

ent types of nutrient media (Woody Plant medium, Gresshoff medium) used for *Solanum* species tissue culture, MS medium has been found to be quite satisfactory for the micropropagation of *Solanum* species. In present study modified MS medium also proved to be satisfactory for the establishment, shooting and rooting of tomato male sterile line Shalimar FMS-1 using single node cutting and hypocotyl as explants.

In the present study, *in vitro* root and shoot regeneration leading to complete microplant development of tomato male sterile line (Shalimar FMS-1) in a single culture medium with the treatment combination of T₁₄ (MS I-V medium supplemented with CDP @ 2 mg/l + CaCl₂ @ 44 mg/l + GA₃ @ 0.4 mg/l.) is reported. Among the different modified MS media having different combinations of growth regulators (calcium D pantothenate, calcium chloride, gibberellic acid), T₁₄ medium MS I-V medium supplemented with CDP @ 2 mg/l + CaCl₂ @ 44 mg/l + GA₃ @ 0.4 mg/l. resulted in highest percentage of rooting (91.66% for hypocotyl and 83.33% for single node cutting), minimum days to root initiation (3 days in hypocotyl and 9 days in single node cutting), maximum root length (7.00 cm in hypocotyl and 6.40 cm in single node cutting), highest shoot regeneration (91.66% in hypocotyl and 83.33% in single node cutting), minimum days to shoot initiation (5 days in hypocotyl and 11 days in single node cutting), maximum shoot length (11 cm in hypocotyl and 10.20 cm in single node cutting), minimum days to microplant regeneration (12 in hypocotyl and 17 in single node cutting), maximum microplant length (18 cm in hypocotyl and 16.60 cm in single node cutting). Among the twenty-seven different growth regulator combinations in basal MS media, only twelve treatment combinations (T₂, T₃, T₄, T₆, T₇, T₉, T₁₀, T₁₃, T₁₄, T₁₈, T₂₀, T₂₃) proved successful in culture establishment of explants while fifteen treatment combinations (T₁, T₅, T₈, T₁₁, T₁₂, T₁₅, T₁₆, T₁₇, T₁₉, T₂₁, T₂₂, T₂₄, T₂₅, T₂₆, T₂₇) failed to evoke any response in terms of root and shoot initiation and microplant development.

Current work elucidates that sodium hypochlorite is more suitable surface sterilant than mercuric chloride as it resulted in maximum survival percentage, minimum mortality percentage and minimum contamination percentage of explants. Similar results have been obtained by [9-11] for sterilization of potato sprouts and shoot tips. Explant type has been found to significantly influence the regeneration response leading to complete microplant development *in vitro*. Micropropagation of *Solanum* species has been

achieved using different explants viz., leaves [12-14] hypocotyl [13,15,16], Cotyledon [17-19] and inflorescence [20]. In the present study two types of explants viz., single node cutting and hypocotyl were used. The advantage with the single node cutting is that large number of explants can be taken from a single seed which develops in to a single plant while only a single hypocotyl segment can be taken from a single seed which drastically reduces the cost of *in vitro* microplant development of male sterile line. However, the main advantage with using hypocotyl is that it takes only 12 days for complete microplant development. Single node cutting with sub culturing is therefore recommended for micropropagation of male sterile line in tomato as it is economic as compared to using hypocotyl as explants.

Conclusion

From the study it is concluded that, various sterilization treatments yielded aseptic cultures but the sterilization regime of (1.0%) sodium hypochlorite gave highest percentage of aseptic cultures, highest percentage of surviving explants, minimum mortality and minimum contamination percentage. The percent survival response of hypocotyl explants was significantly higher than the single node cutting explants and their percent contamination was significantly lower than the single node cuttings. T₁₄ medium consisting of MS I-V medium supplemented with (calcium D pantothenate 2mg l⁻¹ + calcium chloride 44 mg l⁻¹ + gibberellic acid 0.4mg l⁻¹) gave highest rooting percentage, minimum number of days to root initiation, maximum root length, gave highest shooting percent, minimum days to shoot initiation, maximum shoot length and highest microplant height, minimum days to microplant regeneration, maximum microplant diameter and maximum microplant weight. This shows that constituents of the medium especially the growth regulators have significant effect on the regeneration potential of explants. The shooting percent, rooting percent response of hypocotyl explants was significantly higher than the single node cutting explants. This shows that the morphogenetic response of different explants even from the same plant may vary.

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