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High frequency plant production via shoot organogenesis and somatic embryogenesis from callus in *Tylophora indica*, an endangered plant species

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**Abstract:** An efficient and reproducible protocol has been developed for the in vitro production of an endangered medicinal climber *Tylophora indica* (Burm.f.) Merr. via leaf explants. Different types of calli produced on benzyladenine (BA) and thidiazuron (TDZ) supplemented Murashige and Skoog (MS) basal medium were selected for shoot induction and somatic embryogenesis studies. Calli when transferred from BA (5  $\mu$ M) and TDZ (2.5  $\mu$ M) to MS medium containing BA (5  $\mu$ M) resulted in high frequency shoot induction ( $26.8 \pm 0.97$  shoots/culture) along with somatic embryogenesis ( $10.20 \pm 0.37$  embryoids/culture) up to 3 subculture passages. Embryoids transformed into complete plantlets when transferred to growth regulator free half-strength MS medium. Auxin specific pigmented and whitish roots were induced in the microshoots when planted on half-strength MS medium augmented with indole-3-butyric acid (IBA) and  $\alpha$ -naphthaleneacetic acid (NAA) respectively. Regenerated plantlets were hardened, acclimatised, and established in soil with 90% survival rate and exhibited normal morphology when compared with parent plants.

**Key words:** *Tylophora indica*, leaf callus, somatic embryogenesis, shoot organogenesis

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