Title : Production of Sake from Riceberry Rice and Its Properties

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# ABSTRACT

This study aims to produce sake from Riceberry rice and analyze the properties of the product to enhance the value of Thai rice and cater to the current demand for health-focused products. Riceberry rice, a popular Thai rice variety, which is recognized for its high nutritional value. It is characterized by its deep purple color, resulting from anthocyanins, which are antioxidants. Additionally, Riceberry rice contains phenolic compounds and γ-oryzanol, which help reduce cholesterol levels, prevent cardiovascular diseases, and have a low glycemic index, making it suitable for diabetic patients and health-conscious consumers. In this project, Riceberry rice was utilized as a raw material for producing sake, a traditional Japanese fermented beverage, to diversify rice-based food and beverage products and increase the economic value of Riceberry rice. This initiative also promotes sustainable use of domestic resources. The sake production process involved using koji, mixed microbial starter in the form of rice mold (Loog-pang), as the inoculum of fermentation. The fermentation process was monitored by measuring the reducing sugar content using the DNS (3,5-dinitrosalicylic acid) method. The results showed that the initial reducing sugar content was 3.545 mg, which continuously decreased during the 3 days prior to 1.127 mg and gradually declined further in the later stages. This reduction was attributed to yeast consuming sugar to produce alcohol. The alcohol content in the product increased continuously, reaching 47.61% after 14 days of fermentation, which is considered an optimal level for sake production. The experimental results demonstrated an inverse relationship between reducing sugar content and alcohol concentration in Riceberry rice sake fermentation, a typical characteristic of the alcoholic fermentation process. As more sugar was consumed, alcohol production increased until the fermentation reached equilibrium. The analysis of phenolic compounds in Riceberry rice sake using the Folin-Ciocalteu method revealed a continuous increase in concentration, starting from 3.939 mg and rising to 6.298 mg within 14 days. This contributes to the enhanced nutritional value of the sake. Additionally, fermentation using Loog-pang yielded desirable flavor and aroma characteristics.

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