Indian Journal of Natural Products and Resources
Vol. 17(2), June 2026, pp. 238-245
DOI: 10.56042/ijnpr.v17i2.21812

Quantitative analysis of stigmasterol and α-Amyrin in three antidiabetic medicinal plants using GC-MS/MS

Dharmendra Kumar* and Satish S. Kolte
Department of Chemistry, K. C. College, Churchgate 400020, (H.S.N.C. University, Worli 400018) Mumbai, Maharashtra, India

Received 19 July 2025; revised received 26 February 2026; accepted 02 March 2026

Traditional medicinal systems in India frequently employ *Costus igneus* N.E.Br., *Bryophyllum pinnatum* (Lam.) Oken, and *Ficus benghalensis* L. for the management of diabetes mellitus; however, systematic comparative quantitative evidence supporting their bioactive sterol content remains limited. The present investigation aimed to comparatively quantify two pharmacologically significant phytomarkers, stigmasterol and α-amyrin, in chloroform extracts of the leaves of *C. igneus* and *B. pinnatum*, and of the aerial roots of *F. benghalensis*, using a validated GC–MS/MS method operating in Multiple Reaction Monitoring (MRM) mode. Qualitative GC–MS profiling confirmed the presence of both analytes in all samples. Quantitative analysis revealed that *C. igneus* leaves contained the highest concentration of stigmasterol (4580±310 µg/kg), whereas *F. benghalensis* aerial roots were particularly rich in α-amyrin (3250±250 µg/kg). *B. pinnatum* exhibited moderate yet appreciable levels of both compounds. The distinct quantitative patterns observed suggest that although these plants share ethnomedicinal use in diabetes management, their chemical contributors may differ significantly. The findings establish a comparative phytochemical baseline that may guide future pharmacological validation and standardisation efforts.

Keywords: *Bryophyllum pinnatum*, *Costus igneus*, *Ficus benghalensis*, GC–MS/MS, Stigmasterol, α-Amyrin

IPC code; Int. cl. (2021.01)– A61K 36/00, A61K 125/00, A61K 127/00, A61P 3/00