Effect of growth regulators and explant orientation on shoot tip culture of Borneo endemic orchid, Dimorphorchis lowii

Abstract

Multiple shoots were induced from the shoot tip explants derived from the in vitro grown seedlings of an endangered and horticultural important epiphyte orchid, Dimorphorchis lowii. Shoot tip explants were cultured vertically and/or horizontally on solidified Knudson C media (KC) added with various concentrations of Kinetin (Kn) and 6- Benzylaminopurine (BAP) for shoots multiplication. Shoots were initiated after 4 weeks of culture, and the highest number of healthy shoots (5.05 shoots per explant) was observed in 2.0 mg/l Kinetin (Kn), when the explant placed horizontally. Regenerated shoots were root-induced in KC medium with various concentrations and combinations of Naphthalene acetic acid (NAA), Indole acetic acid (IAA) and Indole butyric acid (IBA). Shoots cultured on medium with 1.0 mg/l IAA and 0.5 mg/l IBA was the most appropriate combination for rooting. Rooted plantlets were transferred in a medium mixture containing coco peat and sphagnum moss (2:1). After 2 months, 78% of plants survived when transferred to the glasshouse. This is the first report for in vitro propagation of D. lowii through shoot tip culture. The protocol developed can be utilized for both large-scale plant production and germplasm conservation of this species.