

LEAF OIL EXTRACTION FROM *Eucalyptus microcorys*: AN UNCOMMON SPECIES

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Eucalyptus microcorys plantations were established in Sri Lanka since 1930 in the up-country wet zone and mid country intermediate zone although it was introduced in 1880. Due to colour, durability, workability and high density, the timber of this species is in high demand for heavy construction work, decking, flooring and making domestic structures etc. Therefore, it has been categorised as a special class timber by Sri Lanka Timber Corporation. Due to this reason, *E. microcorys* has become popular as a plantation crop among private sector, especially tea planters. Most of *E. microcorys* plantations of Sri Lanka are located above 1,500 m mean sea level and due to the recent government regulations, felling of these plantations has been restricted. Therefore, extraction of leaf oil can be introduced for this species to generate income for the plantation owners as a non-timber product. Previous studies showed the potential for *Eucalyptus* leaf oil industry in Sri Lanka including *E. microcorys*. Therefore the present study focused on the presence of chemical constituents in the extracted leaf oil of *E. microcorys* and their composition which are essential for the international market penetration as a new industry. Since a previous study proved the oil contents of *E. microcorys* do not significantly vary with different climatic and geological conditions, the present study used leaves collected from the middle of the canopy of 25 trees growing in a 2.5 ha plantation at Passara. Leaf oil extraction was carried out by steam distillation and the oil constituents were identified by GC-MS method. In addition, the production cost was also calculated using the details obtained from a medium-scale cinnamon leaf oil distillation factory. According to the results, the mean leaf oil content of *E. microcorys* was $1.23 \pm 0.07\%$ (w/w) and had 22 different constituents. Among them, seven constituents of industrial importance were identified, i.e., eucalyptol ($36.2 \pm 2.2\%$), α -pinene ($26.9 \pm 3.2\%$), p-cymene ($5.4 \pm 1.5\%$), γ -terpinene ($0.7 \pm 0.3\%$), pinocarveol ($2.4 \pm 0.1\%$), alloaromadendrene ($0.7 \pm 0.1\%$) and 4-terpineol ($0.6 \pm 0.2\%$) which are also present in leaf oil of other *Eucalyptus* species used at commercial scale in the world. The eucalyptol percentage however is low in this species than the pharmaceutical grade which requires at least 70.0%. Still it can be used to fulfil the demand for other industrial and perfumery products. The present study also revealed that the production cost of 1.0 kg of *E. microcorys* oil varies from Rs. 297.64, viz. USD 2.05 (fuelwood boiler) to Rs. 987.29, viz. USD 6.81 (electric boiler). These values are USD 2.05 to USD 6.81. Moreover, wholesale price for 1.0 kg of *Eucalyptus* oil consisting 30.0% eucalyptol varies from Rs. 3,400.00 (USD 23.45) to Rs. 4,500.00 (USD 31.03). Therefore, a significant profit can be gained by