

# Pharmacognosy and Medicinal Plants

## IMPACT OF GEOGRAPHICAL VARIATION ON CHEMOTYPIC VARIABILITY AND BIOLOGICAL POTENTIAL OF GLORIOSA SUPERBA L. COLLECTED FROM GANGETIC PLAINS AND CENTRAL INDIA

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The present study reports the chemotypic variability of bioactive alkaloids (colchicine and gloriosine) and phenolics (quercetin and kaempferol) through calibrated HPTLC method in *Gloriosa superba* L. (tuber), collected from 17 locations of Central India and Gangetic plains. The effect of phytogeography on their antioxidant and anti-inflammatory potential was also established. Quantification data reveals that the content of colchicine (COL) and gloriosine (GLO) varies from 0.02–0.513% and 0.028–0.165%, respectively. Maximum content of colchicine and gloriosine was reported in NBG-10 (Kanth, U.P) and NBG-11 (Mohanlalganj, U.P) having 0.513% and 0.165%. Quercetin and kaempferol content varies from 0.0007% to 0.122% and 0.005% to 0.075%, with is maximum report in NBG-13 (Bheragha, M.P) germplasm. The investigated test extract showed promising antioxidant activity which was found in significant correlation

to total phenolic and flavonoid contents. Although varied results were observed against *in vitro* anti-inflammatory activity, the best results were observed in NBG-01 (0.0038%), whereas, lowest activity was observed in NBG-78 (0.0117%). Based on statistical evaluation on quantitative analysis of bioactive metabolites and bioactivity, five germplasm were identified as elite chemotypes of *G. superba* (NBG-1, NBG-10, NBG-11 and NBG-13) in the targeted phyto-geography. Furthermore, our study proves significant variability in biological potential of *G. superba* extract with the change in phytogeographical content. Thus, it will aid in site specific exploration of high metabolite yielding chemotype(s) with validated pharmacological action to meet out the medicinal and commercial demands.

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