

Analysis of volatile constituents of *Gyrinops walla* Gaertn. found in the Sinharaja Forest Reserve

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Gyrinops walla Gaertn. (Family- *Thymelaeaceae*) is an evergreen tree which grows in the wet zone of Sri Lanka. It is locally known as “Walla patta” and is also known as “Sri Lankan agarwood” or “Sri Lankan agaru” in the international market. Further, it is the only endemic species found in Sri Lanka, which produces an agar-wood type resin. Due to its unique fragrance and high retention of fragrance, it is mainly used in perfumery industry as well as cosmetics, incenses, ingredient in traditional medicine and aroma therapy. Two heart wood samples representing *G. walla* Gaertn. trees located in the Sinharaja forest (Trees located closed to Deniyaya entrance and close to Kudawa entrance) were subjected to hydro-distillation, resulting in essential oil yields of 0.2 ± 0.05 % and 0.3 ± 0.05 % (w/w), respectively. Using GC–MS analysis, a total of 57 (85.4% of the total volatiles) and 48 (84.7% of the total volatiles) volatile compounds were identified respectively. The two oil samples showed quite different volatile profile, however most of the major compounds are common, which is characterized by the dominance of β -patchoulene, naphthalene derivative, prezizaene, allo-khusiol, aromadendrene oxide-(2), (E)-isovalencenal, aristol-1(10)-en-9-ol, spiro[4.5]dec-8-en-7-ol, 4,8-dimethyl-1-(1-methylethyl), khusiol, 5-isopropylidene-6-methyldeca-3,6,9-trien-2-one, longiverbenone, khusimol and (-)-isolongifolol. Desired compounds, such as (-)-isolongifolol (15.1 - 20.9%), khusimol (5.6 - 6.2%), allo-khusiol (14.4 - 18.5%) khusiol (1.0 - 1.1%) and longiverbenone (3.4 - 3.8%), suggesting that the essential oils could be commercialized as fragrant materials of high value. Further, the study implies that, stem essential oil of *G. walla* Gaertn. has very unique chemical profile which deviates from the other type of agarwood chemical profile including *Aquilaria crassna* and *Aquilaria malaccensis*. Therefore, GC-MS finger print can be implemented as an international recognized test for identification of *G. walla* Gaertn. from other agarwood bearing stems of *Aquilaria crassna* and *Aquilaria malaccensis*.

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