

HORMONAL TREATMENTS FOR STEM CUTTINGS AND *IN-VITRO* STERILIZATION PROTOCOL FOR PROPAGATION OF ALLSPICE (*Pimenta diocia* L. Merrill)

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Allspice traditionally propagated through seeds, limits the availability of planting material, impeding its widespread cultivation in Sri Lanka. This study evaluated the hormone treatments for Allspice propagation using stem-cuttings and optimized the *in-vitro* sterilization protocol to enhance the production of quality planting material. A pot experiment was arranged in a net house using a Complete Randomized Design (CRD) with coir dust:cow dung:sand:topsoil in 1:1:1:1 ratio. The stem cuttings treated with Indole-3-acetic acid (IAA) at 20 (T1), 40 (T2) and 60 (T3) mg L⁻¹, the combination of naphthaleneacetic acid (NAA) and IAA at 60 mg L⁻¹ (T4), Rootone (T5) were compared with the control (T6). Growth parameters: number of buds and leaves, length of the longest shoots, height of the stem cuttings, and stem diameter were measured weekly. Means were separated by the Least Significant Difference test using STAR 2.0.1 statistical software. Treatment effects on the growth parameters were not significant ($p>0.05$). However, T3 with 60 mg L⁻¹ IAA recorded the highest number of buds, longest shoots, and greater stem height compared to other treatments. Root formation was not observed during the research period. The experiment to optimize the sterilization protocol for nodal segments in MS medium was carried out with eight treatments consisted with different concentrations of Carbendazime and Mercury (II) chloride (HgCl₂) (T1:0.1% Carbendazime, T2:0.1% Carbendazime, 1% HgCl₂, T3:0.1% Carbendazime, 1.5% HgCl₂, T4:0.1% Carbendazime, 2% HgCl₂, T5:0.2% Carbendazime, T6:0.2% Carbendazime, 1% HgCl₂, T7:0.2% Carbendazime, 1.5% HgCl₂, T8: 0.2% Carbendazime, 2% HgCl₂) and arranged in a CRD design. After two weeks of incubation, treatment T4 with 0.1% Carbendazime, 2% HgCl₂ exhibited a significantly low contamination rate of 46.66%. Findings offer valuable insight for optimizing allspice propagation for scalable production of quality planting materials. Further research is suggested for a comprehensive conclusion.

Keywords: Contamination, Growth parameters, Indole-3-acetic acid, Naphthalene acetic acid