OPTIMIZATION OF DIRECT ORGANOGENESIS PROTOCOL FOR *Dendrobium* ORCHIDS

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ABSTRACT

Dendrobium is one of the largest genera of Orchidaceae, having high demand in Sri Lankan floriculture trade due to their unique features. The aim of this study was to develop a direct organogenesis protocol for *Dendrobium* orchids with efficient sterilization protocol and to study the best explant stage along with different combinations of growth regulators on shoot and root induction as a cost-effective method for commercial *in vitro* propagation. The multiplication study was conducted using six different media in two factor factorial Completely Randomized Design with six replicates. Shoots of the variety V9 and NWST of *Dendrobium* were successfully established with minimum contamination by following the protocol developed for surface sterilization, using stepwise rinsing with several disinfectants. In multiplication study, the liquid MS basal medium supplemented with 1.0 mg L^{-1} 6-Benzyl Amino Purine (BAP), 0.5 mg L^{-1} Naphthalene Acetic Acid (NAA) followed by MS + 1.0 mg L^{-1} BAP + 0.5 mg L^{-1} NAA + 1.0 mg L^{-1} Indole-3-butyric acid (IBA) was reported as the best medium for both shooting and rooting for variety V9. In variety NWST, MS +1.0 mg L^{-1} BAP+0.5 mg L^{-1} NAA media composition reported as the best shooting as well as rooting medium ($p<0.05$). The above stated effective sterilization procedure along with shoot multiplication and rooting protocols could be used in commercial *in vitro* propagation of V9 and NWST.

Keywords: BAP, IBA, *In vitro* propagation, NAA, Surface sterilization