IN VITRO CALLOGENESIS OF DRAGON FRUIT (*Hylocereus undatus* L.) EXPLANTS AS INFLUENCED BY DIFFERENT PLANT GROWTH REGULATORS

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ABSTRACT

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 used as planting material because seed viability of stored dragon fruit is very low. *In vitro* techniques for dragon fruit is very important for mass propagation of plantlets for the fulfilment of adequate demand. The present study was aimed to select the best explant that has high survival ability that leads for well-developed callus initiation with proper morphogenic features. For that basal, middle, and top portion of the immature stem segments and bud explants in 0.5 cm sized were placed in MS medium with 3.0 mg/l TDZ supplemented with 0.5 mg/l NAA for initial culture establishment under *in vitro* conditions. The results revealed that most responded explant was immature stem segment than bud explant. From, the immature stem segment basal portion of the immature stem segment was the best responded explant than other explants (46.1% callogenesis).

Further study was carried out by using selected well responded explants under *in vitro* conditions for the callogenesis of dragon fruit explants to examine the selected plant growth regulators on basal MS medium with 3.0 mg/l TDZ and 3.0 mg/l BAP separately. Basal part of the immature stem explant on basal MS medium with 3.0 mg/l TDZ with 0.5 mg/l 2-4-D and 0.5 mg/l NAA were used. The results revealed that high percentage of friable callus (31.4% callogenesis) were induced within 2-3 weeks of time period on medium that contained 0.5 mg/l 2-4-D while second most high number of compact callus (25.3% callogenesis) were induced by medium that contain 0.5 mg/l NAA within 3-4 weeks of time period.

MS medium with 3.0 mg/l BAP supplemented 0.01mg/l NAA and MS medium with 3.0 mg/l BAP supplemented 0.01mg/l GA_3 were inoculated with immature stem segment in early stage and late stage with 0.5cm sized for callogenesis within 4 weeks and the results revealed immature stem segment in early stage has performed well and quickly under *in vitro* culture conditions which means high number of callogenesis percentage has recorded within 4-6 days. For immature stem segments in early stage explants, medium that contained NAA has induced the highest percentage of callogenesis (58.3%) than the medium that contained GA_3. When compared with TDZ and BAP TDZ was most effective than BAP.

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