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***Research Paper***

# *In vitro* propagation of heliconia hybrid 'Golden Torch Adrian'

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## ABSTRACT

*In vitro* propagation study was carried out in heliconia hybrid 'Golden Torch Adrian' using shoot tip explants, with an objective to standardize a faster and reliable multiplication technique. For culture establishment, addition of BA 5.00 mg $l^{-1}$ to the basal MS (Murashige and Skoog) medium gave better results. Shoot proliferation *via* enhanced release of axillary buds was achieved with the supplementation of BA 2.00 mg $l^{-1}$ and NAA 0.2 mg $l^{-1}$. Full MS medium supplemented with NAA 0.50 mg $l^{-1}$ recorded the highest number of roots under *in vitro* conditions. The rooted plantlets were successfully planted out in sand medium.

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**Key words** : Heliconia hybrid, Golden Torch Adrian, *In vitro* propagation, Shoot tips

Heliconias have been recognized as new exotic cut flowers. Golden Torch Adrian, a natural hybrid of *Heliconia psittacorum* and *Heliconia spathocircinata*, is enjoying a prominent position in the domestic and foreign cut flower markets. Since the conventional propagation method through rhizomes produce only lower number of suckers, it is inevitable to evolve faster multiplication techniques. Hence, the present study was undertaken to standardize *in vitro* propagation procedures in heliconia hybrid 'Golden Torch Adrian' using shoot tip explants.

## MATERIALS AND METHODS

Shoot tips were collected from young actively growing plants and were washed thoroughly in running tap water to remove all the dirt and soil particles adhering to them. They were reduced to a length of about 2 cm using surgical blade, retaining the apical dome (1 cm) and were kept immersed in water with a few drops of wetting agent, labolene for half an hour. It was immediately followed by rinsing in distilled water to remove traces of labolene. Further sterilization procedures were carried out inside laminar air flow chamber, where the shoot tips were subjected to surface sterilization using mercuric chloride 0.10% for 10 minutes followed by dipping in mercuric chloride 0.05% for 5 minutes after trimming. Thereafter, they were transferred carefully to sterile blotting paper placed over sterile Petri plate to remove excess water and were then inoculated into the culture establishment medium using sterile forceps.

For *in vitro* culture establishment, cytokinins *viz*., BA (1.00-10.00 mg $l^{-1}$), kinetin (5.00 and 10.00 mg $l^{-1}$) and 2 ip (5.00 and10.00 mg $l^{-1}$) alone or in combination with auxins, namely, NAA (0.50 mg $l^{-1}$) and IAA (0.05 mg $l^{-1}$) and gibberellic acid (2.00 mg $l^{-1}$) were tried in activated charcoal (0.05 per cent) treated MS medium. Four replications were kept for each treatment. The inoculated culture vessels were immediately transferred to the culture room under darkness at 26 ± 1°C and 60 per cent relative humidity.

The cultures in the establishment medium showing complete greening and shoot initiation were transferred to shoot proliferation medium. MS was used as the basal medium. The effects of plant growth regulators like cytokinins *viz*., BA (1.00-6.00 mg $l^{-1}$), kinetin (1.00-6.00 mg $l^{-1}$) and 2 ip (1.00-6.00 mg $l^{-1}$) alone and in combination with auxins like NAA (0.20 mg $l^{-1}$) and IAA (0.20 mg $l^{-1}$) and gibberellic acid (2.50 mg $l^{-1}$) were assessed. Each treatment was replicated three times.

Individual shoots measuring 3–5 cm in length, having at least 2–3 leaves were subjected to rooting treatments. For standardization of growth regulators, full MS medium with different levels (0.05-0.50 per cent) of auxins (IAA, NAA and IBA) were tried. Three replications were tried for each treatment.

Completely Randomized Design (CRD) as per Panse and Sukhatme (1985) was followed for statistical analysis of the data wherever necessary.