Production of Agarwood Fragrance Compounds by Elicitation of Shoot Cultures of *Gyrinops walla* by Salicylic Acid

Sunethra K.A.S. and Eeswara J.P.*
Department of Crop Science,
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Gyrinops walla (*Walla patta*) is an evergreen non-timber forest tree which produce agarwood similar to the other species in family Thymelaeaceae. Due to the high economic value of agarwood products, illegal harvesting of the trees reported highly. The present study was conducted to find the effect of different concentrations of salicylic acid (SA) on growth and the chemical composition of *G. walla* shoot cultures with the objective of producing fragrance compounds under in-vitro condition. *Gyrinops walla* shoots were grown in full strength MS (Murashige and Skoog) medium supplemented with 1 mg/L of BAP+ 0.1 mg/L of IBA without solidifying agent and the effect of three concentrations of SA (0, 100, 1000 µmol/L) on growth and product synthesis was investigated. Hexane and dichloromethane extracts of wood, control and elicited shoots and growth medium were analyzed for their chemical composition using Thin Layer Chromatography (TLC). Medium supplemented with 1000 µmol of SA showed significantly ($p<0.05$) slowest growth (0.0395 and 0.041 g per day in dry and fresh weight basis) and highest cell doubling time (16.11 and 17.54 days in fresh and dry weight basis) compared to the control (0.0507 g per day and 12 days of growth rate and cell doubling time respectively). TLC results revealed that the synthesis of chemical constituents is higher in elicited shoots compared to non-elicited shoots while 1000 µmol concentration of SA released higher amounts of chemicals into growth medium compared to other two treatment. Therefore present study show the possibility of producing fragrance compounds from shoot cultures of *G. walla* under in-vitro condition.

Keywords: Agarwood, *Gyrinops walla*, Phytochemicals, Salicylic acid

*jpeeswara@agri.pdn.ac.lk