ABSTRACT

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STUDY OF HEATING TREATMENT AND FERMENTATION TIME ON ANTIOXIDANT ACTIVITY OF CHAYOTE (Sechium edule (Jacq.) Swartz)-BASED FERMENTED BEVERAGE

(xiv + 112 pages : 4 tables, 26 figures, and 10 appendices)

Chayote (Sechium edule (Jacq.) Swartz) is a vegetable belongs to Curcubitaceae family and abundantly available in Indonesia. In relation to its limited usage, a processing method of chayote into a product that is acceptable for consumers and has better functionality must be studied. Fermentation was chosen as processing method. The research was aimed to determine the best method, in terms of heating treatment and fermentation time, to yield chayote-based fermented beverage that has high functionality and acceptance. The preliminary research was conducted to determine the most acceptable sugar concentration. The sugar concentrations used were 40%, 50%, and 60%. Hedonic test was conducted to 70 panelists and the most preferable sugar concentration was 60%. Two different heating treatments applied prior to the fermentation process and three different fermentation time were used as the treatments in the main research. The functionality of chayote-based fermented beverages was assessed by the phenolic content analysis, flavonoid analysis, and antioxidant activity analysis. In addition, analysis of total soluble solid, pH, alcohol content, and organoleptic were also conducted. The data showed that phenolic content increased significantly in fermented beverages that underwent heating treatment, both boiling and steaming, and the highest phenolic content is 18.3±5.23 mEq Gallic Acid/100g sample for the sample with steaming and 48 hour fermentation. Flavonoid content was significantly affected by heating treatment and fermentation time. The highest flavonoid content was 13.4±0.00 mEq Quercetin/100g sample for sample with boiling and 24 hour fermentation. Antioxidant activity was increased significantly by fermentation and the highest antioxidant activity was 2.49±0.290 mEq Ascorbic Acid/100g sample for sample with steaming and 24 hour fermentation. The most acceptable sample in organoleptic analysis was samples with heating treatments (boiling and steaming) and fermentation time of 72 hours.

Keywords : Chayote, Sechium edule, fermentation, antioxidant, flavonoid, phenolic

References : 40 (1996-2014)