

Title : Fermentation and Properties of Cascara Wine

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Major : Biochemistry and Biochemical Innovation

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Type of presentation* (choose 1) : Oral Presentation (เฉพาะ ตัวแทนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)
 Poster (กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)
 Cooperative Education (กรณี นำเสนอผลงานสหกิจศึกษา)

ABSTRACT

Coffee pulp is a by-product of the coffee bean production process. It comprises many kinds of organic compounds. This project focuses on exploring the fermentation process and properties of wine made from cascara tea (coffee pulp tea), using different types and proportions of sugars, specifically brown sugar and palm sugar. The study involves preparing cascara tea by boiling 10 grams of coffee pulp in 200 milliliters of water with 20 grams of sugar at 95°C for 10 minutes. A starter culture is prepared by dissolving 0.2 grams of *Saccharomyces cerevisiae* EC-1118 Lalvin in 2 milliliters of sterilized distilled water at 25°C, allowing it to activate for 15-20 minutes. The prepared inoculum is then mixed with the cascara tea, and fermentation is carried out at room temperature (25°C) for 7 days. Samples are collected to analyze reducing sugars using the DNS method, ethanol content using Gas Chromatography (GC), and phenolic compounds using the Folin-Ciocalteu method. The results showed that wine fermented with palm sugar exhibited higher ethanol and phenolic compound content than wine fermented with brown sugar. The maximum ethanol concentration reached 7.70% in palm sugar wine compared to 5.54% in brown sugar wine. Similarly, the highest phenolic compound content in palm sugar wine was 17.11 mg GAE/mL, whereas brown sugar wine contained 13.67 mg GAE/mL. The reducing sugar concentration decreased over the fermentation period, reflecting efficient sugar utilization by yeast. The findings suggest that palm sugar promotes a faster and more efficient fermentation process than brown sugar. This study enhances the understanding of cascara wine fermentation and highlights its potential for commercial production, contributing to waste reduction in the coffee industry and increasing the economic value of coffee byproducts.

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