UNIVERSITI TEKNOLOGI MARA

IDENTIFICATION AND QUANTIFICATION OF FRUCTOSE IN DIFFERENT PARTS OF WATERMELON (*Citrullus lanatus*) BY USING REVERSE PHASE HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (RP-HPLC)

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AUTHOR'S DECLARATION

I declared that the work in this thesis was carried out in accordance with the rules and regulations of Universiti Teknologi MARA(UiTM). It is originally result of my own work, unless otherwise indicated or acknowledge as reference work. This thesis has not been submitted previously or currently to any other academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA (UiTM), regulating the conduct of my study and research.

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ABSTRACT

Identification and quantification of fructose in different parts of watermelon (*Citrullus lanatus*) by using Reversed Phase High Performance Liquid Chromatography (RP-HPLC).

Watermelon have been part of diet due to its nutritional values and sweetness. Fructose is fruit sugar with low glycaemic index that helps in energy production. Studies have been conducted for sugar analysis in watermelon flesh. However, no study performed in detection of fructose in rind and peel of watermelon. This study was carried out to identify and quantify fructose in flesh, rind and peel of watermelon by using isocratic mode RP-HPLC. Fresh juice and freeze dried samples were injected into NH_2 column at 23°C coupled with refractive index detector at 35°C with flow rate 1mL/min of mobile phase Acetonitrile and water (75:25) and 20µL sample injection. Retention time for fresh juice flesh, fresh juice rind and fresh juice peel were at 8.84, 8.84 and 8.88 min. The retention time for fructose in freeze dried flesh and freeze dried rind sample were, 8.81 and 8.92 min while no detection in freeze dried peel. Standard curve were linear over the concentration range (0.30-5.00mg/mL) with limit of detection and limit of quantification 0.1243 and 0.4144 mg/mL. The concentration of fructose in juice of flesh, rind and peel were 6.20, 1.89 and 0.60 mg/mL while in freeze dried flesh and rind were 13.68 and 37.50 mg/mL respectively. Fructose was successfully separated by using isocratic mode of RP-HPLC and the outcomes indicated that this study method is efficient for identification and quantification for fructose in watermelon parts.

Keywords : watermelon, *Citrullus lanatus*, sugar, fructose, HPLC.