

Influence of plant growth regulators on *in vitro* callogenesis and
ex vitro rooting of dragon fruit (*Hylocereus undatus* L.)

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ABSTRACT

Dragon fruit (*Hylocereus undatus*) is a climbing vine which has received worldwide attention first as an ornamental plant and then extended as a fruit crop. Since seed viability of stored dragon fruit is very low, stem cuttings are used as planting material in dragon fruit. The present study was aimed to examine the selected plant growth regulators on vegetative propagation of dragon fruit under *in vitro* and *ex vitro* conditions. Therefore, bud and stem segments of dragon fruit was placed in MS medium with two different concentrations at 2 and 3 mg/l of BAP (6-benzyl- amino- purine) or 2 and 3 mg/l of TDZ supplemented with 0.5 mg/l NAA (α - naphthalene acetic acid) for initial culture establishment under *in vitro* conditions. The results revealed that at 2 and 3 mg/l of BAP or TDZ, TDZ at 3 mg/l was the most responsive concentration for the induction of callus formation in cultured stem explants of dragon fruit. bud explant showed higher *in vitro* response cultured in MS medium supplemented with 3mg/l TDZ and 0.5mg/l NAA. The result exhibited that the most responsible part for the induction of callus formation was the stem segment cultured in MS medium supplemented with 3mg/l TDZ and 0.5mg/l NAA. In this study TDZ is most effective than BAP.

Further, study was done to determine the effect of various concentrations of auxin on establishment of stem cuttings and also to select optimal concentration of auxin for better root and shoot formation from stem cuttings of dragon fruit. Therefore, the stem cuttings were dipped in different concentrations of IBA and then planted in the polythene bags containing top soil: sand: cow dung at a rate of 1:2:1. This experiment was designed in Completely Randomized Design (CRD) with three

replicates. The treatments included 2000, 4000, 6000, 8000 ppm concentrations of IBA and a control. The data revealed significant effect of different concentrations of IBA on the dragon fruit establishment parameters namely, shoot length, number of roots per cutting, root length, fresh and dry weights of shoot and roots. In most cases, cuttings treated with 6000 ppm IBA gave the best results or produced results which are not significantly different from the higher concentrations of IBA (8000 ppm). At 60 days after planting of cuttings, shoot length (10.5 cm), number of roots per cutting (15.3), root length (21.3 cm), fresh weights of shoot (10.25 g) and roots (1.92 g), dry weights of shoot (0.15 g) and roots (0.52 g) were recorded in cuttings dipped in 6000 ppm concentration of IBA. Lower value was recorded in a control in the above mentioned parameters. 6000 ppm IBA concentration is better in rooting of the dragon fruit cuttings.

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