Junior Science Communications
Faculty of Applied Sciences, UiTM Shah Alam
https://journal.uitm.edu.my/ojs/index.php/JSC

E-ISSN 2637-0689
Vol 47 2025

Colloquium on Applied Sciences 1 2025
20-24 January 2025, Faculty of Applied Sciences, UiTM Shah Alam, Malaysia

Effect of Orange Pomace Addition on Physicochemical Properties of Yoghurt

Maryam Azmi[a], Fadhilah Jailani[a*]

Structured Abstract

Background: Orange pomace, a by-product of orange juice production, is rich in antioxidants, polyphenols, and fibre but is often discarded, contributing to environmental waste. This study investigates the effect of hot air drying and freeze drying on the chemical composition of orange pomace and its application in yoghurt. The objective of this study is to determine the physicochemical properties of yoghurt over a 14-day storage period at chilled temperature.

Methods: Orange pomace (*Citrus sinensis* Valencia orange) was dried using a hot air oven (50°C) and lyophilised using a freeze dryer until moisture content <10%. The dried pomace was ground and sieved through a 40-mesh screen prior to crude fibre, total phenolic, and DPPH scavenging analysis. Dried pomace with the highest overall values across these three analyses was chosen for fortification in yoghurt. Three yoghurt formulations were prepared with 0%, 1%, and 3% orange pomace powder. These yoghurt samples were subjected to analysis at one-week interval over a 14-day storage at chilled temperature: total phenolic content, crude fibre, colour, pH, acidity, syneresis, and viscosity.

Results: Hot air-dried pomace powder preserved higher total phenolic content (107.38 mg GAE/100 g) and crude fibre (12.67%) compared to freeze-dried. In contrast, freeze drying exhibited greater DPPH antioxidant activity (92.39%). Incorporating hot air-dried orange pomace powder significantly increased TPC and crude fibre in yoghurt, with the 3% formulation showing the highest values. Colour darkened with more pomace, turning redder and more yellowish. The 3% yoghurt had the lowest pH, highest acidity, and least syneresis. Viscosity increased over storage, highest in the 3% formulation.

Conclusion: In conclusion, the findings of this study indicate that hot air-dried orange pomace powder, particularly at 3%, has significant potential for yoghurt fortification, enhancing its nutritional profile while contributing to the utilisation of fruit waste. The incorporation of orange pomace powder in yoghurt formulation presents a sustainable approach to food waste management while improving functional properties.

Keywords: Orange Pomace, Hot Air Drying, Yoghurt Fortification, Antioxidants

*Correspondence: fadhi478@uitm.edu.my

[a] School of Industrial Technology, Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Malaysia