

## Volatile compounds of essential oil from different stages of *Michelia alba* (cempaka putih) flower development

### ABSTRACT

Seven developmental stages of *Michelia alba* (cempaka putih) flowers namely Stage 5 to 11 (S5 to S11) were investigated for their volatile compounds. The essential oil was isolated by Simultaneous Distillation Extraction (SDE) technique and the oil obtained was subjected to Gas Chromatography-Mass Spectrometry (GC-MS) analysis. In total, 78 compounds representing 93.98% of the overall *M. alba* volatiles were identified. Thirty-three of these compounds belonged to isoprenoids group which comprised 30.65% of the total volatile compounds detected throughout S5 to S11, whereas the remaining belonged to fatty acid derivatives, benzenoid, phenylpropanoid and other hydrocarbon compounds. The major compounds which represented more than 10% of the essential oil at each stage were dihydrocarveol (S5 to S8), linalool (S9 to S11), butanoic acid-2-methyl, methyl ester (S9) and cyclohexane, 1-ethenyl-1-methyl-2,4-bis (1-methylethenyl) (S6 to S7). In this study, variations in the compounds of essential oil as well as their level in percentage within the flower development stages were observed. Dihydrocarveol was the most abundant compounds detected in S5 to S8 (44.65%), while linalool was the most abundant compound detected in S9 to S11, which accounted for 59.89% of the total essential oil obtained. Based on the profile of both compounds, it might suggest that dihydrocarveol was one of the compounds that contributed significantly during bud development through S5 to S8 in which the bud became yellowish and started to swell until the petal just began to open, whereas linalool might contribute significantly to the characteristic fragrance through S9 to S11 in which during these phases, the aroma of *M. alba* fragrance was very much intense.

**Keyword:** *Michelia alba*; Volatile compounds; Essential oil; Gas chromatography-mass spectrometry; Flower development