inhibited the viability of 4T1 cells in vitro. Furthermore, it decreased the level of nitric oxide and inflammation-related cytokines and genes, including iNOS, iCAM, NF-kB and c-MYC. Conclusion: The results propose that, MK managed to inhibit the progression of tumor via immunostimulatory effect and inflammatory reaction within the tumor samples. This suggests that MKconsumption could be a savior in the search of new chemopreventive agents.

Keyword: Anti-inflammation; Chemopreventive; Curry leaves*;* Murraya koenigii; 4T1 cells