OPTIMISATION OF KAFFIR LIME LEAVES (*Citrus hystrix)* VOLATILE OIL EXTRACTION BY PRESSURISED LIQUID EXTRACTION (PLE) USING RESPONSE SURFACE METHODOLOGY (RSM)

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This Final Year Project entitled **"Optimisation of Kaffir Lime Leaves (*Citrus hystrix*) Volatile Oil Extraction by Pressurised Liquid Extraction (PLE) Using Response Surface Methodology (RSM)"** was submitted by Abdul Rahman bin Abdul Ghafar, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Food Science and Technology, in the Faculty of Applied Sciences and was approved by

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OPTIMISATION OF KAFFIR LIME LEAVES (*Citrus hystrix)* VOLATILE OIL EXTRACTION BY PRESSURISED LIQUID EXTRACTION (PLE) USING RESPONSE SURFACE METHODOLOGY (RSM)

Kaffir lime leaf (*Citrus hystrix*) is a source of natural flavouring widely used for a long term in the Asian country. The major constituent of *Citrus hystrix* has been reported is citronellal which is responsible for flavour. Usually kaffir lime leaves flavour available in the market is synthetic. Thus, this study is to introduce a natural kaffir lime leaves flavour based on extraction. Generally, conventional method has many disadvantages like production of thermally destructive compounds in the extract, time consuming and lower yield of the extract obtained. Current extraction methods like hydrodistillation and Soxhlet extraction are tedious, labour and time consuming. Thus, the major objectives of this study were to optimise more efficient and rapid Pressurised Liquid Extraction to produce quality kaffir lime leaves oleoresin. Optimised Pressurised Liquid Extraction conditions were at a temperature of 65.65 ^{o}C and a static time of 5.02 minutes. Flavour profilling of the extract obtained from this optimised condition was also been carried out using GC-MS. The compounds determined were sabinene, myrcene, α-pinene and citronellal. The concentration of the major marker compound, citronellal in the extract was 0.28 mg/100g. Moisture content in the fresh leaves was 59.22±0.39% and for dried leaves was 13.15±0.27%. The total percentage yield of the extract obtained using optimised condition was 56.16%. The volatile oil was analysed by using GC-MS to identify the major marker compound and the flavour profile of *Citrus hystrix*.