



EXPLORING THE INCORPORATION OF MULBERRY (*MORUS ALBA L.*) INTO FREEZE-DRIED YOGURT FOR ENHANCED NUTRITIONAL VALUE AND QUALITY

Nu Yen Nhi Huynh¹, Thi Bich Tram Phan¹, Thi Tuu Tran², Thanh Viet Nguyen^{2,3}✉

¹Faculty of Biological Sciences, Nong Lam University, Ho Chi Minh City 70000, Vietnam.

²Institute of Applied Technology and Sustainable Development, Nguyen Tat Thanh University, Ho Chi Minh City 70000, Vietnam.

³Faculty of Food and Environmental Engineering, Nguyen Tat Thanh University, Ho Chi Minh City 70000, Vietnam.

✉ ntviet@ntt.edu.vn

<https://doi.org/10.34302/crpjfst/2023.15.3.13>

Article history:

Received Aug 14 2023

Accepted Sept 27 2023

Keywords:

Freeze-drying;

Morus alba L.;

Yogurt;

Physicochemical properties;

Antioxidant Activity.

ABSTRACT

Yogurt, popular worldwide, is nutrient-rich with calcium, potassium, protein, B vitamins, and beneficial microorganisms. Mulberries possess medicinal qualities, notably anthocyanins, which have antioxidant, anti-diabetic, and anti-bacterial effects. Though fruit-flavored yogurt is popular, producing it is challenging because of its limited shelf life. However, freeze-drying technology can address this, allowing prolonged storage without compromising its quality. This study evaluated incorporating mulberry into yogurt to enhance its nutritional value and quality while seeking an optimal production process for freeze-dried mulberry yogurt. Mulberry syrup was added in various ratios, demonstrating statistically significant effects on the yogurt's physicochemical properties. Particularly, a 9:1 mulberry syrup to yogurt ratio exhibited a total polyphenol content of 170.84 mg GAE/100 g, marking a 94% increase compared to the yogurt without mulberry syrup. This substantial enhancement signifies an improvement in yogurt efficiency when mulberry is integrated. Similarly, DPPH and ABTS free radical scavenging activities for the 9:1 ratio were observed at 12.22 mgAAE/100g and 22.55 mgAAE/100g, which is an enhancement of 1.89% and 15.99%, respectively, compared to the reference yogurt sample (10:0 ratio). The quality changes in the freeze-dried mulberry yogurt were monitored over a 28-day storage period. The results revealed relatively stable physicochemical properties, microbiological density, and biological activity throughout the storage, highlighting the potential of freeze-drying technology in creating innovative and nutritious yogurt products.
