

Enhancement of Morphogenetic Potential to Obtain Elite Varieties of *Sauropus androgynous* (L.) Merr. through Somatic Embryogenesis

Authors : S. Padma, D. H. Tejavathi

Abstract : Somatic embryogenesis is a remarkable illustration of the dictum of plant totipotency where developmental reconstruction of somatic cells takes place towards the embryogenic pathway. It recapitulates the morphological and developmental process that occurs in zygotic embryogenesis. *S. androgynous* commonly called as multivitamin plant. The leaves are consumed as green leafy vegetable by the Southeast Asian communities due to their rich nutritional profile. Despite being a good nutritional vegetable with proteins, vitamins, minerals, amino acids, it is warned for excessive intake due to the presence of alkaloid called papaverine. Papaverine at higher concentrations is toxic and leads to a syndrome called Bronchiolitis Obliterans. In the present study, morphogenetic potential of shoot tip, leaf and nodal explants of *Sauropus androgynous* was investigated to develop and enhance the reliable plant regeneration protocol via somatic embryogenesis. Somatic embryos were derived directly from the embryogenic callus derived from shoot tip, node and leaf cultures on Phillips and Collins (L2) medium supplemented with NAA at various concentrations ranging from 5.3 $\mu\text{M/l}$ to 26.85 $\mu\text{M/l}$ within two months of inoculation. Thus obtained embryos were sub cultured to modified L2 media supplemented with increased vitamin level for the further growth. Somatic embryos with well-developed cotyledons were transferred to normal and modified L2 basal medium for conversion. The plantlets thus obtained were subjected to brief acclimatization before transferring them to land. About 95% of survival rate was recorded. The augmentation process of culturing various explants through somatic embryogenesis using synthetic medium with various plant growth regulators under controlled conditions have aggrandized the commercial production of *Sauropus* making it easily available over the conventional propagation methods. In addition, regeneration process through somatic embryogenesis has ameliorated the development of desired character in *Sauropus* with low papaverine content thereby providing a valuable resource to the food and pharmaceutical industry. Based on this research, plant tissue culture techniques have shown promise for economical and convenient application in *Sauropus androgynous* breeding.

Keywords : L2 medium, multivitamin plant, NAA, papaverine

Conference Title : ICPTCPB 2018 : International Conference on Plant Tissue Culture and Plant Biotechnology

Conference Location : Dublin, Ireland

Conference Dates : January 30-31, 2018