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Short Communication

Acclimatization of gerbera at Lucknow after *in vitro* multiplication

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Gerbera (*Gerbera jamesonii* H. Bolux ex. Hook. F) is a temperate crop and do not perenniate easily in subtropical climate like that of Lucknow. In the present experiment, attempt has been made to acclimatize gerbera plants under Lucknow condition after multiplying *in vitro*.

Immature flower heads (1.5 cm in diameter) as explants of *Gerbera jamesonii* were collected from greenhouse grown gerbera (pink colour) plants. Flower heads were washed in 5% teepol (a liquid detergent) for 15 min. and then washed in running water for 30 min. Involucral bracts were removed from flower heads and disinfected with 70% ethanol for 1 min followed by surface sterilization with 0.1% $HgCl_2$ for 2 min and thorough wash with sterile distilled water. Each flower head was segemented into 12 pieces and inoculated on MS medium [1] modified as described elsewhere [2] and supplemented with IAA 0. 5 mg/l and BA 2 mg/l.

Leaf petioles were collected from shoots raised *in vitro* from the above experiment. Petiole explants were cultured on medium containing 1, 2 and 5 mg/l BA in combination with 0.1, 0.2 and 0.5 mg/l IAA. Shoots of 2-3 cm length were rooted on modified MS medium containing no growth regulator. All the rooted plantlets were transferred to sand and soil (1:1) mixture and kept covered to maintain high humidity for first one week. After 3 weeks, plants were transferred to the field.

Meristematic tissues were formed from segments of flower heads within one month of culture initiation.

Fig. 1. Acclimatization of gerbera (A) Direct shoot regeneration from petiole explant, (B) Shoot multiplication, (C) Flowering in the field

About 80 percent of the flower head segments responded while the rest turned brown. The responding explants were subcultured on the same medium regularly at one month intervals. Shoot buds were formed after three months of culture initiation. About 70% of the cultures responded with an average five shoots per responding culture. Shoots were proliferated and maintained in the same medium by regular subculture at an interval of one month. In the present experiment flower heads of 1.5 cm diameter were only used as source of explants and cultured on 0.5 mg/l IAA and 2.0 mg/l BA as these conditions were found optimum in our earlier experiment [2]. In gerbera, plant regeneration from vegetative parts like shoot apices are reported but these are difficult to decontaminate [3].

Direct shoot regeneration was observed within two to three weeks of culture initiation from petiole explants (Fig. 1A). Shoots were formed in all treatments (Table 1).

Table 1. Response of petiole explants on IAA and BA supplemented media

IAA (mg/l)	BA (mg/1)					
	1		2		5	
	Response (%)	No. of shoots per responding explant	Response (%)	No. of shoots per responding explant	Response (%)	No. of shoots per responding explant
0.1	0.00	0.0	50.0	3.0±0.5	42.8	4.0±0.6
0.2	40.0	3.0±0.7	47.4	4.2±10.7	37.5	3.2±0.8
0.5	33.3	3.5±0.3	50.0	6.0±0.7	37.5	5.7±1.7

However, the best response was obtained in 0.5 mg/l IAA and 2.0 mg/l BA supplemented medium where 50% explants responded with an average three shoots per responding explants (Fig. 1B). All developing shoots were subcultured on 0.5 mg/l IAA and 2 mg/l BA supplemented media for further proliferation.

Roots were produced within 10 days on rooting medium. Well rooted shoots were transferred to soil where all the plants survived under field conditions and produced true-to-type flowers (Fig. 1C). *In vitro* raised plantlets which were transplanted in the field during July-August produced quality flowers during, December-March. Such a programmed blooming of gerbera with the *in vitro* strategy holds promise to commercialize cultivation of exotic flowers at competitive price in non-traditional areas.

In earlier reports from our laboratory it has been clearly demonstrated how *in vitro* raised temperate Asiatic hybrid and gerbera have been acclimatized under subtropical North Indian plains. Work is on progress at our laboratory for large scale development of quality plant materials of carnation, orchid, etc. through *in vitro* technique to acclimatize them under subtropical climate. Our results clearly indicate that *in vitro* raised juvenile plantlets are more adaptable to new environment.

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References

1. **Murashige T. and Skoog F.** 1962. A revised medium for rapid growth and bioassay with tobacco tissue culture. Physiol. Plant., **15**: 473-497.

2. **Mandal A.K.A. and Datta S.K.** 2002. Introduction of gerbera cultivation in Lucknow agro-climate through tissue culture of young flower head. Ind. J. Biotech., **1**: 212-214.

3. **Murashige T., Serpa M. and Jones J.B.** 1974. Clonal multiplication of *Gerbera* through tissue culture. Hort. Sci., **9**: 175-180.

4. **Misra P. and Datta S.K.** 2001. Acclimatization of Asiatic hybrid lilies under stress conditions after propagation through tissue culture. Curr. Sci., **81**: 1530-1533.