

Beneficial Effect of Micropropagation Coupled with Mycorrhization on Enhancement of Growth Performance of Medicinal Plants

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Abstract : Medicinal plants are globally valuable sources of herbal products. Wild populations of many medicinal plants are facing threat of extinction because of their narrow distribution, endemism, and degradation of specific habitats. Micropropagation is an established in vitro technique by which large number of clones can be obtained from a small bit of explants in a short span of time within a limited space. Mycorrhization can minimize the transient transplantation shock, experienced by the micropropagated plants when they are transferred from lab to land. AM fungal association improves the physiological status of the host plants through better uptake of water and nutrients, particularly phosphorus. Consequently, the growth performance and biosynthesis of active principles are significantly enhanced in AM fungal treated plants. *Bacopa monnieri*, *Andrographis paniculata*, *Agave vera-curz*, *Drymaria cordata* and *Majorana hortensis*, important medicinal plants used in various indigenous systems of medicines, are selected for the present study. They form the main constituents of many herbal formulations. Standard in vitro techniques were followed to obtain the micropropagated plants. Shoot tips and nodal segments were used as explants. Explants were cultured on Murashige and Skoog, and Phillips and Collins media supplemented with various combinations of growth regulators. Multiple shoots were obtained on a media containing both auxins and cytokinins at various concentrations and combinations. Multiple shoots were then transferred to rooting media containing auxins for root induction. Thus, obtained in vitro regenerated plants were subjected to brief acclimatization before transferring them to land. One-month-old in vitro plants were treated with AM fungi, and the symbiotic effect on the overall growth parameters was analyzed. It was found that micropropagation coupled with mycorrhization has significant effect on the enhancement of biomass and biosynthesis of active principles in these selected medicinal plants. In vitro techniques coupled with mycorrhization have opened a possibility of obtaining better clones in respect of enhancement of biomass and biosynthesis of active principles. Beneficial effects of AM fungal association with medicinal plants are discussed.

Keywords : cultivation, medicinal plants, micropropagation, mycorrhization

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