

The effect of 2,4-dichlorophenoxyacetic Acid and 6-benzylaminopurine on Callus Induction and Plant Regeneration of *Allamanda cathartica* – A Valuable Medicinal Plant

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Abstract

Allamanda cathartica is a potential medicinal plant which starts to achieve awareness in society due to its value to treat various types of diseases, especially in the treatment of jaundice, malaria and cancer. In the present study, the effects of 2,4-dichlorophenoxyacetic acid (2,4-D) and 6-benzylaminopurine (BAP) on the callus induction from the leaf and stem explants were investigated. Plant regeneration from the nodal explants was achieved. Surface sterilization by mercuric chloride (HgCl_2) was utilized in order to surface sterilize the leaf (0.1%), stem and nodal (0.2%) explants. The leaf and stem explants were cultured on full-strength Murashige and Skoog (MS) medium supplemented with different concentrations of 2,4-D alone (0.5 and 1.0 mg/L) or in combinations of 2,4-D (0.5, 1.0 and 1.5 mg/L) with BAP (0.5, 1.0 and 1.5 mg/L). In the study of plant regeneration, the nodal explants were cultured on MS medium supplemented with BAP at 1.0, 3.0 or 5.0 mg/L for shoot multiplication.

MS basal medium was used as a control and also used for shoot elongation. All the cultures were incubated under a photoperiod of 16 hours light and 8 hours darkness. For callus induction, the leaf and stem explants cultured on 1.0 mg/L 2,4-D and 1.0 mg/L BAP gave the best callus response (100%) with yellow-white, greenish friable callus (0.0707 ± 0.0549 g with callus initiated after 6 days) and brown-white, greenish friable callus (0.0207 ± 0.0009 g with callus initiated after 5 days), respectively. For shoot multiplication, MS supplemented with 5 mg/L BAP gave the best response (100%) with multiple shoots formed (6 ± 0.6 shoots per explant) from the nodal explants. In the plant growth regulator (PGR)-free medium, the elongated shoots were developed (1.01 ± 0.07 cm) with white hairy roots.