Propagation of *Plumbago indica* L. (Plumbaginaceae) through direct organogenesis and induction of callus

H.A.S.A. PRIYANJANI[1] and W.T.P.S.K. SENARATH[1]*

[1] Department of Botany, Faculty of Applied Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka.
*Correspondence: wtpsk2011@sjp.ac.lk ; Tel. : +94 718136014

Abstract

Plumbago indica L. (Family Plumbaginaceae) has many therapeutic uses in a wide array of diseases. Plumbagin is the major bioactive compound in *P. indica*. In natural habitats, this plant is under severe threat due to the non-availability of proper cultivation system and exploitation by local communities. Tissue culture methods offer an alternative means of vegetative propagation. This research was carried out on callus induction and plantlet regeneration through direct organogenesis. Mother plants were maintained in a shade house free from pests and diseases. Nodal segments were collected from second to third fully opened leaves and cut in to 1.5 cm. They were cultured on MS medium supplemented with 1.0 – 3.0 mg/L BAP. Half strength MS medium with 0.2 – 0.6 mg/L IBA was used for root induction. Leaf disc, inter nodal and nodal explants were cultured in MS medium supplemented with 3.0 mg/L BAP, 1.5 mg/L Kn and 1.0 mg/L NAA for callus induction. Nodal explants grown in MS medium supplemented with 1.5 mg/L BAP gave the maximum shoot length (1.82 ± 0.3 cm) and maximum multiple shoot induction (5.20 ± 0.4) was observed in 2.0 mg/L BAP. Half strength MS medium supplemented with 0.4 mg/L IBA was the best for root induction (9.4 ± 1.1). Best callus induction was observed from leaf disc explants in MS medium supplemented with 3.0 mg/L BAP, 1.5 mg/L Kn and 1.0 mg/L NAA.

Keywords: Phytochemicals, Plumbagin, *Plumbago indica*