World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:13, No:06, 2019

Cardenolides from the Egyptian Cultivar: Acokanthera spectabilis Leaves Inducing Apoptosis through Arresting Hepatocellular Carcinoma Growth at G2/M

Authors : Maha Soltan, Amal Z. Hassan, Howaida I. Abd-Alla, Atef G. Hanna

Abstract : Two naturally known cardenolides; acovenoside A and acobioside A were isolated from the Egyptian cultivar; Acokanthera spectabilis leaves. It is an ornamental and poisonous plant that has been traditionally claimed for their medicinal properties against infectious microbes, killing worms and curing some inflammations at little amounts. We examined the growth inhibition effects of both cardenolides against four types of human cancer cell lines using Sulphorhodamine B assay. In addition, the clonogenic assay was also performed for testing the growth inhibiting power of the isolated compounds. An in vitro mechanistic investigation was further accomplished against hepatocellular carcinoma HepG2 cell line. Microscopic examination, colorimetric ELISA and flow cytometry techniques were our tools of proving at least part of the anticancer pathway of the tested compounds. Both compounds were able to inhibit the growth of 4 human cancer cell lines at less than 100 nM. In addition, they were able to activate the executioner Caspase-3 and apoptosis was then induced as a consequence of cell growth arrest at G2/M. An attention must be payed to those bioactive agents particularly when giving their activity against cancer cells at considerable small values while presenting safe therapeutic margins as indicated by literature.

Keywords : anticancer, cardenolides, Caspase-3, apoptosis
Conference Title : ICMPNS 2019 : International Conference on Medicinal Plants and Nutrient Supplementation
Conference Location : Paris, France
Conference Dates : June 25-26, 2019