

Cytotoxicity of Two *Gypsophila* Species to Human Breast Adenocarcinoma (MCF-7)

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Abstract

Introduction: Cancer is known as the second cause of death worldwide which results in serious problems in human life. It is developed by uncontrolled growth of a cell or a group of cells. Caryophyllaceae is a large family which has been reported to possess cytotoxic species and in the present study, the cytotoxic activity of two plants from this family has been evaluated.

Methods and Results: Dried powder of *Gypsophila bicolor* (Freyn & Sint.) Grossh and *Gypsophila ruscifolia* Boiss. aerial parts were extracted with methanol 80% by maceration method (10 g). For fractionation, 30 g of the dried powder of both species was macerated with petroleum ether at room temperature. After 24 hours, the mixture was filtered and the plant residues were extracted with chloroform and methanol successively through the same process. Then they were concentrated using a rotary evaporator apparatus. The cytotoxic activity was evaluated against MCF-7 (human breast adenocarcinoma), A-549 (non-small cell lung carcinoma) and AGO-1522 (human fibroblast) cell lines using MTT assay. The chloroform fractions of both *Gypsophila* species showed cytotoxic effects against MCF-7 cells with IC₅₀ value <100 µg/mL. None of the extracts or fractions demonstrated cytotoxicity to A-549 or AGO-1522 cells up to the tested concentrations.

Conclusions: The selective toxicity of the chloroform fractions of the species only to the MCF-7 cell line suggested that *Gypsophila bicolor* and *G. ruscifolia* could be proper candidates for further studies in the field of cancer researches.

Key words: Caryophyllaceae, Cytotoxic, MTT assay, Saponin

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