

Full Length Research Paper

# Agarwood resin production and resin quality of *Gyrinops walla* Gaertn

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Agarwood is a resin produced by certain species of family Thymalaeaceae due to a self-defence mechanism. Most species of *Aquilaria* and a few species of *Gyrinops*, *Aetoxylon* and *Gonystylus* are capable of producing agarwood. *Gyrinops walla*, a member of the family Thymalaeaceae is recorded only in the wet zone of Sri Lanka and very rarely in southwest India, has not been previously studied to identify its ability of producing agarwood. Therefore the present study was the first ever to conduct and identify the production of agarwood in *G. walla* and the quality of its resins. Six *G. walla* trees growing in two distinctive areas of the wet zone of Sri Lanka were used for the present study. All six trees had natural wounds occurred sometime before the sample collection due to abrasions or fallen branches. The dark coloured tissues of the affected areas were carefully collected without cutting the trees and resins were extracted by solvent extraction method. The extracted resins were analysed using gas chromatography to identify the different compounds. Finally these compounds were compared with that of selected *Aquilaria* species. The results revealed a strong similarity of resin compounds of *G. walla* with that of *Aquilaria* species which are commercially used to collect agarwood. Further studies should be conducted to identify the effects of artificial resin induction methods on *G. walla* that are already used on *Aquilaria* species.

**Key words:** *Gyrinops walla*, *Aquilaria*, agarwood, retention indices.

## INTRODUCTION

Agarwood, a highly valuable and fragrant resin, is used as incense for religious ceremonies, perfumes in the Arab world, ornamental materials and medicinal components in oriental medicine (Chen et al., 2011). This resin impregnated woody tissues produced in the heartwood area are mainly found in certain species of *Aquilaria* which has been a highly priced commodity for more than 2000 years (Nor Azah et al., 2008). It mainly comes from the damage caused to healthy trunks or branches of the trees of those *Aquilaria* species in the family Thymalaeaceae by mold. In a natural environment, it often takes several years for a wild damaged *Aquilaria* species plant to perform agarwood (Gerard, 2007). *Aquilaria* is an evergreen tree that grows up to 40 m high and 60 cm in diameter. Leaves are 5 to 9 cm long and

oblong lanceolate in shape. It bears white flowers that are sweetly scented. In addition to *Aquilaria*, agarwood products have also been recorded from species of the closely related genus *Gyrinops* (Eurlings and Gravendeel, 2005) and more distantly related *Aetoxylon* and *Gonystylus* (Airy, 1954; Compton and Zich, 2002; Blanchette, 2003). *Aquilaria* and *Gyrinops* belong to sub-family Aquilarioideae (Domke, 1934) and are separated by the number of stamens only. Species of the genus *Gyrinops* are grown as trees or shrubs. Leaves of these species are alternate and coriaceous. Its inflorescence is sessile or shortly pedunculate, terminal or axillary, of fascicles or few-flowered. Flowers are pentamerous and hermaphrodite. The pedicels articulate at the base (Dassanayake and Fosberg, 1981).

From the recorded eight species, *Gyrinops ledermanii* and *G. versteegii* are known to produce agarwood resins. In addition to that, agarwood resin production has been recorded in *Gonystylus macrophyllus*, *G. bancanus* (Compton and Zich, 2002) and *Aetoxylon sympetalum*

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