

Leaf gas exchange properties of three varieties of *Labisia pumila* Benth. under greenhouse conditions

ABSTRACT

Leaf gas exchange properties of three varieties of *Labisia pumila* Benth. (varieties *alata*, *lanceolata* and *pumila*) were measured using LICOR 6400 portable photosynthesis meter under greenhouse conditions in a single factor Complete Randomized Design replicated 10 times. Results indicated that there were no varietal preferences on stomata conductance, water use efficiency and transpiration rate. However, net photosynthesis was 33% and 26% significantly higher ($p \leq 0.01$) in var *lanceolata* ($3.47 \mu\text{mol}/\text{m}^2/\text{s}$) compared to varieties *alata* ($2.33 \mu\text{mol}/\text{m}^2/\text{s}$) and *pumila* ($2.58 \mu\text{mol}/\text{m}^2/\text{s}$), respectively. Although other leaf gas exchange parameters did not differ significantly among the varieties, var *lanceolata* consistently recorded higher values for stomata conductance and water use efficiency against other varieties. The results may imply that var *lanceolata* is a more adaptable, hence, more suitable for the propagation under greenhouse conditions than the other two varieties. However, further research needs to be conducted to confirm these findings as the effects observed might be attributed to the differences in stomata sensitivity of the plants studied. Variety *alata*, conversely, had consistently exhibited the lowest values for all its leaf gas exchange characteristics suggesting that the variety is more challenging to be raised under the greenhouse conditions for domestication purposes. Selection of variety for propagation should also, however, be based upon varietal potential to produce and accumulate secondary metabolites under greenhouse for the purpose of enhancing local herbal industry.

Keyword: Kacip Fatimah; Water use efficiency; Stomata conductance; Transpiration rate; Net photosynthesis