

Verbascoside and isoverbascoside production from the in vitro root culture of *Tecoma stans*

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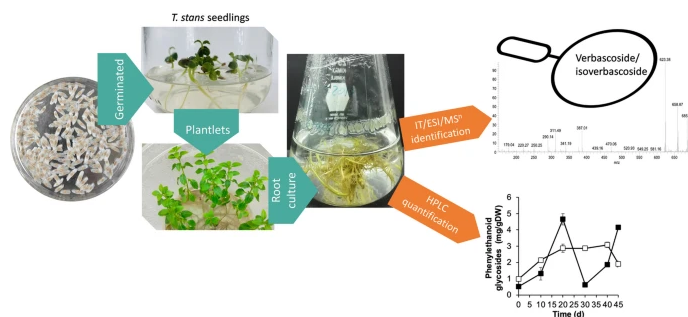
Paniagua-Vega D., Anaya-Esteban E., Cisneros-Ríos D.J., Navarro-Mtz A.K., Barrera-Figueroa B.E., Rivas-Galindo V.M. & Huerta-Heredia A.A. [✉](#)

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Abstract

Tecoma stans is a notable source of antioxidant, antibacterial, antiviral, and anticancer agents, and several of its biological actions are associated with the accumulation of secondary metabolites, such as alkaloids and phenolics. In this study, we developed an in vitro root culture of *T. stans* under photoperiod condition and showed its growth kinetics, demonstrating the verbascoside (Ve) and isoverbascoside (IVe) accumulation. Electrospray ionization and ion-trap analyzer (DFI-ESI-IT-MSⁿ) found both molecules, including caffeic acid, caffeic acid hexoside, and caffeic acid pentoside. In vitro root culture was produced, and a peak biomass occurred at 40 d; however, maximum Ve accumulation was observed at 20 d (4.65 ± 0.35 mg/gDW), and IVe accumulation peaked at day 40. The maximum flavonoid and phenolic compound accumulation was quantified on the 20th day. A linear association between biomass increment (ΔB) and the change in electrical conductivity (ΔEC) was established as $\Delta EC = 0.31\Delta B + 0.15$, $R^2 = 0.96$, functioning as a fast and indirect growth measurement. To the best of our knowledge, this is the first report on *T. stans* root culture that demonstrates its biosynthetic ability to produce Ve and IVe.

Graphical Abstract



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