

## Optimization of Cacao Fermentation in Davao Philippines Using Sustainable Method

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**Abstract :** An optimized cacao fermentation technique was developed for the cacao farmers of Davao City Philippines. Cacao samples with weights ranging from 150-250 kilograms were collected from various cacao farms in Davao City and Zamboanga City Philippines. Different fermentation techniques were used starting with design of the sweat box, prefermentation conditionings, number of days for fermentation and number of turns. As the beans are being fermented, its temperature was regularly monitored using a digital thermometer. The resultant cacao beans were assessed using physical and chemical means. For the physical assessment, the bean cut test, bean count tests, and sensory test were used. Quantification of theobromine, caffeine, and antioxidants in the form of equivalent quercetin was used for chemical assessment. Both the theobromine and caffeine were analyzed using HPLC method while the antioxidant was analyzed spectrometrically. To come up with the best fermentation procedure, the different assessment were given priority coefficients wherein the physical tests - taste test, cut, and bean count tests were given priority over the results of the chemical test. The result of the study was an optimized fermentation protocol that is readily adaptable and transferable to any cacao cooperatives or groups in Mindanao or even Philippines as a whole.

**Keywords :** cacao, fermentation, HPLC, optimization, Philippines

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