A Novel Resveratrol Tetramer Vaticanol C from Stem Bark Acts as an Anti-metastatic Action in a Mouse Mammary Cancer Model

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Editorial

Plants and plant extracts have been traditionally used in Ayurvedic and Chinese medicine for many centuries. A large number of natural products appear to have strong therapeutic effects and the discovery of new plants with potential biological activities is a passionate endeavor for many concerned with natural medicinal. Among those already investigated, great attention has been paid to polyphenols because of their antioxidant and possible anti-tumor properties [1], including α and γ-mangostin from the mangosteen pericarp [2-4] and resveratrol. Resveratrol, a chemo preventive and therapeutic polyphenol found in grape skin and dipterocarpaceous plants [5], is one of the most famous phytochemical compounds currently under investigation. Several biological activities ranging from anti-tumor functions [6] to prevention of heart disease [7].

Isolated from the stem bark of Vatica rassak in Dipterocarpacea, the resveratrol tetramer vaticanol C has shown induction of apoptotic cell death and suppression of cell proliferation in various human cancer cells [8], suggesting anti-tumoral effects. We recently demonstrated anti-metastatic effects of vaticanol C [9] in a mouse metastatic mammary cancer model carrying a p53 mutation, a model which demonstrates a metastatic spectrum similar to that seen in human breast cancers [4,10]. Here, we introduced the summary of the results on anti-metastatic abilities of vaticanol C in vitro and in vivo experiments [9].

Vaticanol C induced in vitro apoptosis, as evaluated by morphological changes, nucleosomal DNA fragmentation, and elevated activities of caspases (which are executional factors of apoptosis); similarly, apoptosis was significantly increased in vivo in mammary tumor cells exposed to 200 ppm dietary vaticanol C. Although tumor growth was similar between the control and vaticanol C-treated groups, the multiplicities of lymph node and lung metastasis were significantly reduced only in animals receiving the highest dose (200 ppm) of vaticanol C; overall metastasis to any organ also decreased, but not to a statistically significant degree over control. Cell proliferation rates tended to decrease in mammary tumors with exposure to vaticanol C in a dose-dependent manner but, again, the decrease was not statistically significant. Breast cancer is one of the most lethal cancers in humans, and death is largely due to metastasis, usually to lungs, lymph node, liver, and bone. Since lymph node involvement is the most important prognostic factor in breast cancer patients, the anti-metastatic activity of vaticanol C may be of clinical significance.

References

