IDENTIFICATION AND QUANTIFICATION OF ALLULOSE IN WATERMELON AS NATURAL SWEETENERS TO CONTROL DIABETIC

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This Final Year Project Report entitled " Identification and Quantification of Allulose in Watermelon as Natural Sweeteners to Control Diabetic" was submitted by Nur Syahirah Binti Samat @ Mat Juri in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

IDENTIFICATION AND QUANTIFICATION OF ALLULOSE IN WATERMELON AS NATURAL SWEETENERS TO CONTROL DIABETIC

The World Health Organization (WHO) recommends that free sugar consumption should be less than 10% of total energy intake in adults and children. Given the ways in which consuming sugar can lead to several diseases, including elevated calorie intake and complications with diabetes, substituting sugar in meals is a very desirable approach. Low- and no-calorie sweeteners have long been used to lower consumption without sacrificing the sweetness of the food. Known as the rare sugar, allulose is the one that is constantly substituted for sugar in culinary preparations. Allulose has a sweetness level that is comparable to sucrose, which is roughly 70% as sweet. Since allulose's sweetest level resembles sucrose, it can take its place in several applications. Allulose has a remarkably low calorie count of 0-0.39 kcal/g calculated from both animal and clinical experiments, compared to the known caloric value of regular sugars, which is approximately 4 kcal/g. The objective of this research is to analyse the allulose from watermelon by using UV Vis Spectrophotometer, to determine the functional group of allulose by using Fourier Transform Infrared (FTIR) Spectroscopy, to identify the ketone group of allulose in watermelon by using the Seliwanoff test, to identify the reducing sugar of allulose in watermelon by using benedict test and to quantify the total reducing sugar of allulose in watermelon by using titrimetric method. From FTIR result, the predominant functional group in the allulose compound in watermelon were at 3281.38 cm^{-1}, 2947.70 cm^{-1} and 1730.2 cm^{-1} indicate for important functional group of allulose in watermelon which is alcohol, carboxylic acid and ketone respectively. The data that obtain from analysis of allulose using UV- Visible Spectroscopy shows that the clear absorption peak for allulose at about 480 nm. The absorption peak in the range of 400 nm to 500 shows that the allulose compound was occur. The result of the study shows that allulose in watermelon has a potential as alternative sweeteners and as a sugar replacement to control diabetic.

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