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In Vitro Propagation in Barleria prionitis L. Via Callus Organogenesis

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Abstract : Barleria prionitis L. is a well explored Indian medicinal plant valued for its stem and leaf which forms an important ingredient of many Ayurvedic formulations. It is used for the treatment of various disorders like toothache, bleeding gums, strengthening gums, whooping cough, inflammation, arthritis, enlargement of scrotum and sciatica etc. The plant is propagated vegetatively through stem cuttings. Frequent harvesting of this plant has led to the shortage of planting material, and it has acquired the status of vulnerable plant species. Plant tissue culture technology offers a very good alternative for propagation and conservation of such plant species. The present investigation was undertaken to develop in vitro regeneration protocol for B. prionitis L. via callus organogenesis pathway. Stem and leaf explants were used for this purpose. Different media and plant growth regulators were optimized to develop the protocol. The problem of phenol secretion and browning and in vitro cultures at the establishment phase was successfully curbed with the usage of antibrowning agents such as ascorbic acid and activated charcoal. Optimum shoot multiplication was achieved by the use of liquid media and incorporation of silver nitrate and TIBA (triiodobenzoic acid) into the media. High percent rooting (76%) was observed on WPM media supplemented with IBA (2.0 mg/l), IAA (0.5 mg/l), GA3(0.5) and activated charcoal(500 mg/l). The rooted plantlets were subjected to in vitro hardening on sterile potting mix (soil:farmyard manure:compost; 1:2:1) and acclimatized under greenhouse conditions. Around 85% survival of plantlets was recorded upon acclimatization. This lab scale protocol would be tested for in vitro scaling up production of B. prionitis L.

Keywords : explant browning, liquid culture, micropropagation, shoot multiplication, phenolic secretion
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