



EFFECT OF DIFFERENT PLANT GROWTH REGULATORS AND ADDITIVES ON *IN VITRO* CULTURE ESTABLISHMENT OF *PSEUDOXYTENANTHERA STOCKSII*

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ABSTRACT: *Pseudoxytenanthera stocksii* (Munro) is a medium sized bamboo up to 9 m tall with internode length 15-30 cm and 2.5-4 cm diameter, distributed in Maharashtra, Karnataka, Kerala and Goa and cultivated in coastal belt of Karnataka. It is commonly propagated through seeds and culm cuttings, but the major hindrance to the species is the production of sterile flowers and absence of viable seeds. Plant tissue culture is a promising alternative for this species, therefore a study was conducted with an objective to evaluate various plant growth regulators and additives for successful establishment and shoot proliferation in *P. stocksii*. In the present study, Murashige and Skoog's (MS) medium supplemented with different concentrations (1, 3 and 5 mg l⁻¹) of different cytokinins as Benzyladenine (BA), kinetin and thidiazuron (TDZ) were tried for *in vitro* culture establishment through axillary bud proliferation. After 10 days of inoculation, 100 percent bud break was observed in different cytokinins at 1 and 3 mg l⁻¹ concentrations. Maximum numbers of sprouts were obtained on 1 mg l⁻¹ TDZ. Number of shoots (3.53) and number of leaves (4.16) were also significantly affected by various concentrations of cytokinins as well as interaction between cytokinins and concentrations and the most effective interaction was 1 mg l⁻¹ TDZ. In contrast, maximum shoot length (4.13 cm) was obtained on 3 mg l⁻¹ BA. As small size shoots were obtained on TDZ, shoot multiplication experiment was carried out on BA supplemented medium. Shoot cultures were multiplied on MS medium containing different concentrations (1, 2 and 4 mg l⁻¹) of BA and NAA (0.25 and 0.5 mg l⁻¹) with or without additives (50 mg l⁻¹ Ascorbic acid, 25 mg l⁻¹ Citric acid and 12.5 mg l⁻¹ L- cysteine). Around 7-9 numbers of shoots with 7-8 cm length were obtained on 1 mg l⁻¹ BA and 0.5 mg l⁻¹ NAA without additives only after 7 days. But after 20 days, the number of shoots increased to 15-20 shoots. This procedure can be useful for large scale multiplication of *P. stocksii*.

Keywords: Benzyladenine, *in vitro*, *Pseudoxytenanthera stocksii*, Thidiazuron.

Abbreviations: BA - 6-Benzyladenine, HgCl₂-Mercuric Chloride, IBA- Indole-3 butyric acid, MS -Murashige and Skoog (1962), NAA- Naphthol acetic acid, TDZ-Thidiazuron

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INTRODUCTION

Ecologically, bamboos support various forms of life and are preferred as important species in soil and water conservation, carbon sequestration, balancing O₂ and CO₂ in the atmosphere, barrier of Ultra Violet rays by reducing light intensity (Venkatachalam *et al.*, 2015). About one dozen dominant species are commercially valuable and significant. Among the indigenous species, about 10 species are introduced (exotic

species) in India. *Pseudoxytenanthera stocksii* Munro (Syn: *Dendrocalamus stocksii/Oxytenanthera stocksii*) is locally known as Maarihal bamboo/Manga bamboo, and it naturally occurs in the Western Ghats. It is distributed in Karnataka, Goa, Kerala and Maharashtra. It is a medium sized species, has stout solid and strong culms. Culm attains height of 9 meters; diameter ranges 2.5 - 5.8 cm and internodes length ranges 15 - 29 cm. It is characterized by the presence of glabrous, solid, grey-green stem with a pubescent ring.