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**Development of *in-vitro* propagation protocol for lisianthus (*Eustoma grandiflorum*)**

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**Abstract**

*Eustoma grandiflorum*, also known as Lisianthus, is a member of the Gentianaceae family and is highly valued in the global floriculture industry due to its unique characteristics, particularly its exceptional shelf life. Since lisianthus has the qualities of an “ideal cut flower”, its demand is increasing throughout the world. This study was aimed to develop cost effective, uniform plants for commercial production of Lisianthus throughout the year by using *in-vitro* techniques. The effects of different combinations and concentrations of plant growth regulators (PGR) and charcoal on new shoot and root induction of Lisianthus explants was studied. The experiment was arranged as two factor-factorial Completely Randomized Design (CRD) along with 15 replicates. The half strength MS medium supplemented with 0.75 mgL<sup>-1</sup> Indole-3-Butyric Acid (IBA) + 0.5 mgL<sup>-1</sup> Napthalene Acetic Acid (NAA) + 0.5 mgL<sup>-1</sup> Gibberellic Acid (GA3) with charcoal was the best media for the new shoot initiation and increment of shoot height of Lisianthus. The MS medium with 0.5 mgL<sup>-1</sup> Thidiazuron (TDZ) + 2 mgL<sup>-1</sup> Indole-3-Butyric Acid (IBA) with charcoal recorded as the best media for both root initiation and increment of root length of Lisianthus (p<0.05). The application of these protocols in commercial production of this valuable cut flower species can be cost-effective, as they involve minimal use of PGR compared to existing literature.

**Keywords:** Charcoal, Explants, Lisianthus, Plant growth regulators

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