ABSTRACT

The development of a non-chromatographic method for partial purifying mitragynine from Mitragyna speciosa leaves aims to address the challenges of inefficient and unstable bioactive compound isolation. Preliminary studies on non-alkaloid fractions failed due to instability and low yield (<0.5%). This study evaluates pH-manipulation-based liquid-liquid extraction (ABLLE) as a simpler and more economical approach. The method compares the effect of maceration solvents (methanol vs. ethanol) and extraction solvents (dichloromethane vs. ethyl acetate) on mitragynine content and yield. Maceration for 3×24 hours was followed by a two-step acid-base extraction to yield alkaloid fractions. Initial methanol extract showed a higher yield (24.4%) compared to ethanol (13.9%), consistent with methanol's polarity. Alkaloid identification by TLC and Dragendorff's reagent showed an Rf spot of 0.49, close to literature mitragynine. UV-Vis analysis indicated alkaloid fraction spectra similar to literature mitragynine, with FADE showing the highest absorbance. Quantitative HPLC-UV results showed that the combination of ethanol maceration and dichloromethane partitioning (FADE) yielded the highest mitragynine content (39.03%), followed by FAEE (27.47%) and FAEM (19.03%). Although FADE had a lower yield (0.4855%) compared to FAEE (0.7022%), dichloromethane was more effective in extracting mitragynine due to its semi-polar to non-polar nature. ABLLE proved effective and economical for obtaining high-content mitragynine fractions.

Keywords: mitragynine, acid-base liquid-liquid extraction (ABLLE), Mitragyna speciosa