

Direct regeneration of Periwinkle (*Catharanthus roseus*) via node explants culture and different combinations of plant growth regulators

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Abstract

Periwinkle (*Catharanthus roseus* L., Apocynaceae) contains more than 130 different terpenoid indole alkaloids (TIAs), of which two dimeric alkaloids, Vinblastine and Vincristine, have antineoplastic activity and are useful in treatment of various cancers. Specific production of some alkaloids in differentiated tissues such as leaf and stem led to use direct regeneration of explants in order to increase the production of these important alkaloids in the plant. In this research, 30 combinations of plant growth regulators and activated charcoal were used in MS media for direct regeneration of node explants. Application of BAP in media containing 1 g/l activated charcoal showed the best direct regeneration of node explants and shoot proliferation. Although application of activated charcoal is necessary for periwinkle growth in media due to many phenolic compounds, but it has negative effects on adsorption of plant growth regulators and consequently reduce shoot proliferation. Therefore, it seems that 1 g/l activated charcoal is an appropriate concentration for preparing shoot proliferation media. In addition, transporting regenerated shoots to culture media containing NAA resulted in increasing shoot length. Proliferated shoots rooted in media without PGR and with 2 g/l activated charcoal and acclimated with environmental conditions after transferring to the soil.

Keywords: Periwinkle, Tissue culture, Regeneration, Micropogation, Plant growth regulators

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