Abstract

In vitro micropropagation technology through shoot tip culture technique of *in vitro* micropropagation of *Musa* spp. Mysore-AAB, cv. 'Embul' banana is well practiced in the country. However a few steps need to be further improved. One main constraint is the time taken for culture initiation. Therefore it is necessary to develop the technology further. The present study reports a further development of the technology by improving several conditions to enhance the rate of culture initiation/greening, minimize the time taken for bud break and to produce maximum number of buds within a short period of time while maintaining quality, quantity, continuity and cost effectiveness of the already available technology.

A protocol was developed for the form of shoot tip (explant) by utilizing Murashige and Skoog (MS) medium supplemented with 6-benzylaminopurine (2.25 mg/L) and indole-3-acetic acid (0.175 mg/L). Three shoot forms (intact form, with two incisions at the top of the tip and longitudinally halved through apical meristem) were tested. Longitudinally halved shoot tips through apical meristem induced the maximum percentage of explants (66.67 %) and produced the highest number of shoots per explant (2) in two months (8-9 weeks). The culture initiation/greening of explants has been rapid and majority of cultures were initiated at 3 - 6 days after inoculation.

The media protocol was also modified by supplementing MS medium with 6-BAP (2.25 mg/L), IAA (0.175 mg/L) and adenine sulphate (1.0 - 4.0 mg/L) and the medium incorporated with adenine sulphate (2.0 mg/L) induced the highest number of explants leading to bud break (33.33 %).

The combined effect of the adenine sulphate and shoot tip form was also studied. Rapid culture initiation/greening from 3-5 days was shown by 2.0 mg/L adenine sulphate with longitudinally halved shoot tips through apical meristem. Furthermore, 62.50 % of explants were induced leading to early bud break (from the third week after inoculation) and the maximum number of shoots (4) was produced by the same combination.

The study revealed that the already practicing technology at commercial level could be further developed by using longitudinally halved shoot tips with 2.0 mg/L adenine sulphate added to the culture initiation medium.