CYTOTOXICITY EFFECT OF IONIC LIQUID-GRAVIOLA FRUIT (Annona muricata) EXTRACT TO HUMAN COLON CANCER (HT29) CELL LINES

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IIUM ENGINEERING JOURNAL
Volume: 22 **Issue:** 2 **Page:** 50-66
DOI: 10.31436/iiumej.v22i2.1687
Published: JUL 2021
Document Type: Article

Abstract

The present study aimed to investigate the anti-proliferative effect of the ionic liquid-Graviola fruit (IL-GFE) extract on colon adenocarcinoma (HT29) cell lines and their kinetics behaviour to assess the Graviola fruit potential as a therapeutic alternative in cancer treatment. The phytoconstituents content of IL-GFE was identified using GC-TOFMS apparatus and measured its cytotoxicity on HT29 by tetrazolium bromide. Then the cytokinetic behaviour of the treated HT29 cells with IL-GFE was illustrated using the cells' growth curve. Besides, the cell cycle phase perturbation for the treated HT29 was applied using a flow cytometry technique. Qualitative identification of phytoconstituents of IL-GFE showed that Graviola fruit contains acetogenins, alkaloids, flavonoids, tannins and saponins compounds. IL-GF extract displayed a cytotoxicity effect on HT29 cells with the IC50 value of 10.56 mu g/mL, while Taxol showed an IC50 value of 1.22 mu g/mL. IL-GFE also decreased the cell generation number from 3.93 to 2.96 generations compared to Taxol-treated cells 2.01 generations. The microscope observation of the HT29 cells treated with the crude IL-GFE displayed loss of density and cell detachment. The extract's growth inhibition was related to the cell cycle arrest at the G0/G1 phase. IL-GFE inhibited colon adenocarcinoma HT29 cells' proliferation and affected their kinetic behaviour by lowering cell viability, inducing apoptosis, and arresting the cell cycle at the G0/G1 phase.

Keywords

Author Keywords: colon cancer; cell cycle; flow cytometry; Graviola (Annona muricata); growth kinetics; GC-TOFMS; ionic liquids
Keywords Plus: IN-VITRO; CYCLE ARREST; ACETOGENINS; APOPTOSIS; LIVER; VIVO

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Categories/Classification

Research Areas: Engineering

Funding

Funding agency	Grant number
International Islamic University Malaysia	P-RIGS18-065-0075

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