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Apoptotic mechanism of compounds with antiproliferative activity from *Bursera microphylla* resin

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Studies on resin of *Bursera microphylla* showed that it consist mainly of terpenes; these compounds have been proved to be active against cancer cell lines. Cancer is a public health problem worldwide. Compounds of *Bursera microphylla* showed antiproliferative activity in cancer cell lines. Therefore, knowledge of the action mechanism for future drugs against cancer is required. The aim of this study was to determine the molecular mechanisms of the compounds that displayed antiproliferative activity on human cancer cell line A549 derived from *B. microphylla* resin. The apoptotic activity was measured through annexin V staining and propidium iodide (PI). The breakdown of the mitochondrial membrane potential was measured using the cationic lipophilic fluorochrome JC-1. Determination of cell arrest will be quantified by measuring the amount of genetic material (DNA) using PI. To evaluate the apoptotic induced pathway, caspase activity will be measured using fluorescein staining of active caspase. An apoptotic activity of the dihydroclusin diacetate, betulonic acid, microphyllanin, malabaricatrienol, ariensin and β-caryophyllene molecules of 22.64%, 4.02%, 1.45%, 25.6%, 13.02% and 10.45%, respectively was obtained and a percentage loss of mitochondrial membrane potential of up to 97% and a caspase activity of up to 3.5 fold. Beta caryophyllene, ariensin and betulonic acid induce arrest in G2/M phase; dihydroclusine acetate in S phase and microphyllanin in G0/G1. The ability to induce the apoptosis of the compounds through the caspase pathway, cell cycle arrest and activated by the intrinsic pathway was demonstrated.

Biography

Q B C Francisco Humberto González Gutiérrez has completed his licentiate from Universidad de Sonora. He has done his Master's in faculty of biological sciences and health from Universidad de Sonora. He has two articles published as co-author, participated in multiple school events where he obtained recognition for obtaining first places and in addition to having the participation in a congress at state level.

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