

Effects of Organic Additives and Plant Growth Regulators on Protocorm Development of *Dendrobium lowii*

Abstract

A simple and efficient growth protocol was developed for *Dendrobium lowii*, an endangered and Borneo's endemic epiphyte orchid, using four-month-old protocorms as explant sources produced by asexual seeds germination. Protocorms of *Dendrobium lowii* were cultured on Knudson C (KC) media supplemented with organic additives (coconut water, tomato juice and banana pulp) or plant growth regulators (NAA, Zeatin and BAP) at different concentrations and observed for protocorm development. Among all organic additives tested, medium containing banana pulp at 25g/L induced the highest growth index value of 593.3 after 240 days of culture. This treatment also promoted 100% production of shoot and 93.3% of root formation compared to other treatments. Addition of 2g/L peptone or 15% (v/v) coconut water had significantly induced 16.7% protocorms proliferation. The supplementation of 6 μ M NAA promotes similar responses for growth index of 563.3. The treatment induced up to 86.7% and 83.3% of protocorms forming shoots and roots, respectively. The study also revealed that the addition of 2 or 4 μ M of NAA and 4 or 6 μ M BAP is suitable for shoot induction, however with poor rooting formation. This finding is important for conservation and horticultural manipulation of the species.