

**Influence of N<sup>6</sup>-benzyladenine and sucrose on in vitro direct regeneration and microrhizome induction of *Kaempferia parviflora* wall. Ex Baker, an important ethnomedicinal herb of Asia**

ABSTRACT

*Kaempferia parviflora* is an ethnomedicinally important plant. Conventional propagation of *K. parviflora* is hindered by slow growth rate, long dormancy periods and dual use of rhizomes for seeds as well as marketable produce. In our study, we developed a promising dual-phase micropropagation protocol to increase number of plantlets, survivability, biomass and quality plantlets for mass production. Multiple shoot regeneration was found most successful on Murashige and Skoog (MS) media supplemented with 35.52  $\mu$ M N<sup>6</sup>-benzyladenine (BA) in terms of highest number of shoots ( $22.4 \pm 1.84$ ), leaves ( $29.27 \pm 1.30$ ), and roots ( $17.8 \pm 1.72$ ) per explant. High survivability was observed with an acclimatisation percentage of 100% in sterile perlite medium. This method was shown to be preferable compared to conventional propagation in terms of propagation time and number of plantlets. Regenerated in vitro plantlets were then successfully induced to form microrhizomes in MS media with an optimal concentration of 6% (w/v) sucrose. Increase in microrhizome biomass ( $35.7 \pm 2.59$  g per flask), number of microrhizomes ( $5.2 \pm 0.78$ ), shoots ( $8.5 \pm 1.58$ ) and roots ( $8.5 \pm 1.58$ ) were observed for this treatment. This investigation successfully highlights the manipulation of single factors in short time frame to produce a simple and efficient alternative propagation method for *K. parviflora*.

**Keyword:** Acclimatisation; BA; Multiple shoot; Single factor; Sucrose