Title Induction of plant disease defense and growth of *Dendrobium* 'Eia Sakul' by chitosan treatment

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Abstract

One most problems for growing *Dendrobium* orchids is disease infection resulting in losses of production and quality of inflorescence. At the present, the public has been concerning about chemical residues in environment, human health, and the increasing chemical resistance of pathogens. Therefore, the objective of this experiment was to study the effects of chitosan treatment on plant disease defence and in vitro growth of *Dendrobium* 'Eia Sakul' was cultured on Vacin and Went 1949 (VW) medium supplied with the chitosan at the concentrations of 0 (control), 10, 20, 40 and 80 mg.L-1 at 25°C. Chitinase and beta-1,3-glucanase activities; the enzyme associated with plant disease defence, and the growth of *Dendrobium* were then determined after culturing for 4, 8, 12, 22, 24 and 26 weeks. The results revealed that the activities of chitinase and beta-1,3-glucanase dramatically increased during cultured, and the chitosan treated *Dendrobium* showed significantly the highest activities of both enzymes on week 22, 24 and 26 when compared with non-treated. However, chitosan treatments were not significant effects on the *Dendrobium* growth; plant height, number of leaves, length of leaves, width of leaves, number of root, length of root and the number of plant per cluster. Total chlorophyll content in leaves also measured. *Dendrobium* treated with chitosan at 10 and 20 $mg.L^{-1}$ was significant higher than that of control after culturing for 24 and 26 weeks.