

Abstract

Curcuma parviflora hybrid is an ornamental plant within a potential for the flowering pot plant. One of the most important factors for ameliorating industrial production is high quality of rhizome. The *in vitro* technique is the crucial step for disease-free mother stock and further multiplication system. The objectives of this research are to study *in vitro* culture of shoot multiplication and tuberous roots (t-roots) formation; and then to transplant plantlets with t-roots for rhizome production. The results herein showed that TDZ was more effective in shoot multiplication than BA, Kinetin and 2iP, respectively. *Curcuma* shoot on MS supplemented with 13.62 μM TDZ and then transferred to MS with 8.89 μM BA, yielded the greatest multiple shoots at 50 shoots/plantlet. However, its fresh weight, 0.05 g/shoot, and dry weight, 0.006 g/shoot, was very low due to short and small shoot. T-roots formation was induced on media supplemented with various plant growth regulators and carbon sources. The high yield and quality of t-roots came from MS with 18.59 μM Kinetin and 233.78 mM sucrose. The optimal temperature and light intensity for T-roots formation was at 25° C and 60 $\mu\text{mol/ms}^{-1}$, respectively. The plantlet with t-roots from MS with 18.59 μM Kinetin and 233.78 mM sucrose, showed 100% survival rate, early flowering within 60 days and 9 flowers in a pot. Finally, after 180 days of transplant this treatment led to high yield and quality of rhizome.