

**CHARACTERISATION OF
FRAGRANCE MAJOR COMPOUNDS
IN INTACT PLANT AND IN VITRO CULTURES
OF *Citrus grandis* (Osbeck.) FLOWERS**



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Y.Bhg. Prof.,

LAPORAN AKHIR PENYELIDIKAN "THE CHARACTERIZATION OF FRAGRANCE MAJOR COMPOUND IN INTACT PLANT AND IN VITRO CULTURE OF *Citrus grandis* (Osbeck.) FLOWERS".

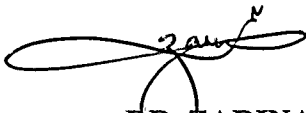
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Bersama-sama ini disertakan dua (2) naskah Laporan Akhir Penyelidikan bertajuk, "Characterization of Fragrance Major Compounds in Intact Plant and In Vitro Cultures of *Citrus grandis* (Osbeck.) Flowers".

Sekian, terima kasih.

Wassalam.

Yang benar,



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ABSTRACT

Citrus *grandis* or pomelo flowers possess a strong floral-, jasmine- and orange-like fragrance. In this study, various sampling techniques such as hydrodistillation, Soxhlet extraction and Solid Phase Micro extraction (SPME) were used to compare the extraction capability of the fragrance from pomelo flowers. Gas Chromatograph - Mass Spectrometry (GCMS) was then used to identify the extracted components. Results thus far showed that, limonene, linalool, ocimene, naphthalene and caryophyllene were the major compounds detected. In the Soxhlet extraction method, limonene was a major compound detected on extracts of blossoms and buds with percent concentrations of 4.4 and 9.3 %, respectively. On the contrary, analysis on extracts of both flower components via the hydrodistillation method was identified linalool as the major compound with percent concentrations of 8.3 and 2.7 %, respectively. In the SPME method, however, the detection of limonene in both flower components was found to be the most efficient with the peak area of *ca.* 13 and 62 %, respectively. In this method, three different types of coating fibres were evaluated and 100 µm polydimethylsiloxane coated fibre showed a high efficiency detection of fragrance compounds from pomelo flowers. Analysis of buds showed that, limonene attained the highest relative abundance i.e. 1.3×10^7 followed by ocimene (3.8×10^6), caryophyllene (3.0×10^6) and naphthalene (2.8×10^6). In the tissue culture procedure, pomelo flowers attained a relatively high yield of sterile explants i.e. ~70 % when treated with 70 % ethanol followed by 0.525 % sodium hypochlorite for 5 minutes. Interestingly, six different parts of cultured explants namely petal, sepal, style, ovary, pistil and cup base showed a capability to form callus as early as day 5. Style and pistil were the best explants to form callus on Murashige and Skoog media which supplemented with 0.05 mg/l and 0.01 mg/l BAP, respectively.