

Embryogenic callus induction from leaf tip explants and protocorm-like body formation and shoot proliferation of *dimorphorchis lowii*: Borneon endemic orchid

Abstract

Dimorphorchis lowii is a rare epiphytic orchid endemic to Borneo and very popular due to its ornamental value. For the purpose of mass propagation, procedures for *in vitro* propagation through callus were developed. The objectives of this study were to determine the effects of plant growth regulators (PGRs) on callus induction from leaf tip explant and the effects of complex additives on PLBs formation and shoot development. The best combination of PGR was 3.0 mg L⁻¹ Thidiazuron (TDZ) with 0.046 mg L⁻¹ NAA supplemented in half-strength medium (1/2 MS) (Murashige & Skoog, 1962). The percentage of survival and callus formation obtained were 96.0 % ± 19.8 and 52.0 % ± 16.5 respectively. Maximum shoot proliferation from PLBs was observed in Knudson C (KC) medium enriched with 15 % (v/v) coconut water. In this treatment, 10.2 ± 6.2 shoots were produced from one callus explant. Shoots were rooted on KC medium containing 15 % (v/v) coconut water and transferred in a medium mixture containing sphagnum moss, charcoal, brick and coco peat with the ratio of 1:1:1:1. After 2 months being acclimatized in the glasshouse, 78 % of plantlets survived. Histology observations showed that embryogenic callus derived from leaf tip explants might originate from epidermis and mesophyll cells and was capable of developing into complete plantlets.