

Colloquium on Applied Sciences 2024

19-21 January 2024, Faculty of Applied Sciences, UiTM Shah Alam, Malaysia

Effect of Addition of Enzyme and Sugar during Germination of Robusta coffee beans in comparison to Arabica coffee beans

Nurul Aqilah Azra Abdul Salam^{a*}, Zaibunisa Abdul Haiyee^a

Structured Abstract

Background: Coffee is a widely consumed beverage that has a complex flavour profile influenced by a variety of factors. Because of the inherent logistical barriers, possibility of spoiling, and entrenched reliance on traditional methods, germination of beans prior to processing is seldom considered to be the conventional coffee manufacturing norm. However, this study delves into this less-travelled area in an attempt to understand the possible influence of germination on the quality of coffee. Knowing the differences between the two main species of coffee, Robusta and Arabica, is essential to understanding the complexity of flavour. Arabica stands out with its sophisticated and varied flavour profile, luring those who appreciate nuanced taste experiences. Robusta, on the other hand, appeals to individuals who want a stronger and more caffeinated cup because of its strong and bitter flavour, which is frequently complemented by nutty or earthy undertones. Focusing on the fascinating domains of enzyme and sugar addition, this study seeks to understand how these factors influence coffee flavours and identify approaches to improve overall quality.

Methods: The coffee powder was extracted using SPME (PDMS/DVB) fibre and next injected to the Gas Chromatography-Mass Spectrometer (GC-MS) for analysis the volatile compositions present in the sample. In terms of its microstructure, the Scanning Electron Microscopy (SEM) was utilised by fixing the sample on a sample stage and sputter coated with thin layer of gold. Under standard vacuum conditions at accelerating voltage of 15.0 KV. Lastly, the study was next subjected to sensory evaluation by 5 trained panellists. The attributes were scored using SCAA scale and accordance to the analysis protocol that been proposed in the previous studies.

Results: The findings show that whereas treated Robusta has better morphological traits than untreated Robusta, there is no statistically significant difference in volatile compositions between the two. Likewise, sensory characteristics are marginally improved upon while retaining their uniqueness from Arabica.

Conclusion: In summary, this study provides light on possible directions for improving the microstructure and sensory aspects of coffee production. It offers insightful information for the future of coffee processing and flavour optimisation by provoking thought about alternate methods and presenting a detailed understanding of the volatile compounds exhibited by treated and untreated Robusta and Arabica.

Keywords: Robusta coffee beans, Arabica coffee beans, Enzyme, Sugar, Germination

*Correspondence: 2021120723@student.uitm.edu.my

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