

Studies on cost effective procedure for mass propagation of *Rauwolfia serpentina*

SANJAY KUMAR, ASHOK AHUJA AND S.S. GAURAV

Accepted : November, 2008

SUMMARY

The plant of selected genotype of *Rauwolfia serpentina* growing in RRL herbal garden was utilized as source for collection of explants used for initiation or shoot culture. In the present study Murasige and Skoogs (1962) basal media containing PGRs IAA (0.4ml) and BAP (0.2ml) was utilised following different treatments. The treatments include (i) culture media utilising tap water and commercial grade sucrose (Treatment A), (ii) culture media utilising Milli Q water and commercial grade sucrose (Treatment B), (iii) culture media utilising distilled water and commercial grade sucrose (Treatment C), (iv) culture media utilising distilled water and AR grade sucrose (Treatment D). Inoculation of shoot tips into culture flask containing media was performed in laminar flow cabinet. Shoot tips of *Rauwolfia serpentina* placed inside the sterilised Petridish (after sterilization) four treatments (A, B, C and D) containing media in each group there is 10 flasks of each treatment (A, B, C and D). The results suggested that the use of Milli Q water and distilled water could be replaced with tap water for *in vitro* propagation of *Rauwolfia serpentina*. The use of commercial sucrose replacing conventional use of AR grade sucrose in preparation of media could be a true replacement without affecting propagation rate of *Rauwolfia serpentina in vitro*. The use of commercial sucrose and tap water effectively could cut down the cost of its propagation.

Key words : Culture media, *Rauwolfia serpentina*, Tissue culture, Mass propagation.

R*auwolfia serpentina* is one of such traditional Rancient plants whose compounds like reserpine, recinnamine etc. have been employed as valuable drug, as used in snakebite, dogbite, mental disorder (madness, mental retardation, hysteria), bile vomiting, chickenpox, abdominal discomfort etc. *Rauwolfia serpentina* is a small evergreen climbing shrub of the dogbane family native to the Indian subcontinent, known as Sarpagandha, it was used for centuries to treat insanity as well as physical illness such as fevers and snakebites. After this isolation in 1952, it was used to lower/high blood pressure. The sanskrit word Sarpagandha literally means, one which smell like a serpent, it is mentioned in all ancient Ayurvedic scriptures for its special property, as a sedative. Plant tissue culture is an important component of biotechnology which has contributed tremendously to crop improvement. Plant tissue culture has emerged as a major discipline in the experimental biology. The most popular application of tissue culture is micro-propagation, an alternative to vegetative plant propagation. Micro-propagation represents the optimum efficiency in terms of vegetative plant propagation and allows a large number of propagules to be produced in a relatively short period of time under

controlled conditions throughout the year in a relatively small space. *In vitro* micro propagation is the practical method of large scale production of improved and disease free planting materials from the seasonal plants. Plant tissue culture technology today been globally commercialized and a large number of companies in India and abroad are now producing large quantities of planting materials especially ornamentals. Today there are nearly 135 micro propagation industries globally producing nearly 700 million plants annually. In India, there are approximately 50 companies with an installed capacity of 250 million. The annual production, however, is nearly 25 million of which 20 million plants are exported. For commercial exploitation of the developed *in vitro* method of propagation, cost effectiveness of procedures developed is highly desirable from practical point of view. A very little work has been carried out to work out economics of developed procedures to ensure low cost effective tissue culture methods to be adopted. The present study was carried out with the aim, to work out media cost towards mass propagation of *Rauwolfia serpentina* using tissue culture procedure.

MATERIALS AND METHODS

The present work was carried out at the Biodiversity and Applied Botany Division, Regional Research Laboratory (CSIR), Canal Road Jammu-180001, J&K (India) during the year 2004. The plant of selected genotype of *Rauwolfia serpentina* growing in RRL herbal garden was utilized as source for collection of explants

Correspondence to:

SANJAY KUMAR, Department of Seed Science and Technology, C.C.S. University, MEERUT (U.P.) INDIA

Authors' affiliations:

ASHOK AHUJA, Regional Research Laboratory (CSIR), JAMMU (J&K) INDIA

S.S. GAURAV, Department of Seed Science and Technology, C.C.S. University, MEERUT (U.P.) INDIA