

## Preliminary Study on the Effect of Nitrogen and Potassium Fertilization, and Evapotranspiration Replacement Interaction on Primary and Secondary Metabolites of *Gynura procumbens* Leaves

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### ABSTRACT

Despite progressive reports on pharmacological properties in *Gynura procumbens*, many are overlooking the importance of agronomic requirements for high yields and phytochemical content that vary due to environmental variations. The study was carried out to examine the effects of nitrogen (N), potassium (K), and evapotranspiration replacement (ER) on growth and phytochemical content. Treatments affected parameters significantly ( $p \leq 0.05$ ) with a stronger effect on physiological and biochemical attributes ( $p \leq 0.0001$ ). Highest and lowest yield of biomass and phytochemical content were observed under N0K30(70) and N90K0(25), respectively. Treatments interaction was highly significant ( $p \leq 0.0001$ ) in Cond, TPrC, and TFC, ( $p \leq 0.05$ ) in CF and PWP, and not significant ( $p > 0.05$ ) in Photo, TCC, and TPC. The 75% ER had significant ( $p \leq 0.05$ ) output of biomass and phytochemical content. As ER decreased from 100 to 25%, the Photo and CF were reduced. Phytochemical content displayed a significant negative relationship with PWP. Caffeic acid, kaempferol, and ferulic acid demonstrated as lead compounds. Following this, there were correlations between phenolic biosynthesis-regulated gene and gene expressions such as PAL, CHS, and F3H primers.

**Keywords:** Biosynthesis, flavanone3-hydroxylase, *Gynura*, metabolite, phenylalanine ammonia-lyase, phytochemical

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