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Promoted by Cytokinin influence Regeneration from Shoottip explants of *Ipomoea batatus*

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Abstract: *In vitro culture methodology requires efficient plant regeneration from protoplasts, production of hybrid plants has been limited to a variety few species. Hansen G (1999), Ghazi et al (1986).Stem node segments of Ipomoea batatus were inoculated on MS basal medium supplemented with various cytokines BAP and NAA Coconut water also had a role in triggering the formation of multiple shoots. Addition of BAP at 2.0 mg/l and NAA at 3.0 mg/l to the MS basal medium, induced regeneration from leaf segments with an increase in the level of BAP 2.0 – 3.0 mg/l the percentage of explants producing shoots also increased. In vitro micro propagation from shoottip explants Ugender and Venkateshwarlu M (2012) and T Ugender et al (2012). The number of shoots developed on the leaf segments ranged from 1-4 to 2-3 by the addition of BAP at concentration of 1.0 mg/l or NAA at 2.0 mg/l. Among the three concentrations of coconut milk used i.e., 10,15 and 20% , 15% of coconut milk along with 0.5 mg/l BAP + Kn proved to be ideal for multiple shoot induction. Callus induction multiple shoots Venkateshwarlu M (2008).MS medium fortified with 1.0 mg/l BAP or 2.0 mg/l L-G Glutamic acid also induced shoot buds on leaf segments. The developments of chimaeric culuses in place of hybrids plants that are regenerated from callus induction usually lose their adventitious shoots or embryos usually develop from a single cell.*

Keywords: Regeneration, shoottip, BAP, Kn, L-Glutamic acid, *Ipomoea batatus*

I. INTRODUCTION

All diverse inter generic somatic hybrids reported are sterile and therefore have limited value for new variety development. Plant regeneration from MS medium cultured explants involves the initiation of callus and then shoots differentiation, several growth regulator combinations establishment of callus growth with subsequent organogenesis has been obtained from many hormonal combinations BAP, Kn + L-Glutamic acid etc., The plants of *Ipomoea batatus* from several diseases including mosaic virus (Greber 1978) green mottle mosaic virus (Nijsden 1984) and also suffers from downy and powdery mildews which seriously limits the crop production. Auxiliary buds from pumpkin were reported by Jelaska (1974). In the present paper, a simple and reproducible procedure was devised to obtain multiple shoots from stem node segments of *Ipomoea batatus* on MS medium fortified with plant growth regulators along with coconut milk and amino acids.Forester (2007). Jaksem (2010) Shoot induction explants M Venkateshwarlu (2021). The main objective of clonal propagation is to establish plants that are uniform and predictable for selected qualities. Growth of *in vitro* propagated plants is often stronger than in those cloned *in vitro*. *In vitro* regeneration products after variable due to translation, elimination, organelle segregation successful investigation into new breeding programs.

II. MATERIALS AND METHODS

The stem explants were soaked in sterile distilled water for 2-3 times and sterilized with 0.1%(w/v) aqueous $Hgcl_2$ for 2-3 minutes followed by washing 2-3 times with sterile distilled water later these dried on sterile explants materials tissue. MS medium containing 3% (w/v) sucrose and 0.8% agar-agar these cultures bottles were inoculated at 25±10ºc under 16hr photoperiod. The shoottip explants with active cells are generally good for Induction. The initiation and development of regeneration and shoots from the explants tissue without the interviewing callus. This occurs through pre-embryogenic developmental cells and in certain tissue of young *in vitro* grown plantlets. Shoottip explants of 1.0 to 1.5 cm length were cultured and surface sterilized with 0.1% $HgCl_2$ for 5-7 minutes and rinsed with sterile distilled water. They were cultured on MS medium containing 2.2% sucrose and 0.8% Agar-Agar and different concentrations of

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BAP, NAA and L- Gltamic acid (Table1). The pH of the medium was adjusted to 5.8 and later was autoclaved at 120°C for 17 minutes. Cultures were incubated under 16 hrs illuminations (250 lux0 at 25± 2°C temperature. Each treatment consisted of 10-15 replicates. Jas Rai et al (1999). Direct regeneration from shoottip cultures. MS medium containing various concentrations of cytokinines BAP, NAA, Kn and L-Glutamic acid alone the direct shoot regeneration (0.5-3.0mg/l) NAA and Kn showed viable response in explants cultures were elongated 2-4 shoots within two weeks of culture initiation.The data was recorded at the end of eight week. Venkateshwarlu M (2020) and Ugender (2018) propagation by adventurous explants formation directly from septically cultured explants segments is promoted by cytokines. The explants callus cultures developed shoot primordial in large numbers directly from all cut surfaces in contact with MS medium in all the concentrations and combinations of phytohormones.

