

Title: In vitro regeneration potential of shoot tip explants, ex vitro rooting and phytochemical assessment of acetone leaf extracts of *Tecoma stans* L.

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Abstract: *Tecoma stans* (Bignoneaceae) is a valuable medicinal shrub having commercial and industrial importance for its bioactive phyto-constituents. In the current study, multiple shoots were successfully regenerated from shoot tip explants of *Tecoma stans* L., under the influence of meta-topolin (mT). On evaluation of the morphogenic effect of its various doses either singly or in combination with different auxins, MS medium fortified with 7.50 μ M mT and 0.50 μ M NAA yielded maximum shoots (11.8 ± 0.37) per explant with an average length (5.08 ± 0.28 cm), after 8 weeks. For studying the effect of subculturing passages, the cultures were grown on to optimized medium and an enhanced shoot multiplication upto 35 shoots per explant were observed at 8th subculture passage. For ex vitro rooting, healthy microshoots were excised and pulse treated for 3 h with higher doses (100 - 500 μ M) of auxins IAA, IBA or NAA separately before their transplantation to Soilrite. Of the tested treatments, best rooting was obtained in 300 μ M IBA treated microshoots, after 4 wk of plantation in Soilrite. Further, on studying the effects of secondary metabolite production, in vitro raised leaf tissues revealed higher phytochemical diversity and significant increase in antidiabetic alkaloid (Tecomine) from 0.36% control plant to 1.68% in in vitro raised plants. In spite of different phytochemical profiles, no genetic variation was observed among micropropagated plants with the explant donor plant (mother plant) via RAPD marker assessment. The established micropropagation system appears to be practicable for large scale production of *T. stans* progenies with higher number of biochemical compounds.

Keywords: *Tecoma stans*, Micropropagation, Meta-topolin (mT), Auxins (IAA, IBA, NAA) Shoot multiplication, Ex vitro rooting, Secondary metabolites

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