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Enhanced adventitious shoot regeneration from aerial stem explants of ginger using TDZ and its histological studies

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Abstract: A protocol for direct plantlet regeneration from aerial stem explants of ginger (*Zingiber officinale* Rosc.) has been developed. Adventitious shoots and roots were regenerated from in planta aerial stem explants of 2 ginger varieties viz. var. 'Jamaica' and var. 'Varada'. Maximum shoot and root regeneration were observed in the cultures containing TDZ and IBA (1:1; 1:0.1 mg L⁻¹) in both varieties. Cultures containing TDZ alone showed poor shoot and root formation. Histological studies revealed that the shoot initials originated from the primary thickening meristem and apical meristem, while the root primordia originated from the primary thickening meristem present in the aerial stem. The hardening of in vitro plants was performed with different hardening media and successful acclimatization was obtained. The hardening medium containing soil: sand: coir dust: cow dung + 5 g *Trichoderma harzianum* / cup gave good result in all aspects like survival of hardened plants, plant height, number of leaves, and chlorophyll content.

Key words: Aerial stem, biological hardening, direct regeneration, ginger, primary thickening meristem, *Trichoderma harzianum*

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