In vitro regeneration studies and genetic stability evaluation of *Muntingia calabura* (L); a medicinally important woody tree

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Abstract: *Muntingia calabura* (L), is a medicinal plant known for its multiple medicinal values belongs to the family *Elaeocarpaceae* has great significance in traditional systems of medicine and commonly known as Jamaican cherry. A reliable regeneration studies was established through leaf explants on Murashige and Skoog medium supplemented with cytokinins BAP and KN (0.2-2.5 mg^{-1}) in combination with auxin IAA and NAA (0.5mg^{-1}). The sterilization treatments of explants with 1%HgCl2 (w/v) yielded 95% of contamination free leaf and nodes of M.calabura. The breakage of bud and shoot initiation were noticed with the initiation of callus at lower concentrations of auxin alone 0.5mg^{-1} 2,4-D found to be good in callus induction from leaf and nodal explants. A problem of browning callus was prevented by regular sub culturing of callus cultures. Maximum number of shoots (32±0.88a) with shoot length (7.6±0.17a) in leaf observed on MS medium supplemented with BAP (1.5mg^{-1}) and IAA (0.5mg^{-1}).Half strength MS medium fortified with IBA (2.0mg^{-1}) was effective and achieved 70% of rooting. These well developed shoots were transferred to pots containing mixture of soil and vermicompost (1:1) for acclimatization. The acclimatized plants were established in the field successfully with 85% survival rate. Molecular marker studies (ISSR) showed that regenerated plants showed genetic stability in micro-propagated plants. In conclusion, our research findings established a protocol of regeneration studies in woody tree using PGRs at lower concentrations with eradicating the problem of browning callus without using anti browning agents through regular sub culturing of cultures and this is the first report on regeneration studies of *Muntingia calabura.*

Keywords: *Muntingia calabura*, *Elaeocarpaceae,* $HgCl_2$, Cytokinins, Auxins.

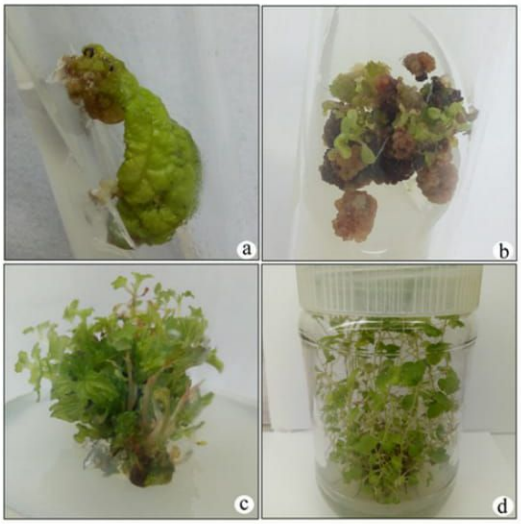

PLATE -1
a) Initiation of callus on 2,4-D at 0.5mg-1
b) Initiation of shoots in combination with 0.5mg-1 BAP +IAA 0.5mg-1
c) Elongation of shoots at 0.5mg-1 IAA + BAP 1.0mg-1
d) Elongation of shoots at 0.5mg-1 + 1.5mg-1 and rooting alone IBA 2.0mg-1