

Influence of storage conditions on the quality, metabolites, and biological activity of soursop (*Annona muricata*. L.) Kombucha

ABSTRACT

Kombucha is a slightly alcoholic beverage produced using sugared tea via fermentation using the symbiotic culture of bacteria and yeast (SCOBY). This study aimed to optimize the production of soursop kombucha and determine the effects of different storage conditions on the quality, metabolites, and biological activity. The response surface method (RSM) results demonstrated that the optimum production parameters were 300 ml soursop juice, 700 ml black tea, and 150 g sugar and 14 days fermentation at 28°C. The storage conditions showed significant ($P < 0.05$) effects on the antioxidant activity including the highest antioxidant activity for the sample stored for 14 days at 25°C in light and the highest total phenolic content (TPC) for the sample stored for 7 days at 4°C in the dark. No significant effects were observed on the antimicrobial activity of soursop kombucha toward *Escherichia coli* and *Staphylococcus aureus*. The microbial population was reduced from the average of 106 CFU/ml before the storage to 104 CFU/ml after the storage at 4 and 25°C in dark and light conditions. The metabolites profiling demonstrated significant decline for the sucrose, acetic acid, gluconic acid, and ethanol, while glucose was significantly increased. The storage conditions for 21 days at 25°C in the dark reduced 98% of ethanol content. The novel findings of this study revealed that prolonged storage conditions have high potential to improve the quality, metabolites content, biological activity, and the Halal status of soursop kombucha.

Keyword: Antioxidant activity; Halal; Fermented tea; Beverages and biological samples; Health promoting