

Simple and efficient in vitro method of storing Dendrobium sw. shavin white protocorm like bodies (PLBs)

ABSTRACT

In the present study, an efficient and simple in vitro method for storing orchid protocorm like bodies (PLBs) has been developed for Dendrobium Sw. Shavin. PLBs of Dendrobium Shavin White were kept in an empty airtight container without supplementation of any nutrient and stored for up to 135 days under dark condition at different temperatures namely 5, 10, 25 ± 2°C and 30 ± 2°C. The effects of storage period and temperature on the regeneration ability of the stored PLBs were evaluated. The results revealed that PLBs stored for up to 135 days at 25 ± 2°C were found to remain unchanged (72%) and recorded higher germination percentage (88) with shoot proliferation ability of 12% after storage. Though, morphologically about 8% of PLBs were found to be brownish green during storage no morphological abnormalities were recorded after 8 weeks of culture. While, storage at 30 ± 2°C only 20% PLBs remained unchanged and 76% of PLBs turned into brownish during the storage which exhibited germination percentage of 16. Though, PLBs showed survival percentage at low temperatures (5 and 10°C), their survival percentages decreased rapidly as the storage duration was increased. The results clearly suggest that PLBs can be stored for only 15 and 75 days at 5 and 10°C respectively. Lower storage temperature of 5°C was not conducive for PLBs because the survival frequency recorded is very low (24) even when stored for a short period (15 days). Thus, PLBs of Dendrobium Shavin White can be stored for up to 135 days at 25 ± 2°C. Ability to store PLBs is vital as it can ease the distribution of the propagules to the laboratories and commercial nurseries to facilitate the production of uniform plants. Furthermore, this in vitro storage method can reduce the need for frequent subculture cycles and conserve the genetic uniformity in germplasm.

Keyword: Orchid; Somatic embryos; Temperature; Survival; Short term storage