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Auraptene, a major compound of supercritical fluid extract of Phalsak (*Citrus hassaku* Hort ex Tanaka), induces apoptosis through the suppression of mTOR pathways in human gastric cancer SNU-1 cells

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The supercritical extraction method is a promising process to obtain volatile and non-volatile compounds by avoiding thermal degradation and solvent residue in the extracts. In search of phytochemicals with potential therapeutic application in gastric cancer, the supercritical fluid extract (SFE) of Phalsak (*Citrus hassaku* Hort ex Tanaka) fruits was analyzed by Gas Chromatography-Mass Spectrometry (GC-MS). Compositional analysis in comparison with the anti-proliferative activities of peel and flesh suggested that auraptene is the most prominent anti-cancer compound having activity against gastric cancer cells. SNU-1 cells were the most susceptible to auraptene-induced toxicity among the tested gastric cancer cell lines. Auraptene induced the death of SNU-1 cells through apoptosis, as evidenced by the increased cell population in the sub-G1 phase, the appearance of fragmented nuclei, the proteolytic cleavage of caspase-3 and poly(ADP-ribose) polymerase (PARP) protein, and depolarization of the mitochondrdial membrane. Interestingly, auraptene induced an increase in the phosphorylation of Akt, which is reminiscent of the effect of a rapamycin, the mTOR inhibitor that triggers a negative feedback loop on Akt/mTOR pathway. Taken together, these findings provide valuable insights into the anti-cancer effects of the SFE of the Phalsak peel by revealing that auraptene, the major compound of Phalsak peel induced apoptosis in addition to the inhibition of mTOR in SNU-1 cells.

Biography

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