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# *In vitro* conservation studies in dahlia (*Dahlia variabilis* L.)

**G. SHIVAYOGEPPA**, J. DINAKARA ADIGA, G. PRABHULING, B.S. REDDY, S.K. NATRAJ **AND** S.J. PRASHANTH

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See end of the article for authors' affiliations

Correspondence to :

**G. SHIVAYOGEPPA**
Department of Plant Propagation and Biotechnology, K.R.C. College of Horticulture, Arabhavi, BELGAUM (KARNATAKA) INDIA

## ABSTRACT

*In vitro* conservation of micro shoots were conducted in *dahlia variabilis* L., Effect of maleic hydrazide, sucrose and alar (B-9) on growth and storability of micro shoots of *dahlia* was assessed. Among the different concentrations of maleic hydrazide (0, 10, 20, 30 and 40 mg per cent), sucrose (0, 0.5, 1.0, 3.0, and 5.0 per cent) and alar (0, 10, 20, 30 and 40 mg per litre) MS media supplemented with 40 mg per litre maleic hydrazide took significantly higher number of days (27.5 days) for bud sprouting and maximum storage period (134.00 days) followed by sucrose and alar (B-9) at 40mg per litre was recorded maximum storage period (131.00 days) and maximum storage period (129.00 days), respectively.

**Key words :** Tissue culture, *In vitro*, Conservation, Maleic hydrazide, Sucrose and alar, Micro shoots

Dahlia (*dahlia variabilis*.L) popular bulbous flower crops in most gardens of the world. Multitude of colours, great variation in size, ranges from miniature (< 2.5 cm cross) to gaint (<40 cm in diameter). The genus dahlia belongs to family asteraceae and comprises about 150 spp. The name dahlia was originally coined by Abb Cavenilles (Smith, 1963). Dahlias are extensively used in different parts of exhibition, garden display and decoration. The available diversity with respect to floral characters is worth conserving. Urbanization and Industrialization have posed a great thread to biodiversity due to destruction of natural environment. Hence, conservation of plant genetic resources is of outmost importance to mankind's future. The conventional field maintenance is costly, labour oriented and prone to attack of pests and diseases and climatic disorders. Storage of germplasm (such as shoot tips in dahlia) at lower temperature is energy oriented and maintenance is also difficult and requires more area for conserving available diversity. The development of biotechnology has led to the production of new category of germplasm obtained from elite genotypes and genetically transformed materials. The *in vitro* storage method can circumvent the problems of short to medium term storage of recalcitrant seeds species and vegetatively propagated crops. Various methods have been shown to reduce the growth rate of culture with the use of osmotica (Dekkers *et al.*, 1991 and Reed, 1993) and use of growth retardants (Westcott, 1981 and Thieme, 1988).

## MATERIALS AND METHODS

Shoot tips of 0.3 to 0.5 mm were taken from young and actively growing plant part. The material was procured from Division of Horticulture, UAS Dharwad and Department of Horticulture, Lalbagh, Bangalore (Karnataka). Then they were treated with 0.1 per cent $HgCl_2$ followed by 0.5 per cent Citrimide for 5 minutes. Explants were thoroughly rinsed with sterile distilled water for 4-5 times. The cut ends of explant were recut and carefully inoculated on the prepared MS basal media containing different concentrations of manitol, alar and MH. The media were solidified with 0.8 per cent (w/v) agar (Hi-media, Mumbai, India) and adjusted to pH 5.7 to 5.8 prior to autoclaving and 15 lbs for 20 minutes. All cultures were incubated under the 25 ± $2^0$C. and 16:8 h cool florescent light (35-50 mol $m^{-2}$ $s^{-1}$): dark.

Effect of different concentration of maleic hydrazide, sucrose and alar on storability was examined. The number of days taken for bud sprouting, multiple shoots produced during storage, storage period, per cent recovery etc. were recorded. The onset of drying of cultures indicated the end of storage period. The per cent recovery was calculated by the formula,

No. of buds regenerated on best proliferation
No. of buds inoculated on best proliferation media

The proliferation media, contained MS basal medium supplemented with 2 mg per litre BAP.

The data obtained were statistically analyzed by following completely randomized design (CRD) as described by Panse and Sukhatme (1986).

## RESULTS AND DISCUSSION

Growth and Storability of *in vitro* cultures of dahlia