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 measured its cytotoxicity on HT29 by tetrazolium bromide. Then the cytokinetic behaviour of the treated HT29 cells with IL-GFE 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 μg/mL, while Taxol showed an IC50 value of 1.22 μg/mL. IL-GFE also 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 μg/mL, while Taxol showed an IC50 value of 1.22 μg/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 effect on HT29 cells with the IC50 value of 10.56 μg/mL, while Taxol showed an IC50 value of 1.22 μg/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 microscopic 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 GO/G1 phase. The 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
- colon cancer
- cell cycle
- flow cytometry
- Graviola (Annona muricata)
- growth kinetics
- GC-TOFMS
- ionic liquids

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