

Development of Meatball incorporated with eggplant and its physicochemical properties

Nurul Faiza^a

Structured Abstract

Background: Eggplant having underutilisation in the market despite its versatility and nutritional benefits. No research has been identified the completely substitutes of meat with eggplant in meatball production. Most studies have focused on evaluating the role of eggplant fibre and eggplant flour as a fat substitute and binding agent in meat-based products. The objective of this research is to determine the physicochemical properties of meatball incorporated with eggplant (*solanum melongena*) and to evaluate the sensory evaluation of eggplant-based meatballs. This study is significant for innovation in the food industry on as it diversifies plant-based options, enhances nutritional profiles, and aligns with sustainability goals by reducing reliance on traditional meat production.

Methods: This research develops five meatball formulations using a long eggplant as a substitution of meat. The formulations developed were control with 0% eggplant, F1 with 30%, F2 with 50%, F3 with 70%, and F4 with 100% eggplant. The physicochemical analysis conducted in this study including moisture content, water holding capacity, cooking yield, cooking loss, pH, colour, texture profile analysis and acceptance test by using 9-point hedonic scale.

Results: This study shows that the incorporation of eggplant in meatball influences both of physicochemical properties and sensory attributes. Incorporation up to 70% of eggplant in the meatball increase the cooking yield and decrease the cooking loss. moisture content of meatballs formulated with different levels of eggplant incorporation significantly increased as the amount of eggplant increased. There is no significant difference in pH and water holding capacity. There is also a significant effect on the colour and texture parameters of meatball samples in terms of L* (darkness to lightness), a* (greenness to redness) and b* (blueness to yellowness). Based on sensory evaluation, meatball incorporated with 30% of eggplant rated as the most acceptable in terms of appearance, texture, juiciness and flavour.

Conclusion: In conclusion, the findings of this study show F1 with 30% eggplant incorporation as a optimal formulation that not only enriches the physicochemical properties but also enhances overall consumer satisfaction. Therefore, the result of this study helps to understanding the physicochemical and sensory effects of incorporation of eggplant in the meatball.

Keywords: Eggplant, Meatball, Plant-based meat, Physicochemical

*Correspondence: 2022931165@student.uitm.edu.my

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