



**INVESTIGATION OF TOTAL FLAVONOID, PHENOLIC AND ANTIOXIDANT ACTIVITY OF FERMENTATION BROTH OF FERMENTED CLIMBING SWAMP FERN (*Sthenochlaena palustris*)**

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**ABSTRACT**

Fermented vegetable has become more popular as part of daily diet due to their increased shelf life and, more importantly, their beneficial effect for health. Climbing swamp fern (*Sthenochlaena palustris*) is an edible plant that known has medicinal properties. Fermentation can improve functionality of food, and therefore in the present study we prepare fermented fern and examine antioxidant activity, total phenolic and flavonoid content of the fermentation broth. The fronds of fern were collected from local farmer and fermented with different salt concentration (2, 4, 6% w/w), addition of exogenous lactic acid bacteria (none vs *Lactobacillus plantarum*) and time of fermentation (72 vs 144 hours). The experiment was performed using completely randomized design with factorial design approach. Broth formed during fermentation was collected and examined for their total flavonoid content (TFC), total phenolic content (TPC) and antioxidant activity, measured as percentage of DPPH inhibition. The result indicated that salt has significant effect on TFC, while all the three factors have significant effect TPC and DPPH inhibition. The highest TFC was observed when lowest salt was used, and the highest TPC was observed when the lowest salt concentration was used with the addition of *L. plantarum* and the lowest fermentation time. While the highest antioxidant activity was observed when the highest concentration of salt used with the addition of *L. plantarum* and the lowest fermentation time. TPC has significant and moderate correlation with TFC and DPPH inhibition, while TPC and TFC indicate no significant and no correlation. Further investigation is required to examine antioxidant compounds other than polyphenol and flavonoid in the fermentation broth. Furthermore, the solid fraction of the fermented fern fronds needs to be examined for its antioxidant property.