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Adventitious Root Induction from *in-vitro* Generated Shoots of a Selected Cinnamon Clone (*Cinnamomum verum*)

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Seed propagation is the common propagation method used in cinnamon cultivation. But Cinnamon bears berries only once a year (June- August) and loses viability rapidly during storage. Unevenly matured seeds in a single bunch also require extra precautions to be taken at the harvesting or before sowing. Homogenous plantations would not be established through cross-pollinated seeds. There should be reliable vegetative propagation method/s to overcome these constraints but the main difficulty faced is rooting, thus cinnamon has been recognized as a hard to root crop. The objective of this study was to identify a suitable rooting medium for rooting of *in-vitro* generated shoots of selected high yielding locally developed cinnamon clone CRS 184 obtained from Cinnamon Research Station, Thihagoda.

Auxiliary and apical buds were directly dipped into 0.1 g/l Ascorbic acid solution at the time of explants collection. Surface sterilization was done washing with running tap water for 30 minutes, 0.1 mg/l Topsin solution for 30 minutes, 5 times with distilled water and 15% NaOCl + 1 drop of teepol for 15 minutes. Outer leaves of the buds were detached and the buds were established in WP medium (Woody Plant Medium) initially for two weeks. Then they were transferred in to Anderson medium supplemented with 3 mg/l BAP (6-benzylaminopurine) and 0.1 mg/l NAA (Naphthaleneaceticacid) for proliferation. The shoots emerged from these cultures were used as explants for the root induction trial. *In-vitro* generated shoots obtained from above procedure were separated and established in MS (Murashige and Skoog's) media supplemented with different concentrations of IBA (Indole-3-Butericacid) and activated charcoal. The experiment was arranged according to Factorial CRD with 15 replicates. The cultures were maintained at 23± 2 °C with 16 hrs photoperiod light regime (1220 lux). The number of days taken for root initiation and number of roots were observed.

Root initiation was observed 27 days after transferring into the rooting media. Significantly higher frequency of rooting was observed with an average of 2 roots per shoot in the MS media supplemented with 1 mg/l IBA and 1 g/l activated charcoal. Hence it could be concluded that MS media supplemented with 1mg/l IBA + 1g/l activated charcoal facilitates as the best medium for induction of adventitious roots from *in-vitro* generated shoots of the cinnamon clone CRS 184. Thus this suggests a complete and a successful *in-vitro* micropropagation protocol for multiplication of the cinnamon clone CRS 184.

Keywords: *Cinnamomum verum*, *In-vitro* propagation

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Seed Germination and Early Seedling Growth of Brinjal (*Solanum melongena*) as Affected by Heavy Metals

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Soil pollution with heavy metals is a matter of highly concern as more and more Agro-ecosystems are affected. Present investigation was conducted to study the effect of Cu²⁺ and Ag²⁺ on seed germination and early seedling growth of *Solanum melongena*. Pretreated seeds (germination >90%) washed twice with ddH₂O were placed on double layered filter papers in Petri dishes. They were treated separately with different concentrations of Cu²⁺ and Ag²⁺ and incubated for 10 days under laboratory conditions. Germination was recorded daily, when the radical was appearing through the broken seed coat. The experiment was arranged according to CRD with 3 replicates each contained 25 seeds.

Germination percentage was found to be reduced with the increasing metal concentrations. In the case of Cu²⁺, a 50% reduction in germination percentage was observed at 40 ppm while at 30 ppm of Ag²⁺ same reduction was observed implying that toxicity of Ag²⁺ is severe than that of the Cu²⁺. The length of the shoot of the seedlings treated with >50ppm Cu²⁺ was also found to be significantly (p<0.01) lower than that of the lower concentrations (<25 ppm). In the case of Ag²⁺, both root and shoot length was severely affected even at 20 ppm. Furthermore, some morphological abnormalities in germinated seeds could also be noticed at higher concentrations for both metals. However, the abnormalities were not specific. Results could be concluded that both Cu²⁺ and Ag²⁺ affect seed germination of *Solanum melongena* and the effect of Ag²⁺ was found to be severe at low concentrations compared to Cu²⁺.

Key words: heavy metals, seed germination; *Solanum melongena*