SUMMARY

Kratom (*Mitragyna speciosa*) is a plant native to Southeast Asia, rich in alkaloid compounds, especially mitragynine, which is known for its analgesic effects and potential as an alternative therapy for opioid addiction. Indonesia, particularly West Kalimantan, is a major global producer of kratom. However, its exports are primarily in the form of dried powder without further processing, resulting in low added value. Efforts to increase this value through the isolation of bioactive compounds face challenges, as seen in preliminary research that attempted to isolate non-alkaloid fractions from dichloromethane using solvent partitioning and column chromatography. This attempt failed due to fraction instability, low selectivity, and low yield.

These failures highlight the need for more efficient and stable isolation methods. Mitragynine, as the main alkaloid, possesses high economic value and pharmacological activity, but it is difficult to separate in pure form because it readily degrades when exposed to light, oxygen, and heat. Conventional methods like preparative HPLC are costly and require specialized equipment. Therefore, this research evaluates a simpler and more economical liquid-liquid extraction method based on pH manipulation (acid–base liquid–liquid extraction/ABLLE). It also compares combinations of maceration solvents (methanol vs. ethanol) and extraction solvents (dichloromethane vs. ethyl acetate) on mitragynine content and yield.

The research was conducted at the Tropical Disease Laboratory at UNDIP using a maceration method for 3 x 24 hours, followed by a two-stage acid-base extraction to produce alkaloid fractions FAEM (Ethyl Acetate Methanol Alkaloid Fraction), FAEE (Ethyl Acetate Ethanol Alkaloid Fraction), and FADE (Dichloromethane Ethanol Alkaloid Fraction). Alkaloid identification was performed using thin-layer chromatography and Dragendorff's reagent, while mitragynine analysis was conducted qualitatively with UV-Vis spectrophotometry and quantitatively using HPLC-UV with a gradient system.

The results showed that the combination of ethanol (maceration) and dichloromethane (partitioning) solvents yielded the highest mitragynine content (39.03%), although the yield was lower compared to using ethyl acetate. UV-Vis spectra and Rf values in TLC supported the presence of mitragynine, and the quantification results were consistent with the HPLC profile. Thus, ABLLE proved to be an effective and economical approach for obtaining high-content mitragynine fractions without the need for further chromatography.