Assessment of Quercetin Content Between Yeast Fermented and Non-Yeast Fermented *Parkia speciosa* Pods

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ABSTRACT

Parkia speciosa is famous in Southeast Asia countries as a native food that is not only delicious but also has many nutritional values. It has both antioxidant and antibacterial properties. One such antioxidant in petai pods is quercetin. Studies have shown that quercetin is crucial in the defence of the tissues, brain and heart against reperfusion injury, toxic compounds and other factors that leads to oxidative stress due to its pro-oxidant activity. Since the petai pods are usually thrown away as it is considered not useful, it can actually be used to extract quercetin. Therefore, this project aimed to extract quercetin from the petai pods through fermentation. The petai pods were fermented for three days in two fermentation conditions, namely the yeast fermentation that uses Baker's yeast and non-yeast fermentation that uses water as substitute for yeast. At each 24-hour interval, two 5 mL of the fermented broth from each condition were used for pH measurement and quercetin extraction using 80% (v/v) methanol respectively. Two mL of the extracted quercetin was purified using solid phase extraction (SPE). The fifth fraction from SPE was used to measure absorbance at 370 nm and perform 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay in determining the recovery rate and the content of quercetin respectively. These steps were repeated for 48 and 72-hour fermentations. The results showed that the non-yeast fermented flasks have a higher absorbance compared to the yeast fermented flasks whereby the absorbance of non-yeast fermented petai pods are 0.181, 0.326, and 0.223 for 24, 48, and 72 hours of fermentation respectively whereas the absorbance of yeast fermented petai pod is 0.123, 0.212, and 0.233 for 24, 48, and 72 hours respectively. The quercetin content after SPE was lower compared to before SPE. Thus, the rate of recovery of quercetin was low as the recovery was only 20% to 20.78% for yeast fermented petai pods and 13.11% to 20.82% for non-yeast fermented petai pods. When DPPH was done, it can be seen that there was quercetin present in the samples. Petai pods may not be an ideal substrate for the yeast, hence the low extraction of quercetin.