

**RAPID MICROPROPAGATION OF A TROPICAL FOREST SPECIES, *MADHUCA LONGIFOLIA* VAR. *LONGIFOLIA* USING APICAL AND NODAL EXPLANTS**

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*Madhuca longifolia* (Koenig) J.F. Macb. var. *longifolia* is a tropical tree belonging to the family Sapotaceae with a high reforestation potential, and immense benefits economically and in traditional medicine. Overexploitation and rapid deforestation combined with the problems in seed propagation due to viability and survivability in the soil increased species vulnerability in natural forests. These drawbacks can be overcome by the development of a rapid regeneration technique for *M. longifolia*. In the present study, a successful *in vitro* propagation protocol from sterilization to hardening was developed by direct organogenesis through apical shoots and nodal cutting explants. The combined effect of 10% (v/v) sodium hypochlorite (NaOCl) for 10 min following 0.1% (w/v) mercuric chloride (HgCl<sub>2</sub>) for 5 min increased the survival rate of all explants (83.9%) compared to using NaOCl alone. Culture initiation was influenced by the type of explants, where apical shoots showed a higher response (90.0%) than nodal explants (77.7%) in bud break. Both explants indicated the highest bud break percentage in the shortest duration (approximately 6 and 15 days, respectively) with 1.0 mg l<sup>-1</sup> 6-benzyl amino purine (BAP). A higher multiplication rate of micro shoots (7.93) from a single node was observed with 1.0 mg l<sup>-1</sup> BAP combined with 3.0 mg l<sup>-1</sup> Zeatin (ZEA). A culture medium with ZEA was more efficient for shoot multiplication than indole-3-acetic acid (IAA) or gibberellic acid (GA<sub>3</sub>), where shoot elongation was enhanced under a low concentration of BAP (0.2 mg l<sup>-1</sup>). The application of kinetin has no significant effect on shoot multiplication. *In vitro* grown shoots can be successfully rooted within 9 days by pulsing with IAA (0.5 g l<sup>-1</sup>) for 2 h (64.7%). After 12 weeks, 88.9% of plants survived after keeping in a soil-less ¼ MS media for four weeks before transferring into the sand: compost (1:1) media under greenhouse conditions.

**Keywords:** *Madhuca longifolia*, Micropropagation, Rooting, Shoot, Tropical forest