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Micropropagation of *Chlorophytum borivilianum* to boost its cultivation

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SUMMARY

Chlorophytum borivilianum Santapaw and Fernandes (Safed Musli) is one of the most important plant in Indian systems of medicine due to its aphrodisiac and sex tonic properties. Stem disc, shoot bud, root disc and seed of were cultured on different MS basal media having different concentrations and combinations of auxins (IAA, NAA and IBA) and cytokinins (BAP and KIN) which resulted in differentiation of shoots, roots, formation of callus, regeneration and field transfer of plantlets and ultimately development of micropropagation protocol. The use of micropropagated plants will reduce the cost of planting material and will boost its cultivation.

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Key words : *Chlorophytum borivilianum*, Tissue culture, Micropropagation

Chlorophytum borivilianum Santapau and Fernandes is one medicinal plant whose natural availability is continuously decreasing due to heavy demand of useful parts. It is commonly known as Safed musli,because it yields milky white tubers on processing. Safed musli is considered as one of the most important drugs in Indian system of medicine namely Ayurveda, Unani and Siddha due to its aphrodisiac and sex tonic properties. For this reason that it is an integral part of more than 100 Ayurvedic formulations (Singh *et al.*, 2004; Phurailatpam *et al.*, 2009).

Unprecedented increase in the demand of safed musli and a consequent rise in its prices necessitated its systematic cultivation about a decade ago. Safed musli cultivaton has been initiated in many areas of Maharastra,Madhya Pradesh, Chattishgarh, Rajasthan, Uttar Pradesh,Bihar and many other states.The further increase in its cultivation will help in reducing pressure on natural forest resources and ultimately help in saving the plant from being extinct. Expension of Safed musli cultivation will require substaintial amount of quality propagules.Safed musli is generally propagated by seeds as well as vegetative propagules.Seed propagation has not become popular due to the poor seed germination (Bordia *et al.*, 1995).Poor tuber development in the seed raised plant and higher period taken for maturity and harvesting of these plants.Vegetative propagation through stem disc is better then seed propagation, but the method is costly(Phurailatpam *et al.*,2009;Rani *et al.*,2009).

Tissue culture or *in vitro* technique provides an alternative vegetative propagation method known as micropropagation.Micropropagation can lead to production of a very large number of plants in relatively short time and space from a single mother plant. They are normally disease free, genetically uniform and show more many vigour and higher yield. Tissue cultured medicinal plants have been reported to exhibit higher medicinal value. Micropropagation would also help in ensuring the production of uniform plants, thereby restricting the variation in commercial population and quality of roots, which at present, is a major problem encountered with seed and stem disc propagating material.

MATERIALS AND METHODS

Stem disc, shoot bud, root disc, inflorescence and seeds of *Chlorophytum borivilianum* were used as explants. These explants were washed and pretreated in a mixture solution of 0.1% streptomycin and 0.1% bavestin for 30 minutes. The pretreated explants were surface sterilized with 0.2% $HgCl_2$ solution for 5 to 10 minutes. The surface sterilized explants were inoculated on different MS media having different concentrations and combinations of auxins (IAA, NAA, and IBA) and

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