



### SHOOT REGENERATION AND DETERMINATION OF IRIDOID LEVELS IN THE MEDICINAL PLANT *CASTILLEJA TENUIFLORA* BENTH.

#### ABSTRACT

*Castilleja tenuiflora* is a medicinal plant that grows in pine–oak woods primarily in southern and central Mexico. It is highly valued for its medicinal properties, which have been attributed to aucubin-like iridoids. In the present study, we developed an efficient protocol for in vitro shoot proliferation and ex vitro rooting of *C. tenuiflora*. Using a colorimetric method, we determined total iridoid contents of various different tissues of propagated plants. The shoots were induced from nodal explants cultured on Murashige and Skoog (MS) (1962) medium supplemented with indole-3-butyric acid (IBA) (0 and 0.5  $\mu$ M) and different concentrations of thidiazuron (TDZ), 6-benzyladenine (BA), or kinetin (KIN) (0–20  $\mu$ M). Of the cytokinins tested, KIN was more effective for shoot induction than TDZ or BA, and the highest shoot proliferation rate was achieved with 5  $\mu$ M KIN (4 shoots per explant). Plantlets were rooted on MS medium, nutrient solution, or potting mix, alone or in combination with auxins. The best responses (100% rooting efficiency) were obtained by dipping shoots in half-strength MS medium containing 7.5  $\mu$ M IBA before transfer to potting mix. On average, each shoot formed 9 roots of  $39.3 \pm 3.8$  mm in length after 21 days. These roots appeared to be more functional than those that developed in nutrient solution, and were associated with a high survival rate (95%) during acclimatization and cultivation in a greenhouse, where flowering occurred after 4 months. Propagated plants accumulated iridoids, thus representing a potential source of pharmacologically useful compounds.

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