

In vitro direct rhizogenesis from *Gerbera jamesonii* Bolus leaf

ABSTRACT

The present report describes an original protocol for in vitro direct induction of roots from leaf explants of gerbera for the first time. Since gerbera has immense potential as a premium cut-flower, the major attempts were made on in vitro mass propagation chiefly through in vitro multiple shoot proliferation or callus regeneration. Nevertheless, rhizogenesis could be impending an unattempted method with its yet-to-be known advantages. In our study, the optimum conditions for direct root induction from leaf explants were assessed employing tissue culture technique. Leaves were inoculated to MS medium containing no or variable auxin sources and concentrations namely, 2,4-dichlorophenoxyacetic acid, indole-3-acetic acid (IAA), indole-3-butyric acid or -naphthaleneacetic acid for root induction. It was evident that the maximum root induction (with a frequency of 92.6 %) occurred on MS media fortified with 1.5 mg l⁻¹ IAA, wherein root induction was observed as early as 11 days of culture and an average of ~19 roots with ~13 mm length was obtained from 4 cm² leaf segment after 45 days of culture. Stereo microscopic observation revealed the induction of roots and gradual developmental stages of rhizogenesis. The efficiency of direct root induction without any interim growth stages (such as, callus or shoots) in our study offers a reproducible system that could provide a model protocol for more comprehensive developmental studies on root growth.

Keyword: Adventitious rooting; Auxins; Coumarin; Developmental stages; Leaf explant