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Bioactive Molecules Isolated for the First Time from Hyoscyamus albus L. and their Mechanisms Underlying the Anticancer Effects

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Abstract : Hyoscyamus albus L. is a small genus from Solanaceae family known by its use in old traditional medicine in the east of Algeria. Aim: This study aimed to characterize bioactive molecules from H. albus, evaluate their anticancer activity in several cancer cells and investigate their possible molecular mechanism. Materials and Methods: Different compounds (Peak h of fraction F), (Peak 3 of Fraction F), (Peak 1 of fraction C) were isolated from H.albus L by using high-performance chromatography (HPLC), mass spectrometry (MS) and proton NMR (NMR H1). All isolated compounds were subjected to cytotoxicity and antiproliferative assays against a panel of the four cell lines: DU-145, U-2 OS, U-87 MG and LN-229 cell lines and were determined using MTT assay, Annexin V and propodium iodide were used to evaluate apoptosis. Results: The phytochemical study of H. albus Fractions led to the isolation of quercetin-3-O-β-dglucopyranosyl-(1 → 6)-β-d-glucopyranosid, N-trans-feruloyltyramine, Hydrocaffeoyl-N8- caffeoylspermidine.The biological results indicated that all cell lines were consistently sensitive to P1 FC in a dose-dependent manner. This difference in cytotoxic sensitivity was more pronounced in osteosarcoma cell line, U-2 OS, when compared to prostate cancer and U-87 MG. Cell viability data also demonstrated that only U-87 MG cells were responsive to treatment with Ph FF. compounds P1 FC and Ph FF have induced necrosis and apoptosis in a large part of LN-229 cells. Conclusion: The overall results of the present study provided evidence that isolated compounds are potential therapeutic entities against cancer.

Keywords : hyoscyamus albus, cancer cells, coumpounds, HPLC
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