

E04 Development and optimisation of green tea kombucha using response surface methodology

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The fermented tea drink, kombucha has become increasingly popular due to its purported health benefits. Kombucha is made by fermenting sweetened tea using the symbiotic colony of bacteria and yeast (SCOBY). Kombucha has a refreshing, sweet, and acidic taste with a sparkling mouthfeel. One of the challenges in producing commercial kombucha is inconsistencies in the batch of kombucha. Different fermentation conditions influence the physicochemical and sensory quality of kombucha. The interaction between the fermentation conditions with the physicochemical properties of green tea kombucha and the optimised green tea kombucha fermentation parameters were investigated with Response Surface Methodology. Fermentation time, temperature, and sugar concentration had a significant effect ($p < 0.05$) on the pH, total soluble solids, and titratable acidity of green tea kombucha. The desired qualities of the optimised green tea kombucha are pH value between 3-3.5, maximum titratable acidity, and minimum fermentation time. The optimised parameters of green tea kombucha were 5% sugar concentration, seven days fermentation time, and 30°C fermentation temperature with a desirability score of 0.806. The consumer sensory evaluation of optimised green tea kombucha and two competitor products result showed that the colour, clarity, mouthfeel, and overall acceptability of optimised green tea kombucha were significantly higher than both competitor products ($p < 0.05$). The optimised green tea kombucha had the highest overall acceptability score and the most preferred sample by the panellists. Green tea kombucha has good market potential and business value as a functional probiotic beverage and healthy alternative for carbonated beverages. The product concept of green tea kombucha was made with the consideration of the packaging, safety, cost of production, and market positioning. The result obtained from this study may provide guidance to develop product innovations, marketing strategies, and direction of future research to meet the demand and rising interest in kombucha as a functional probiotic beverage.