ABSTRACT

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EFFECT OF KOMBU FERMENTATION ON THE ANTIOXIDANT ACTIVITY OF BOTTLE GOURD (Lagenaria siceraria (Mol.) Standl.) JUICE

(xv + 71 pages : 2 tables, 13 figures, and 17 appendices)

Bottle gourd is mainly used as food product, and also known for its ability in treating inflammatory disorders that mainly caused by free radicals. Its antioxidant activity may be increased by fermentation. One of the health-beneficial fermentation products is kombucha, which has also been known as the traditional way to reduce blood pressure and to be a natural remedy for several kinds of disease. This research is aimed to study the effect of kombu fermentation towards the antioxidant activity, total phenolic, and total flavonoid content of the bottle gourd juice. In the preliminary stage, the effect of peel and pulp were observed. The unpeeled clear juice was found to have the highest antioxidant activity. The unpeeled clear juice was subsequently used in the main research. Four different sugar concentration (0%, 15%, 20%, and 25%) and 5 level of fermentation time (0 day, 2 days, 4 days, 6 days, and 8 days) were used as the treatments. The result showed that the highest antioxidant activity was found in the juice before fermentation (0 day fermentation) and without additional sugar (0% sugar). The phenolic content also decreased as the sugar added concentration increases and as the fermentation days lengthen. The highest phenolic content was owned by treatment with 0% added sugar and 0 day fermentation. Flavonoid content however, increased as fermentation days lengthened. Sugar-added concentration still resulted in significantly lower flavonoid content compared to 0% sugar treatment. The highest flavonoid content is obtained by 8 days treatment with 0% added sugar.

Keywords : bottle gourd, Lagenaria siceraria, kombu, antioxidant, polyphenol, fermentation, flavonoid

References : 42 (1981-2012)