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Quality Characterization of Kombucha using Black Tea, Pandan Leaves Tea and Raisin Tea

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Structured Abstract

Background: Kombucha is a fermented tea drink that has gained popularity worldwide due to its potential health benefits. The quality of kombucha is influenced by various factors including the type of tea used in its production. There is a lack of comprehensive understanding regarding the quality characteristics such as taste, aroma, acidity, chemical compounds and nutritional content of kombucha. While black tea is commonly utilized, alternative substrates such as pandan leaves tea and raisin tea have to be explored, each potentially imparting unique characteristics to the final product. This study aims to determine the effect of different types of tea on the physicochemical and sensory attributes of kombucha.

Methods: Three different types of kombucha , kombucha black tea (KBT), kombucha raisin tea (KRT) and kombucha pandan leaves tea (KPT) (day 0, 3, 7 and 10) were assessed using pH, brix, colour profile, total phenolic and flavonoid content as well as antioxidant activity (DPPH and FRAP assays). Volatile compounds of the kombucha were determined using Gas Chromatography Mass-Spectroscopy. Sensory evaluation was also conducted to assess the attributes and acceptability of kombucha.

Results: As time of fermentation increased, pH and brix value decreased, thus affecting the colour profiles of kombucha. KBT, KRT and KPT were prepared using different types of tea, resulting significant differences ($p<0.05$) in TPC and TFC. KBT exhibited the highest phenolic content at 25.35 mg/L after 10 days of fermentation. KBT had the strongest antioxidant capacity among the samples with 91.49% inhibition for DPPH assay and FRAP value was 42.68 mg AAE/100 mL. Sensory evaluations highlighted distinct flavour profiles and appearance differences, with KBT and KPT being preferred for its better taste and vibrant hue.

Conclusion: In conclusion, the findings of this study indicated that there is considerable potential in producing kombucha using different tea substrates, thus offering unique taste and odour of the kombucha. As time of fermentation increased, the pH and brix value for KBT, KRT and KPT decreased thus affect their colour profile. KBT has higher value in TPC, TFC and antioxidant assays as compared to KRT and KPT, indicating that fermentation of KBT is more effective than using alternative teas.

Keywords: Antioxidants, Fermentation, Kombucha, Pandan Leaves, Raisin

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