

Mechanism of Secondary Metabolite Production Pathway by Chitin and Cellulose Elicitation in *Dendrobium antennatum* in Vitro Culture

by Evy Yulianti, Ixora Sratika Mercuriani, Paramita Cahyaningrum Kuswandi, Lili Sugiyarto

ABSTRACT

Orchid is one of the most popular plants as decorations. Nevertheless, some studies have shown that secondary metabolite compounds contained in orchids can be used for some disease treatment. One of the efforts to obtain potential new sources of medicinal plants is to increase the secondary metabolites, by modifying the growth medium of orchids grown with plant tissue culture techniques. Elicitation is one method that can activate several metabolic pathways to produce secondary metabolites. The purpose of this study is to improve the secondary metabolite product of *Dendrobium antennatum* orchid with various elicitor, know the metabolic pathway in plants in producing secondary metabolites due to the influence of elicitors and know the content of secondary metabolites produced. Elicitor used in this study were chitin and cellulose. Secondary metabolites will be obtained by maceration method using ethanol. Secondary metabolites are qualitatively tested. The metabolic pathway is known by looking at the activity of the enzymes Phenylalanine ammonia lyase (PAL) and Glutathione Peroxidase (GSH-Px). The activity of enzymes is known by spectrophotometry and ELISA methods. The results showed that secondary metabolites of *Dendrobium antennatum* orchids produced include saponins, phenols, steroids, flavonoids and tannins. The highest GSH-Px and PAL activity was obtained by treatment with chitin elicitor 100 mg / L.

Kata Kunci: *Dendrobium antennatum*, *elicitor*, *chitin*, *cellulose*, *Glutathione Peroxidase*, *Phenylalanine ammonia lyase*