

Studies on *in vitro* plant regeneration in brinjal (*Solanum melongena* L.)

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SUMMARY

In the present study the rapid regeneration protocol of brinjal was conducted. The shoot tip and hypocotyl explants from the *in vitro* grown sterile seedling were used for regeneration. The MS culture medium containing 2.5 mg l⁻¹ BAP + 0.3 mg l⁻¹ IAA induced highest callus growth in hypocotyl (1.43 cm) as well as in shoot tip (1.14 cm). The calluses obtained from both explants (shoot tip and hypocotyl) were sub-cultured on responding treatments. After sub-culturing, the highest number of shoots (3.59), shoot length (3.16 cm) and leaves (3.66) were recorded on the medium containing 2.5 mg l⁻¹ BAP + 0.3 mg l⁻¹ IAA. Root induction frequency was highest in full strength MS medium with 0.5 mg l⁻¹ IAA (number of roots = 14.06 and root length = 6.99 cm). In hardening, highest survival percentage (100%) and healthy growth of plantlets were observed in mixture of vermiculite, farmyard manure and cocopeat in 1:1:1 ratio.

Key Words : BAP, Brinjal, Hardening, Hypocotyls, IAA, Rapid regeneration, Shoot tip

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Brinjal (*Solanum melongena* L.) is one of the most common, popular and principle vegetable crops grown in India and other parts of the world. The application of *in vitro* methodologies to brinjal improvement has resulted in considerable success. Its tissues present a high morphogenetic potential that is useful for developmental studies as well as for establishing biotechnological approaches to produce improved varieties with resistance to pests and diseases (Collonnier *et al.*, 2001; Magioli and Mansur, 2005). The existing reports on organogenesis show that nature and concentrations of a given growth regulator in association with specific genotype and explants can cause significant result in morphogenetic response of brinjal (Matsuoka and Hinata,

1979; Alicchio *et al.*, 1982; Sharma and Rajam, 1995; Magioli *et al.*, 1998). The adventitious shoot regeneration capacity of cells or tissues to be used in transformation studies affects the success of genetic transformation significantly and frequency of explants responding after co-cultivation is severely affected (Chen *et al.*, 1995). Hence, it is advisable to know as well as document the effect of various concentrations of growth regulators on shoot morphogenesis in a crop variety before heading to *in vitro* applications for its genetic improvement. Furthermore, no effort has been made to document the effects of growth regulators on shoot regeneration and *in vitro* root induction in major Indian brinjal cultivars. 'Bhagyamathi' is a predominant, year round, locally well adapted and most preferred brinjal cultivar in India particularly in Andhra Pradesh. The present study was carried out to document effect of growth regulators on morphogenetic response, shoot elongation and *in vitro* root induction in cv. 'BHAGYAMATHI'.

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MATERIALS AND METHODS

The present investigation was carried out at the tissue