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Isolation, Characterization and Quantitation of Anticancer Constituent from Chloroform Extract of N. arbortristis L. Leaves

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Abstract : Background: Nyctanthes arbortristis Linn is traditionally used as anticancer herb in Indian system of medicine, but its introduction into modern system of medicine is still awaited due to lack of systematic scientific studies. Objective: The objective of the present study was to isolate and characterize anticancer phytoconstituents from N. arbortristis L. leaves based on bioactivity guided fractionation. Method: Different extracts of the leaves of the plant were prepared by Soxhlet extractor. Each extract was evaluated for anticancer activity against HL-60 cell lines. Chloroform and HA extract showed potent anticancer activity and hence were selected for fractionation. Fraction C1 from chloroform extract was found to be most potent amongst all when tested against three cell lines (HL-60, A-549, and HCT-116) and thus was selected for further fractionation and a pure compound CP-01 was isolated. RP-HPLC method has been developed for quantification of isolated compound by using Kinetex C-18 column with gradient elution at 0.7 mL/min using mobile phase containing potassium dihydrogen phosphate (0.01 M, pH 3.0) with acetonitrile. The wavelength of maximum absorption (λ_{max}) selected was 210 nm. Results: The structure of potent anticancer CP-01 was determined on the basis spectroscopic methods like IR, 1H-NMR, ^{13}C-NMR and Mass Spectrometry and it was characterized as 1,1,2-tris(2’,4’-di-tert-butylbenzene)-4,4-dimethyl-pent-1-ene. The content of CP-01 was found to be 0.88 %w/w of chloroform extract and 0.08 %w/w of N.arbortristis leaves. Conclusion: The study supports the traditional use of N. arbortristis as anticancer herb & the identified compound CP-01 can serve as an excellent lead to develop potent and safe anticancer drugs.

Keywords : anticancer, HL-60 cell lines, Nyctanthes arbor-tristis, RP-HPLC
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