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Antioxidant and Cytotoxic Effects of Different Extracts of Fruit Peels Against Three Cancer Cell Lines

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Abstract : Cancer is a disease that causes abnormal cell proliferation and invades nearby tissues. Lung cancer is the second most frequent cancer worldwide. Natural anti-cancer drugs have been developed with low side effects and toxicity. Citrus peels and extracts have been demonstrated to have significant pharmacological and physiological effects as a result of the high concentration of phenolic compounds found in citrus fruits, particularly peels. Tangerine peels can serve as an effective source of bioactive substances such as phenolics, flavonoids, and catechins, which have antioxidant, antibacterial, anticancer, and anti-inflammatory properties. Consequently, this work aims to determine the anticancer activity of ethanol extract of Tangerine peels against the A549 cell line and identify the phenolic compound profile (19 compounds) by using HPLC. Anticancer and antioxidant potentials of the extract were evaluated by MTT assay and TLC- TLC-bioautography sprayed with DPPH reagent, respectively. The obtained results revealed that tangerine peel extract showed significant activity against the A549 cell line with IC50 of 97.66 µg/mL. HPLC analysis proved that the highest concentration is naringenin 464.05 mg/g. More studies indicate that naringenin has significant anticancer potential on A549 cancer cells. The results showed that naringenin binds t0 EGFR protein in A549 with high binding affinity and thus may reduce lung cancer cell migration and enhance the apoptosis of cancer cells. From the obtained results it could be concluded that tangerine peel extract is an effective anti-cancer agent that may potentially serve as a natural therapeutic option for lung cancer treatment.

Keywords : tangerine peel, A549 cell line, anticancer, naringenin, HPLC analysis, naringenin, TLC bioautography
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