ABSTRACT

We undertook this study to (1) evaluate an in vitro procedure for plantlet regeneration of Castilleja tenui flora Benth. (Scrophula-riaceae) from axillary buds and (2) induce callugenesis and organogenesis through the manipulation of explant type, culture media and plant growth regulators. An efficient propagation protocol for in vitro multiplication and plantlet regeneration of C. tenuiflora using axillary buds of wild plants was developed. Shoot multiplication was induced from axillary buds in Muras-hige and Skoog (MS) medium containing 0.2 mg L-1BAP and 0.1 mg L-1NAA with an efficiency of 33%. Shoot multiplication and elongation were achieved in one stepusing 0.1 mg L -1IBA and 0.25 mg L-1BAP. After 14 days, an average of four shoots per explant was observed. For rooting, IBA was increased to 1.0 mg L-1and BAP was excluded. Hyperhydricity was not observed and 88% of the shoots rooted. From one axillary bud, 250 plantlets were produced within eight weeks. To induce callugenesis and organogenesis, explants (leaves and internodes) from plantlets were excised and inoculated into MS, B5 and NN culture media in combination with NAA (0-10 µM) and kinetin (0-0.5 µM). In general, rhizogenesis was the main in vitro response (up to 100%) followed by shoot formation (5-50%) and, finally, callugenesis (2-35%). Internodes were more competent than leaves for both callugenesis and organoge-nesis, along with the fact that leaf explants oxidized easily. Rhizogenesis depended on exogenous NAA, but auxin requirement varied according to the culture medium and type of explant used. On the basis of our results, conditions for callugenesis and organogenesis induction of C. tenuiflora can be recommended: a) callus-internode, 0.1 µM NAA and B5 medium; b) rhizoge-nesis-0.1 µM NAA and NN medium; and c) shoots-internode, 0.1 µM NAA and MS medium. Results of the present study show the feasibility of using in vitro culture to propagate and conserve germplasm of the 'cancer herb' C. tenuiflora.

http://www.herbario.encb.ipn.mx/pb/esp/frame_es.htm

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