

Effects of plant growth regulators on root culture and yeast extract elicitation on metabolite profiles of *Polygonum minus*

ABSTRACT

There are various secondary metabolites that have been identified in *Polygonum minus* Huds. or kesum plant, but the production is often very low and depending on growth stage. Therefore, elicitation and in vitro techniques have been suggested as an effective way for inducing secondary metabolites production in plant. This study was conducted to determine the optimal conditions for *P. minus* root formation in vitro and to profile the metabolite content from *P. minus* root culture with and without elicitor treatment. From the root induction study, it was found that the fresh weight of induced root for nodal explant in MS liquid media supplemented with 0.5 mg/L NAA and shaken had the highest production (0.38 ± 0.08 g) compared to other treatments including the control. The results from metabolite profile showed that the volatile compound of *P. minus* root produced without any elicitation contained 50.11% aliphatic (27.59% aldehyde, 9.17% alkane and 13.35% others) and 19.39% sesquiterpene (β -caryophyllene, α -bergamotene, β -farnesene, α -caryophyllene dan β -curcumene) where the dodecanal compound (22.27%) and β -caryophyllene (8.09%) have the highest percentage value for aliphatic and sesquiterpene group, respectively. Moreover, elicitation of *P. minus* root culture using yeast extract at 100 mg/L concentration for 1 day demonstrated the ability to increase the production of secondary metabolites in many volatile compounds of kesum in vitro root including the sesquiterpene compounds compared to control treatment and other yeast extract elicitation treatments.

Keyword: Aliphatic; Elicitation; *Polygonum minus*; Secondary metabolite; Sesquiterpene