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Callus formation from different explants of *Chlorophytum borivilianum* (Safed musli)

ARCHANA RANI AND HARSH KUMAR

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SUMMARY

Stem disc, shoot bud, root disc and seed of *Chlorophytum borivilianum* Santapaw and Fernandes (Safed Musli) were cultured on different MS basal media having different concentrations and combinations of auxins (IAA, NAA and IBA) and cytokinins (BAP and KIN). The different cultured explants showed variation in establishment of swelling and callus formation. Besides explants, these responses were also found to be media dependent. The formed calli were largely friable and of yellow green colour suggesting their undifferentiated nature and indicating the possibility of induction of somaclonal variations. Further, shoot differentiation was also observed from different explants. The work showed the possibility of the use of somaclonal variation in the improvement of this important medicinal plant.

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

Chlorophytum borivilianum Santapau and Fernandes is an important medicinal plant, which is grown for its white tubers, commonly known as Safed musli. Safed musli is one of the most important drugs in Indian system of medicine particularly for its aphrodisiac and sex tonic properties (Ram and Pandey, 2004). It is an integral part of more than 100 Ayurvedic formulations (Singh *et al.*, 2004). The medicinal properties of Safed musli are due to presence of saponins, which are found in the tuberous roots. These medicinal saponins have their highest content in the plants grown under natural environment found in forest. Under artificial cultivation the saponin content declines. Plant tissue and cell cultures technologies are seen as a tool for channelizing the resources of nature for benefit of mankind by conservation of elite, endangered plants and ecofriendly production of drugs and drug intermediates. Improved cell and tissue culture technology would help in producing the active compounds *in vitro* without cutting down the natural resources (Heble, 1993). Callus cells show lots of variations, many of which can be selected and used for the improvement of the plant. These cells can also be selected for their ability to produce higher concentration of saponins. Growing such selected cell lines in large fermenters will help in production of these medicinally important saponins on an industrial scale without harvesting and killing the plants and will help in saving the plant from being extinct. The callus formation from different explants particularly the root disc and identification of cell lines having capacities to produce higher amount of saponin will help in industrial exploitation of this important medicinal species without harvesting and killing of the plants of *Chlorophytum borivilianum*.

Correspondence to:
ARCHANA RANI, Department of Agricultural Biotechnology and Molecular Biology, FBS and H, Rajendra Agricultural University, PUSA, SAMASTIPUR (BIHAR) INDIA

Authors' affiliations:
HARSH KUMAR, Department of Agricultural Biotechnology and Molecular Biology, FBS and H, Rajendra Agricultural University, PUSA, SAMASTIPUR (BIHAR) INDIA

MATERIALS AND METHODS

Stem disc, shoot bud, root disc and seeds of *Chlorophytum borivilianum* were used as explants for tissue culture studies. 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 sterile explants were inoculated on different MS media having different concentrations and combinations of auxins (IAA, NAA, IBA) and cytokinins (BAP and KIN).The culture were incubated at 25±2^{0}C under continuous fluorescent light of 1 k lux.