Investigation of Suitable Growing Media to Enhance Growth and Recovery of In-Vitro Grown *Dendrobium spp*

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ABSTRACT

Micro propagation of *Dendrobium* is mostly used technique for their exploitation in commercial cultivation. However, micro propagated *Dendrobium* plantlets show lack of growth and slow recovery rate after *in-vitro* grown stage and it cause a major loss in commercial level cultivation. Therefore present study was aimed to find out the best medium and suitable plant density/bottle in order to increase the recovery rate of in-vitro grown *Dendrobium* spp. The study was conducted at the tissue culture laboratory located at Floriculture Research and Development Unit, Royal Botanical Gardens Peredeniya. The experiment was arranged as a two factor factorial experiment with Completely Randomized Design (CRD) combining six treatments randomized in five replicates. Treatments were combination of three different media [Media 1 = sand, coco pit, bricks powder, and charcoal (ratio 1:1:1:1), Media 2 = sand, coco pit and granite chips (ratio 3:3:1) and Media 3 = Knudson's Culture media] and two different plant densities i.e. five plantlets per bottle and ten plants per bottle. Measurements were taken on height of the plantlets, weight of the plantlets, number of leaves per plant as well as the chlorophyll content at the initial stage and after 120 days after plantlets were inoculated to the bottles,. The data obtained were tabulated and analyzed subject to the Analysis of variance (ANOVA) procedure of statistical analysis system (SAS). Duncan's new multiple test (DNMRT) was performed to compare the differences ($P<0.05$) among different media as well as the plant densities. Overall results indicated that the media two, i.e. sand, coco pit and granite chips (3:3:1) as the best among three media tested. The plant density type one (five plantlets per bottle) is the best among two plant density types tested. Hence, five plantlets inoculated per bottle with sand, coco pit and granite chips (3:3:1) media can be considered as the most effective treatment combination to increase the recovery rate of poorly grown in-vitro *Dendrobium* plants under controlled environment.

Key words: *Dedrobium*, micro propagation, media, recovery rates, plantlets/bottle

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