Floral micromorphology and transcriptome analyses of a fragrant Vandaceous Orchid, Vanda Mimi Palmer, for its fragrance production sites

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ABSTRACT

Vanda Mimi Palmer (VMP), a commercially viable orchid derived from the crossing of Vanda Tan Chay Yan and Vanda tessellata (Roxb.) Hk.f. ex G. Don, is endowed with the terrate-shaped fower of Vanda Tan Chay Yan as well as the tri-colour and strong foral scent of Vanda tessellata. Its sweet fragrance-producing ability earned it the Champion Award for Fragrant Orchid organized by the Royal Horticultural Society of Tailand in 1993 and the Best Orchid Fragrance in the 17th World Orchid Conference in 2002 [1]. VMP is popular in Malaysia, being mainly cultivated for potted-fower production. Fragrance plays various functions in both foral and vegetative organs. Floral scent emission, in addition to colour, shape, surface structure and nectar guides, is a crucial strategy of plants to attract benefcial pollinating insects in ensuring reproduction [2–4]. Floral fragrances vary widely among species in terms of the number, identity, and relative amounts of constituent volatile compounds. Gas chromatography–mass spectrometry (GC–MS) analysis revealed that the VMP fower produced a fragrance composed of terpenoid, benzenoid and phenylpropanoid compounds [5].

KEYWORDS:

Fragrance; Monoterpene synthase; Morphology; Orchid; Stomata; Trichome