

Histology and scanning electron microscopy observations of cryopreserved protocorm-like bodies of *Dendrobium sonia-28*

ABSTRACT

The genus *Dendrobium* possesses horticultural importance. *Dendrobium sonia-28* is an important ornamental orchid in the flower industry. Cryopreservation is a favoured long-term storage method for orchids with propagation problems. Protocorm-like bodies (PLBs) of *Dendrobium sonia-28* were cryopreserved using the vitrification technique. Histology and scanning electron microscopy (SEM) observations were conducted on stock, non-cryopreserved (control), and cryopreserved PLBs of *Dendrobium sonia-28* to detect cryoinjuries resulting from the vitrification protocol. Histological observations of control PLBs indicated that the preculture, osmoprotection, and dehydration steps were not physically damaging to the PLBs. Histological and SEM analyses of cryopreserved PLBs indicated that the freezing and thawing cycles inflicted damages on the parenchymatic regions of the PLBs. Only embryogenic cells survived the treatment. Scanning electron microscopy studies of the control and cryopreserved PLBs indicated that both osmotic and freezing injuries occurred only in the interior regions of the PLBs.

Keyword: Cryopreservation; *Dendrobium sonia-28*; Histology; Protocorm-like bodies; Scanning electron microscopy; Vitrification