

Phytochemical profiling and correlation analysis of five medicinal Euphorbiaceae species from Bangladesh

Mahabub Alam Ashik¹, Md. Shakib Al Islam¹, Arup Karmokar¹, Md. Riyadh Arefin^{1,2}, A.K.M. Azad-ud-doula Prodhani¹ and A.K.M. Golam Sarwar^{1*}

¹ Laboratory of Plant Systematics, Department of Crop Botany, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh.

² Botany Division, Bangladesh Tea Research Institute, Sreemangal 3210, Bangladesh.

* Email: drsarwar@bau.edu.bd

Receipt: 28.12.2025 Revised: 09.03.2026 Acceptance: 11.03.2026

DOI: <https://doi.org/10.53552/ijmfmap.12.1.2026.114-122>

License: [CC BY-NC 4.0 \(https://creativecommons.org/licenses/by-nc/4.0/\)](https://creativecommons.org/licenses/by-nc/4.0/)

Copyright: © The Author(s)

ABSTRACT

The family Euphorbiaceae comprises a large and diverse group of flowering plants with pivotal medicinal value for human health. Bangladesh harbors 47 genera and 141 species of this family, yet a significant research gap remains in its phytochemical study. To address this situation, the present experiment was conducted to determine the phytochemical compounds and their relationships in five important Euphorbiaceae species, viz., *Euphorbia hirta* L., *Acalypha indica* L., *Jatropha gossypifolia* L., *Jatropha curcas* L., and *Acalypha hispida* Burm., collected from the Botanical Garden of Bangladesh Agricultural University. The study was accomplished by following a completely randomized design (CRD) with three replications to quantify the phytoconstituents of leaves, like chlorophyll a (Chl a), chlorophyll b (Chl b), total chlorophyll (TChl), carotenoids (CRTN), total phenolic compounds (TPC), total flavonoid contents (TFC), and total antioxidant activity (TAC). The species showed significant variation in phytochemicals, as revealed by analysis of variance. Among them, *A. indica* had the significantly highest Chl a ($2.42 \pm 0.08 \text{ mg g}^{-1} \text{ FW}$), Chl b ($1.64 \pm 0.09 \text{ mg g}^{-1} \text{ FW}$), TChl ($4.06 \pm 0.17 \text{ mg g}^{-1} \text{ FW}$), CRTN ($4.13 \pm 0.21 \text{ mg g}^{-1} \text{ FW}$), and TPC ($17.01 \pm 0.19 \text{ mg GAE g}^{-1} \text{ DW}$), whereas *J. gossypifolia* possessed the maximum amount of Chl b ($1.42 \pm 0.07 \text{ mg g}^{-1} \text{ FW}$) and TAC ($7.31 \pm 0.13 \text{ mg AAE g}^{-1} \text{ FW}$). Strong positive correlations were identified between leaf pigments and TPC, whereas negative correlations were determined with TFC and TAC. Finally, *A. indica* and *J. gossypifolia* were identified as the most promising species, with phytoconstituents that warrant more in-depth study to validate the current research.

Keywords: Antioxidants, Euphorbiaceae, flavonoids, leaf pigments, phenolics, phytochemicals.