

ABSTRAK

Rahimi EL Yunusiyah : Karakteristik Fisikokimia Teh Kombucha Dengan Penambahan *Puree* Buah Matoa (*Pometia Pinnata*). Skripsi. Fakultas Teknik Universitas Negeri Medan. 2025.

Kombucha merupakan minuman probiotik hasil fermentasi teh dan gula yang mengandung mikroba bermanfaat serta senyawa bioaktif. Penambahan *Puree* buah matoa (*Pometia pinnata*) dilakukan sebagai inovasi produk karena kandungan vitamin C, gula alami, dan senyawa fenoliknya berpotensi meningkatkan nilai gizi, aktivitas antioksidan, dan mutu sensori. Gula alami pada matoa juga berfungsi sebagai substrat tambahan pada fermentasi sekunder. Penelitian ini bertujuan mengetahui pengaruh penambahan *Puree* matoa terhadap karakteristik fisiko-kimia, jumlah bakteri asam laktat (BAL), dan daya terima konsumen pada teh kombucha.

Penelitian menggunakan Rancangan Acak Lengkap dengan tiga perlakuan: F0 (kontrol tanpa *Puree*), F1 (fermentasi sekunder 24 jam), dan F2 (48 jam), masing-masing dua ulangan. Uji sensori meliputi uji hedonik dan mutu hedonik oleh panelis tidak terlatih. Data dianalisis menggunakan uji Kruskal-Wallis dan Mann-Whitney ($\alpha = 0,05$). Parameter fisiko-kimia meliputi pH, vitamin C, total gula, aktivitas antioksidan, total BAL, dan kadar alkohol.

Berdasarkan hasil uji hedonik, mutu hedonik, dan metode perbandingan eksponensial (MPE), penambahan *puree* matoa serta lama fermentasi sekunder memberikan pengaruh terhadap karakteristik sensori teh kombucha. Hasil analisis menunjukkan adanya perbedaan nyata pada parameter warna ($p=0,014$), rasa ($p=0,003$), dan tekstur ($p=0,002$), sedangkan parameter aroma tidak menunjukkan perbedaan yang signifikan ($p=0,416$). Pada pengujian mutu hedonik, perbedaan signifikan ditemukan pada atribut warna ($p=0,000$) dan rasa manis ($p=0,010$). Berdasarkan nilai MPE, formula F2 terpilih sebagai formula terbaik dengan total skor 288,38 dan rata-rata 28,83. Formula ini juga memperoleh tingkat kesukaan tertinggi dari panelis, yang ditunjukkan oleh nilai rata-rata rasa (3,04), aroma (3,08), dan tekstur (3,27) yang lebih tinggi dibandingkan formula lainnya.

Secara fisiko-kimia, F2 memiliki aktivitas antioksidan tertinggi (80,726%), vitamin C 261,8 mg, total BAL $7,59 \times 10^6$ CFU/mL, serta total gula terendah (0,3375%). Nilai pH meningkat menjadi 4,55 dan kadar alkohol 0,40%. Secara statistik, F2 berbeda signifikan dari F0 dan F1 pada sebagian besar parameter. Dengan demikian, F2 merupakan formula terbaik berdasarkan karakteristik fisiko-kimia, aktivitas BAL, dan daya terima konsumen.

Kata kunci: Kombucha, *Puree* matoa, Fermentasi sekunder, Aktivitas antioksidan, Bakteri asam laktat

ABSTRACT

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Kombucha is a probiotic beverage produced through the fermentation of tea and sugar, containing beneficial microorganisms and bioactive compounds. The addition of matoa fruit puree (*Pometia pinnata*) was applied as a product innovation due to its vitamin C, natural sugar, and phenolic compound contents, which have the potential to enhance nutritional value, antioxidant activity, and sensory quality. The natural sugars in matoa also serve as an additional substrate during secondary fermentation. This study aimed to determine the effect of matoa puree addition on the physicochemical characteristics, lactic acid bacteria (LAB) count, and consumer acceptability of kombucha tea.

This study employed a Completely Randomized Design (CRD) with three treatments: F0 (control without puree), F1 (24-hour secondary fermentation), and F2 (48-hour secondary fermentation), each conducted in duplicate. Sensory evaluation included hedonic and hedonic quality tests performed by untrained panelists. Data were analyzed using the Kruskal–Wallis and Mann–Whitney tests ($\alpha = 0.05$). Physicochemical parameters observed included pH, vitamin C, total sugar, antioxidant activity, total LAB count, and alcohol content.

Based on the results of the hedonic test, hedonic quality test, and Exponential Comparison Method (ECM), the addition of matoa puree and the duration of secondary fermentation significantly influenced the sensory characteristics of kombucha tea. Statistical analysis revealed significant differences in color ($p = 0.014$), taste ($p = 0.003$), and texture ($p = 0.002$), while aroma showed no significant difference ($p = 0.416$). In the hedonic quality test, significant differences were observed in color ($p = 0.000$) and sweetness ($p = 0.010$). According to the ECM results, F2 was selected as the best formulation with the highest total score (288.38) and average score (28.83). This formulation also achieved the highest panelist preference, as indicated by its superior scores for taste (3.04), aroma (3.08), and texture (3.27) compared to the other formulations.

In terms of physicochemical properties, F2 exhibited the highest antioxidant activity (80.726%), vitamin C content (261.8 mg), and total LAB count (7.59×10^6 CFU/mL), as well as the lowest total sugar content (0.3375%). The pH increased to 3.5, while the alcohol content reached 0.40%. Statistically, F2 differed significantly from F0 and F1 in most observed parameters. Therefore, F2 was identified as the best formulation based on physicochemical characteristics, LAB activity, and consumer acceptability.

Keywords: Kombucha, Matoa puree, Secondary fermentation, Antioxidant activity, Lactic acid bacteria