Antiproliferation and induction of apoptosis by Moringa oleifera leaf extract on human cancer cells.

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Abstract

Medicinal plants provide an inexhaustible source of anticancer drugs in terms of both variety and mechanism of action. Induction of apoptosis is the key success of plant products as anticancer agents. The present study was designed to determine the antiproliferative and apoptotic events of Moringa oleifera leaf extract (MLE) using human tumor (KB) cell line as a model system. KB cells were cultured in the presence of leaf extracts at various concentrations for 48 h and the percentage of cell viability was evaluated by MTT assay. MLE showed a dose-dependent inhibition of cell proliferation of KB cells. The antiproliferative effect of MLE was also associated with induction of apoptosis as well as morphological changes and DNA fragmentation. The morphology of apoptotic nuclei was quantified using DAPI and propidium iodide staining. The degree of DNA fragmentation was analyzed using agarose gel electrophoresis. In addition, MLE at various concentrations was found to induce ROS production suggesting modulation of redox-sensitive mechanism. Eventually, HPTLC analysis indicated the presence of phenolics such as quercetin and kaempferol. Thus, these findings suggest that the leaf extracts from M. oleifera had strong antiproliferation and potent induction of apoptosis. Thus, it indicates that M. oleifera leaf extracts has potential for cancer chemoprevention and can be claimed as a therapeutic target for cancer.