

Title : Effects of anthocyanins extracted from butterfly pea on probiotic growth and physicochemical properties of fermented milk product

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Major : Microbiology

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ABSTRACT

Functional foods are gaining popularity, particularly probiotic products that support digestive health. Anthocyanins from butterfly pea (*Clitoria ternatea* L.) flowers are natural plant compounds that provide color and are commonly used in food products. However, the addition of these compounds may influence the growth and survival of probiotics in fermented milk. Therefore, this study aimed to evaluate the growth and survival of probiotics in fermented milk supplemented with butterfly pea anthocyanins at concentrations of 3.125 and 6.25 mg/mL compared with a control group. In addition, physical and chemical changes of the products during fermentation were investigated. Fermented milk samples were collected at 0, 3, 6, and 9 days to determine viable cell counts, pH, lactic acid content, anthocyanin content, and physical characteristics. The results showed that anthocyanin supplementation had a significant effect on the growth of *Lacticaseibacillus paracasei*. Especially, the supplemented groups at day 9 showed significantly higher probiotic survival compared with the control group. The anthocyanin concentration of 6.25 mg/mL demonstrated the best ability to maintain probiotic viability during fermentation. Anthocyanin addition also influenced physical properties, particularly product color. The lactic acid content increased during the early stage of storage and slightly decreased toward the end. This trend was consistent with the pH value, which initially decreased and then remained relatively stable during the later stages of storage. Meanwhile, the anthocyanin content gradually decreased over time, reaching its lowest level on day 9, possibly due to microbial utilization or changes that occurred during fermentation. These findings suggest that butterfly pea anthocyanins contribute to maintaining probiotic viability in fermented milk and influence product characteristics during fermentation, offering valuable insights for product development.

Keywords: Anthocyanin, Butterfly pea, Fermented milk, Prebiotics, Probiotics

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