

Effect of Different Soaking Time on Glucose and Starch Concentration in Steamed Rice

Nur Ellyana Najwa Rosdan^a, So'bah Ahmad^{a*}

Structured Abstract

Background: Basmati rice is being examined to reduce sugar in rice recipes. Its cost exceeds the population's means; hence its practicality is dubious. Thus, many methods are used to reduce rice sugar. Pre-soaking food prior to steaming shows promise in effectively reducing sugar content due to its simplicity and cost-effective. This study aims to determine the glucose and starch concentration and sensory acceptability on three varieties of steamed rice at different soaking time.

Methods: The glucose and starch content in the steamed rice were measured by using the UltraViolet-Visible spectroscopy method where the glucose and starch were extracted out first from the rice by using the hydrolysis method to measure its concentration. The glucose and starch in rice were specifically measured by using the phenol-sulphuric method and iodine test respectively. Furthermore, a sensory acceptance test was performed. The 9-point hedonic scale was used to rate twelve steamed rice samples, each with a randomly assigned three-digit number (1 extremely disliked, and 9 extremely liked). This sensory acceptability test includes about thirty untrained panellists who were asked to rate four attributes: colour, aroma, texture, and overall acceptance.

Results: Result shows that steaming can decrease the glucose and starch in all three types of rice with different sizes of grain, short grain, medium grain, and long grain rice. The glucose and starch concentration in all three types of rice decrease from 0 minutes (raw rice) to 180 minutes of soaking time. Results indicated that 180 minutes reduce most of glucose and starch concentration in all three types of rice and long grain rice has the lowest starch and sugar concentration after 45 minutes of steaming compared to short and medium grain rice due to its low initial content of sugar and starch. Steamed medium-grain rice that has been soaked for 180 minutes is superior to other steamed rice in every aspect, including approval overall, based on sensory acceptability. There was no statistically significant difference ($p > 0.05$) in the samples' hues and textures.

Conclusion: The study revealed that soaking time significantly decreases glucose and starch content in three rice varieties, with 180 minutes being the most significant reduction.

Keywords: Soaking times, Glucose, Starch, Grain rice

*Correspondence: sobah@uitm.edu.my

^a School of Industrial Technology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia