

Volatile profiling aided in the isolation of anti-proliferative lupeol from the roots of *Clinacanthus nutans* (Burm. f.) Lindau

ABSTRACT

Isolation of anti-proliferative compounds from plants is always hindered by the complexities of the plant's nature and tedious processes. *Clinacanthus nutans* (Burm. f.) Lindau is a medicinal plant with reported anti-proliferative activities. Our study aimed to isolate potential anti-proliferative compounds present in *C. nutans* plant. To start with, for our study, we came up with a strategy by first profiling the volatile compounds present in the leaf, stem and root of *C. nutans* using GC-MS. Comparing the plant's volatile profiles greatly narrowed down our target of study. We decided to start with the isolation and characterization of a pentacyclic terpenoid, i.e., lupeol from the roots of *C. nutans*, as this compound was found to present abundantly in the roots compared to the leaf or stem. We developed a simple maceration and re-crystallization method, without the necessity to go through the fractionation or column chromatography for the isolation of lupeol. Characterizations of the isolated compound identified the compound as lupeol. The anti-proliferative activity of the isolated lupeol was further investigated against the MCF-7 cell line, which showed comparable anti-proliferative activity with the authentic lupeol and camptothecin. Our strategy to profile every part of the plant first, followed by selection of the most suitable plant part and targeted compound proved useful for further isolation and characterization bioactive compound from *C. nutans*.