Propagation of Ornamental Plants
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CONSERVATION OF *DENDROBIUM ANOSMUM* LINDL. 'TIM HUE' BY *IN VITRO* PROPAGATION

Nguyen Huu Tho[1,4], Nguyen Thi Oanh[1], Truong Thi Bich Phuong[2], Pham Thanh[3], Hoang Khanh Linh[3], and Nguyen Thi Kim Cuc[1]*

[1]Institute of Biotechnology, Hue University, Road 10, Phu Thuong, Phu Vang, Thua Thien Hue, Vietnam, *E-mail: ntkcuc.huib@hueuni.edu.vn
[2]Hue University of Sciences, Hue University, 77 Nguyen Hue, Hue City, Thua Thien Hue, Vietnam
[3]Hue University of Education, Hue University, 34 Le Loi, Hue City, Thua Thien Hue, Vietnam
[4]College Electro-Mechanics, Construction and Agro-Forestry of Central Vietnam, KV8, Bui Thi Xuan Ward, Quy Nhon city, Binh Dinh, Vietnam

Abstract

Dendrobium anosmum 'Tim Hue' is a local orchid from the Thua Thien Hue wild forest with typical color and fragrance, needing conservation measures. This study focuses on *in vitro* propagation of 'Tim Hue'. Nodal segments used as initial explants were disinfected in 2% NaClO and 0.1% $HgCl_2$ for 10 min, resulting in 66.7% aseptic explants. Axillary shoot induction was best (88.9%) in Murashige and Skoog (MS) medium containing 1.5 mg l^{-1} BAP and shoot multiplication was optimal in the same medium supplemented with 1.5 mg l^{-1} BAP and 0.5 mg l^{-1} IAA, with an estimated average of 6.0 shoots with 3.0 cm in length and 4.7 leaves after eight weeks of culture. Also, MS medium supplemented with 1 g l^{-1} activated charcoal, and 0.7 mg l^{-1} NAA or 0.5 mg l^{-1} IAA was found the most efficient medium for the rooting of shoots. 'Tim Hue' plantlets were well acclimatized to the nursery conditions with a survival rate of 97.8% on coconut coir and rice husk coal (1 : 1, w : w) or 95.6% on fern board with sphagnum moss.

Key words: conservation, *Dendrobium anosmum* Lindl. 'Tim Hue', *in vitro* propagation

INTRODUCTION

The overall decline in biodiversity has dramatically increased in recent years, therefore, it is imperative to implement conservation strategies to conserve and propagate plant genetic resources from each geographical area (Deplazes-Zemp 2018). Previously, valuable clonal plants, that have unique characteristics were conserved by traditional vegetative propagation instead of sexual reproduction (Rajasekharan and Sahijram 2015), however these techniques are difficult to mass production of seedlings (Högberg 2003). To overcome the disadvantage of the traditional method, *in vitro* tissue culture has been applied to generate mass plantlets from a few initial explants (Hussain et al. 2012). Commonly, apical meristem or axillary buds, which retain good developmental capacity, were preferred as initial materials to differentiate tissues in *in vitro* propagation (Rajasekharan and Sahijram 2015). Sofar different crops, flowers, and fruitswere successfully micropropagation using artificial media with suitable growth hormone regulators (Hasnain et al. 2022).

Among floral varieties, orchids are famous ornamentals with a global marketing industry, but they are recently at risk of extinction in nature (Zhao et al. 2021). Previously, growing orchids in the wild mainly depended on vegetable regeneration because their seeds lack endosperm and have a very low germination rate (Zhao et al. 2021). To overcome that fact, the micropropagation technique has been successfully applied to generate orchid plantlets from seeds and somatic tissues (Chugh et al. 2009) that are important to the market and maintain the orchid gene pool (Reddy et al. 2020). So far, many orchid species have been successful cultured by seed germination in aseptic conditions as *Laelia anceps* Lindl. (Ramírez-Mosqueda et al. 2019), *Epidendrum nocturnum* (De Stefano et al. 2022), *Vanda pumila* Hook. f. (Maharjan et al. 2019), *Dendrobium secundum* (Ramasoot et al. 2022), *Dendrobium anosmum* Lindl. (Nguyen et al. 2022b), however, it is valuable to note that the *in vitro* propagation of orchid seeds may generate heterozygous plantlets with chimeric traits. Therefore, some group, recently, tried to

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