

## A Comparison of Chemical Identities of Roots of Natural and Tissue Cultured Plants and Callus of *Plumbago Indica* L.

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*Plumbago indica* L. (Family Plumbaginaceae) has many therapeutic uses in a wide array of diseases. Plumbagin is the major bioactive compound. This research was carried out on callus induction and plantlet regeneration of *P. indica* and phytochemical screening of roots from tissue cultured plants, natural plants and callus. Nodal explants grown in MS medium supplemented with 1.5 mg/L BAP gave the maximum shoot length ( $1.82 \pm 0.3$  cm) and maximum multiple shoot induction ( $5.20 \pm 0.4$ ) 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 ( $9.4 \pm 1.1$ ). Best callus induction from leaf disc explants was observed in MS medium supplemented with 3.0 mg/L BAP, 1.5 mg/L Kn and 1.0 mg/L NAA. When regenerated plantlets were transferred to sterilized potting mixture (compost: coir dust: top soil: sand 1:1:1:1) for acclimatization, only 25% survival was observed. Phytochemicals present in callus, roots of tissue cultured plants and natural plants of *P. indica* were compared using Gas Chromatography-Mass Spectrometry (GC-MS). A total of three phytochemicals in callus, six in roots of tissue cultured *P. indica* root and seven in natural plant roots were identified. Only two phytochemicals were identified in all three samples namely, cyclohexasiloxane, dodecamethyl and cycloheptasiloxane, tetradecamethyl which have antifungal properties suggesting that even though *P. indica* is getting threatened in natural habitats due to climate change, callus or plant cell culture would be an attractive alternative to obtain necessary bioactive compounds.