Indirect regeneration from *in vitro* leaf tissue of periwinkle (*Catharanthus roseus* L.) in response to different treatments of plant growth regulators

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Abstract

Periwinkle (*Catharanthus roseus* L.) belongs to the Apocynaceae family and accumulates more than 130 terpenoid indole alkaloids (TIAs), of which two dimeric alkaloids Vinblastine and Vincristine have antineoplastic activity and are useful for treatment of various cancers. Therefore, the production of these drugs has been emphasized in plant tissue culture. In this research, 25 treatments of plant growth regulators to produce callus from leaf explants and seven treatments for regeneration of calli were considered. Analysis of variance showed that the effect of different hormonal treatments in the production of callus from leaf explants is significant ($P<0.01$). Application of 0.1 mg/L BAP and 5 mg/L NAA in nutrient media produced a lot of calli and roots. In addition, nutrient media containing activated charcoal and without it were found to be suitable for production of callus and regeneration, respectively. In conclusion, the results showed that indirect regeneration of leaf explants is not a suitable method for micropropagation of periwinkle due to difficult regeneration of callus, probability of mutation and lower number of produced branches. But this method can be utilized for production of secondary metabolites.

Keywords: Periwinkle, Micropropagation, Indirect regeneration, Callus.

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