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Histological Assessment of *Acalypha Paniculata* and Its Phytoconstituent Systemisation

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ABSTRACT This study explores the pharmacognostic characterisation of *Acalypha paniculata*, a plant species within the Euphorbiaceae family known for its traditional medicinal uses. The investigation focuses on the leaf histology and phytoconstituent profile of *Acalypha paniculata*. Microscopic analysis reveals distinct features, including rectangular epidermal cells, multicellular covering trichomes, caryophyllaceous stomata, and cortex-heteromorphic structures. Phytochemical examination confirms the presence of alkaloids, terpenoids, carbohydrates, steroids, flavonoids, and saponins. Physicochemical parameters such as moisture content, total ash value, and extractive values are measured, with the soxhlet ethanolic extract. HPTLC densitometric analysis identifies four distinct spots with Rf values of 0.2, 0.4, 0.7 and 0.9, respectively. ATR-FTIR spectroscopy reveals nine functional group peaks between 3350 cm^{-1} to 881 cm^{-1} and GC-MS analysis detects 11 bioactive compounds. The comprehensive findings contribute to the understanding of *Acalypha paniculata*'s characteristics, facilitating future identification and authentication. The phytoconstituent profile suggests potential applications in new drug development, emphasising the plant's pharmacological significance.