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***In vitro* hardening of *Dendrobium* plantlets to enhance acclimatization**

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Orchids are one of the most important cut flowers and ornamental plants in the floriculture industry with a high commercial and medicinal value. Successful establishment of *in vitro* derived orchid plants under *ex vitro* conditions is a challenge. When transferring from *in vitro* to *ex vitro* conditions, plantlets undergo an adaptation process due to factors relating to luminosity, transpiration, photosynthesis and nutrient absorption. This limits the cultivation of some species due to high plant mortality. Paclobutrazol (PBZ) has usually enhanced orchid acclimatization by contributing to fast adaptation and high survival rates upon the reduction of transpiration, plant height, leaf area, biomass and also due to the induction of root thickness and green coloration of leaves. Therefore, this study aimed to enhance the acclimatization of *in vitro* derived *Dendrobium* cultivars by *in vitro* hardening process with the use of PBZ in the Murashige and Skoog (MS) medium. After 10 months of *in vitro* culturing, *Dendrobium* plantlets were subcultured in different concentrations of PBZ supplemented MS media. The experiment was completely randomized with five treatments (PBZ concentrations: 0.025; 0.05; 0.075 and 0.1 mgL⁻¹, and the control with no PBZ) and five replications, with three plantlets per replication. A significant dropdown of plantlet height, leaf width, root length and an increment of root diameter was observed with the enhancement of PBZ concentration in the medium when compared to the control. The lowest plantlet height (3.07 ± 0.15^c cm) compared to the control (4.60 ± 0.20^a cm) was observed in 0.075 mgL⁻¹ PBZ concentration. Meanwhile, the smallest leaf width (0.45 ± 0.04^b cm) compared to the control (1.23 ± 0.15^a cm), the lowest root length (1.00 ± 0.02^c cm) compared to the control (2.07 ± 0.21^a cm), the highest root diameter (1.00 ± 0.1^a cm) compared to the control (0.50 ± 0.11^c cm) were observed in 0.10 mgL⁻¹ PBZ medium. Furthermore, after the acclimatization, the survival rate of plantlets in 0.10 mgL⁻¹ PBZ concentration has increased up to 60% with a 47% of increment compared to the control showing the highest survival rate of plantlets. According to this result, MS medium supplemented with 0.10 mgL⁻¹ PBZ could be used as an *in vitro* culture medium to enhance the acclimatization of *Dendrobium* plantlets.

Keywords: Acclimatization, Dendrobiums, Paclobutrazol (PBZ)