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Rauvolfine B isolated from the bark of *Rauvolfia reflexa* (Apocynaceae) induces apoptosis through activation of caspase -9 coupled with S phase cell cycle arrest

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The chemistry of the Rauvolfia species has been comprehensively investigated for the presence of indole alkaloids and their biological activities over a long period of time. For example, the clinical uses of *Rauvolfia* in arterial hypertension has been described in 1955 and the roots and barks of *Rauvolfia yunnanensis* have been used for the remedy of snake bites, feverish illnesses and insanity in China and India. In this study, three indole alkaloids namely; rauvolfine B, macusine B and isoreserpiline have been isolated from the dichloromethane crude extract of *Rauvolfia reflexa* bark (Apocynaceae). The structural elucidation of the isolated compounds has been performed using spectral methods such as UV, IR, MS, 1D and 2D NMR. Rauvolfine C showed anti proliferation activity on HCT-116 cancer cell line, its cytotoxicity induction was observed using MTT assay in eight different cell lines. Annexin-V is serving as a marker for apoptotic cells and the Annexin-V-FITC assay was carried out to observe the detection of cell-surface Phosphatidylserine (PS). Apoptosis was confirmed by using caspase-8 and -9 assays. Cell cycle arrest was also investigated using flowcytometric analysis. Rauvolfine B had exhibited significantly higher cytotoxicity against HCT-116 Cell line. The treatment significantly arrested HCT-116 cells in the S phase. Together, the results presented in this study demonstrated that rauvolfine B inhibited the proliferation of HCT-116 cells and programmed cell death followed by cell cycle arrest.

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