

**Optimum shade enhances growth and 5,7-dimethoxyflavone accumulation in
Kaempferia parviflora Wall. ex Baker cultivars**

ABSTRACT

Light is one of the main limiting factors for phenolic compound biosynthesis in plants and shade levels play an important role in the cultivation of medicinal plants. *Kaempferia parviflora* a popular rhizomatous medicinal plant was investigated for secondary metabolite and plant biomass accumulation in response to shading and cultivar type. Two cultivars KPM (*K. parviflora* Malaysia) and KPT (*K. parviflora* Thai) were analyzed for growth and secondary metabolite content under four shade levels (0%, 30%, 50%, and 70%). Photosynthetic capability, plant biomass and total flavonoid content were highest both cultivars under 30% shade after 9 months of growth cycle. 0% shade induced stress on plant growth and reduced photosynthetic capability and the flavonoid accumulation in both cultivars. 5,7-dimethoxyflavone (DMF) was used as a chemical marker to quantify secondary metabolite content in *K. parviflora* cultivars. DMF was greatest in KPM grown under 30% shade. KPT had higher biomass than KPM under 30% but lower DMF content. In conclusion, *K. parviflora* is a semi shade loving plant suitable to grow under 30% shading for high yield and secondary metabolite production.

Keyword: *Kaempferia parviflora*; Shade; Secondary metabolites; 5,7-dimethoxyflavone; HPLC