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Research Note

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Callus induction and root regeneration in gerbera (*Gerbera jamesonii*)

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ABSTRACT : Efficient and reproducible callus induction and root regeneration protocol for *Gerbera jamesonii* has been developed using *ex vitro* leaf explants. In the present experiment the callus induction and growth was maximum observed on ¼ MS medium supplemented with 1mg l-1 BA + 0.08 mg l^{-1} 2,4-D. The root regeneration was observed in the MS medium supplemented with 2 mg l^{-1} Kin and also in medium with 1 mg l^{-1} NAA and 1mg l^{-1} BA. This protocol offers rapid buildup of selected clones and opens up prospects for using biotechnological approaches for gerbera improvement.

KEY WORDS : Gerbera, Compact callus, Friable callus, Growth regulators, Root regeneration

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Gerbera (*Gerbera jamesonii*) belongs to family Asteraceae and is popular ornamental of commercial importance used as a decorative garden plant, container plant, or mostly as cut flowers. It ranks among the top ten cut flowers of the world (Parthasarathy and Nagaraju,1999). The genus consists of about 40 species (Das and Singh, 1989). Out of the recorded species, only one species *G. jamesonii* is under cultivation. It can be propagated both by sexual and asexual methods. Until recently, they were usually propagated by dividing clumps. However, this technique is too slow for commercial purposes (Murashige *et al.*, 1974). Nowadays, *in vitro* propagation is the preferred method (Reynoird *et al.*, 1993; Aswath and Choudhary, 2002, Xi and Shi, 2003; Prasanth and Sekar, 2004; Kumar *et al*., 2004). The present study was carried out to check the induction of callus and its regeneration in gerbera.

The present investigation was carried out at plant tissue culture lab for the commercial production of ornamental plants attached to the Department of Pomology and Floriculture, College of Horticulture, Vellanikkara, Thrissur, Kerala, India. The gerbera used in this study is a cut flower cultivar (bicolor) with double type of flowers having white rays, florets and black disc. The leaves were collected and disinfected with pril and bavistin (0.1g/100ml) for about 10 minutes. The leaves were washed in sterilized water until the detergent gets washed out. Under aseptic conditions, leaves were sterilized with 0.1% $HgCl_2$ for 5 minutes and washed thoroughly with sterilized water to remove sterilants. The explants were cultured on MS medium (Murashige and Skoog, 1962). The medium was supplemented with 30g per litre sucrose and solidified with 7.5 g per litre agar. The pH of the medium was adjusted to 5.7 before autoclaving. The cultures were maintained at 25 ± 2^0 C in dark for callus induction. One month old calli were transferred to regeneration medium (MS salts with cytokinin and auxin) and were maintained under a photoperiod of 8 h illumination, with a light intensity of 100 µmol $m^{-2}s^{-1}$.

Callus initiation was obtained by using leaf segment as explants. It was very difficult to overcome the contamination problem. The explants showed swelling within 8 to 10 days of inoculation. However callus formation was observed after 15 days at the margins of the explants and subsequently spread over the whole explants. In the present experiment the callus induction and growth was maximum observed on ¼ MS medium supplemented with 1mg l^{-1} BA + 0.08 mg l^{-1} 2,4-D. The