III. RESULTS AND DISCUSSION

The number of shoot bud induction was found to be decreased as the concentration of BAP and Kn increase (1.0mg/l-4.0mg/l). At high concentration of Kn and BAP showed (2-4 to 4-6) number of shoots per explants. Cytokinine Kn (1.0-3.0mg/l) as role growth regulators showed the direct organogenesis shoots and multiple shoots with 60-75% of cultures were recorded concentration of BAP was gradually increased (2.0mg/l-3.0mg/l) after wards the number of shoots. The plants *Ipomoea batatus* produced in tissue culture although green callus with small shoots studied the effect of growth regulators on *in vitro* development of autotrophism and acclimatization of a medicinal /tropical fruit crop plants and found that the chlorophyll and Carotenoid content. Photosynthesis and chloroplast differentiation were greater in plants cultivated in presence of either BAP+Kn and NAA L-Glutamic acid. Shoottip explants were inoculated on MS medium fortified with various cytokinins i.e., BAP and NAA Coconut water also had a role in triggering the formation of multiple shoots. The mean number of shoots developed on the leaf segments ranged from 1-4 to 2-3 by the addition of different concentrations of BAP and NAA (Table1). Raising the level of BAP (3.0 mg/l to 4.0 mg/l) resulted in an increase in the percentage of shoots developed with 10,15,20% of coconut milk also triggered the induction of multiple shoots (Plate1) Low concentration of L-Glutamic acid (0.5 – 3.0 mg/l, along with BAP 2.0 mg/l, produced significant mean number of multiple shoots that ranged from 2-3 to 5-6 in the stem node segments. Shoot multiplication was obtained from shoot apices of *Niger* when cultured on MS medium supplemented with 2.0 to 3.0 mg/l BAP, Raising the level of BAP+Kn+ L-Glutamic acid (1.0 to2.0 mg/l) resulted in an increase in the number of shoots from stem node segments of *Niger*. Cheng et al (1980). Suggested that the formation of multiple shoots at the leaf region of the leaf of *soyabean* indicated the existence of totipotency in this region which can be activated with the addition of BAP M Venkateshwarlu (2017). MS medium with different combinations of cytokinines and Auxins (1.0mg/l-4.0mgl)in with various concentrations. The explants development shoot primordial in large scale production directly from all explants surfaces in contact with MS Medium in all the combinations with 1.0mg/l-3.0mg/l NAA and BAP. When concentration was increased upto 3.0mg/l BAP gradually induction of callus with multiple shoots were reduced.

Table 1: Promoted Cytokinin influence Regeneration from Shoottip explants of *Ipomoea batatus*

Growth Regulators (mg/l)	Shoottip explants	
	% Frequency of shoots	Mean No. of Shoots.
MS + 0.5 mg/l BAP + L Glutamic acid + Kn	40	Callus
MS + 1.0 mg/l BAP + L Glutamic acid + Kn	35	Green Callus
MS + 2.0 mg/l BAP + L Glutamic acid + Kn	30	Shoots (2-4)
MS + 3.0 mg/l BAP + L Glutamic acid + Kn	25	Shoots (3-4)
MS + 0.5 mg/l NAA + CM + L Glutamic acid	20	callus
MS + 1.0 mg/l NAA + CM + L Glutamic acid	30	Green Callus
MS + 2.0 mg/l NAA + CM + L Glutamic acid	25	Shoots (2-3)
MS + 3.0 mg/l NAA + CM + L Glutamic acid	20	Shoots (1-2)
MS + 4.0 mg/l NAA + CM + L Glutamic acid	10	Shoots (2-4)

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Plate 1: Promoted Cytokinin influence Regeneration from Shoottip explants of *Ipomoea batatus*

IV. CONCLUSION

The technique is sufficiently elaborated species vegetable crop plants is gradually also being developed for the plant species. *In Vitro* production for distant hybrids the breeding if polyploidy species at the diploid level and crossing with related cultivated or wild diploid species.

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