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Direct plantlet regeneration of Dragon fruit (*Hylecereus undatus*) from leaf and stem explants on tissue culture medium

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Dragon fruit (*Hylocereus undatus*) is a beautiful plant in the family Cactacea. It is a climbing vine which has received worldwide attention, first, as an ornamental plant and then as a fruit crop. Stem cuttings are using as planting material as seed viability of stored dragon fruit is very low. Though several studies have examined different propagation methods for dragon fruit; very little information is available on protocols for production of high quality planting material via tissue culture. In the present study we examined the potential of direct regeneration of Dragon fruit explants using leaf and stem cuttings in three different concentrations of Benzylaminopurine (BA) 2, 2.5, 3 mg/l in Murrashige and Skoog (MS) basal regeneration media. There after the regenerated plantlets were rooted in 0.01 mg/l NAA (Naphthaleneacetic acid) supplemented MS basal root induction medium.

The results released that the type of explants greatly influences the regeneration ability of shoot buds in tissue culture medium. Stem explants exhibited much higher regeneration ability (1.8 buds/explant) than leaf explants (0.3 buds/explant) without vitrification. Within 4 weeks buds were initiated on stem explant MS basal medium supplemented with 2.5 mg/l BA and 0.01 NAA mg/l and buds took nearly 60 days to elongate up to 1.5 cm on the same medium. Explants, both stem and leaf, regenerated the highest number of shoots on MS medium supplemented with 2.5 mg/l BA and 0.01 NAA mg/l compare to that of the other hormone combinations. However compare to leaf explants, the stem explants showed highest shoot formation. Rooting was observed in regenerated mature shoots after transferred onto MS basal medium with 0.01 mg/l NAA. Roots were initiated from the base of the shoots, and these roots were slimmer, brown and had fewer branches.

Keywords: Dragon fruit, explant, direct regeneration, MS medium