

UNIVERSITI TEKNOLOGI MARA

**EVALUATION OF A NUTRITIOUS FROZEN FRUIT DESSERT
FORMULATION: SHELF-LIFE STABILITY, MICRONUTRIENT AND SUGAR
PROFILE ANALYSIS, AND CONSUMER MARKET SURVEY.**

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ABSTRACT

There is a rising prevalence of obesity in Malaysia, which affects more than 54% of the population. This increase is due to poor dietary habits, especially the frequent consumption of high-calorie, sugary and fatty snacks. In response to this public health issue, the creation of healthier snack alternative has gained importance. This study was about the evaluation of a nutritious frozen fruit dessert made from a fruit formulation that does not contain added sugar or dairy. The objective was to determine its shelf-life stability under various storage environments (room temperature, refrigerated and frozen), examine its sugar profile and vitamin C composition, and assess consumer acceptance through market surveys. The shelf-life analysis was carried out over 35 days, with real-time observations and pH readings. The study found that freezer storage (-15 to -20 °C) offered the most stability, while room temperature (22-28 °C) caused quick deterioration. Nutritional profiling found that the product comprised solely naturally occurring sugars (glucose and fructose), was low in fat, and had measurable levels of vitamin C. A market survey of 197 participants revealed significant consumer interest, with the majority expressing their willingness to buy and recommend the product. Preferences for healthier dessert options and clean-label products boosted the product's commercial viability. In conclusion, this study shows that a nutritious frozen fruit dessert can be created to fulfil both health and consumer needs. The findings have important implications for the future development and commercialisation of healthier frozen dessert options in Malaysia.

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CHAPTER 1

INTRODUCTION

1.1 Research Background

The prevalence of obesity in Malaysia is a growing problem. According to the National Health and Morbidity Survey (NHMS) 2023, more than half, or 54.4% of Malaysians screened under the National Health Screening Initiative (NHSI) are classified as either overweight or obese. Obesity is very dangerous as it can be the root cause of many diseases and complications such as cardiovascular disease, metabolic syndrome, and stroke (Pontiroli et al., 2024). This concern about the growth of obesity in Malaysia is due to the rapid urbanisation of Malaysia that affects the lifestyle and dietary choices of Malaysians (Chong et al., 2023). For example, the increasing number of fast-food chains in Malaysia. Nowadays, people are more likely to consume snacks high in sugar and fat instead of healthy snacks such as fruits and vegetables (Frontiers, 2022).

To combat this issue, it is important to develop healthy alternatives to snacks in Malaysia. Healthy snacks that contain fibre, vitamins, and less sugar and fat. Previous studies of this nutritious frozen fruit dessert have shown that a healthy and nutritious frozen dessert can be produced from fruit-fruit formulation without the addition of refined sugar. This nutritious frozen fruit dessert has greater nutritional value and contains fewer calories and fat, unlike other ice creams and unhealthy snacks in the market nowadays. Additionally, it is also proven that this nutritious frozen fruit dessert is high in fibre, lactose-free, and a good antioxidant booster that can be consumed daily. Furthermore, it is shown that this nutritious frozen fruit dessert is highly acceptable in food diets based on the results of hedonic tests in sensory evaluation of past research.