

ABSTRAK

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Latar belakang : Gastroenteritis akibat bakteri patogen seperti *Escherichia coli* dan *Salmonella typhi* merupakan masalah kesehatan serius. Kombucha, minuman fermentasi yang mengandung senyawa bioaktif, dan temu mangga (*Curcuma mangga*), tanaman Zingiberaceae yang kaya akan senyawa antimikroba, berpotensi dikembangkan sebagai agen antibakteri alami.

Tujuan : Penelitian ini bertujuan mengevaluasi pengaruh durasi fermentasi terhadap aktivitas antibakteri dan perubahan kimia kombucha temu mangga.

Metode : Fermentasi dilakukan selama 5, 7, 10, dan 14 hari menggunakan Rancangan Acak Lengkap. Uji antibakteri terhadap *Escherichia coli* dan *Salmonella typhi* dilakukan dengan metode difusi sumuran. Analisis kimia mencakup total asam (titrasi), kadar asam asetat dan alkohol (GC-MS), serta identifikasi senyawa bioaktif (LC-HRMS).

Hasil : Hasil menunjukkan peningkatan aktivitas antibakteri seiring waktu fermentasi, dengan zona hambat terbesar pada hari ke-10: 8,2 mm terhadap *Escherichia coli* dan 9,2 mm terhadap *Salmonella typhi*. Total asam meningkat dari 0,99% menjadi 1,42%, alkohol dari 0% menjadi 1,35%, dan asam asetat mencapai puncaknya (21,57%) pada hari ke-10 sebelum menurun. Senyawa bioaktif seperti 2-Furancarboxaldehyde, asam linoleat dan oleat, D-Glucono- δ -lactone, serta Hydroquinone berkontribusi terhadap efek antibakteri.

Simpulan : Fermentasi selama 10 hari menghasilkan kombucha temu mangga dengan aktivitas antibakteri optimal dan karakteristik kimia yang mendukung, sehingga berpotensi dikembangkan sebagai minuman fungsional dengan kandungan antibakteri alami.

Kata kunci: Kombucha, Temu Mangga, Fermentasi, Antibakteri, *Escherichia coli*, *Salmonella typhi*.

ABSTRACT

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Background: Gastroenteritis caused by pathogenic bacteria such as *Escherichia coli* and *Salmonella typhi* poses a serious health concern. Kombucha, a fermented beverage rich in bioactive compounds, along with mango ginger (*Curcuma mangga*), a Zingiberaceae plant known for its antimicrobial constituents, has potential as a natural antibacterial agent.

Objective: This study aimed to evaluate the effect of fermentation duration on the antibacterial activity and chemical changes in kombucha made from *Curcuma mangga*.

Methods: Fermentation was conducted for 5, 7, 10, and 14 days using a Completely Randomized Design (CRD). Antibacterial activity against *E. coli* and *S. typhi* was tested using the well diffusion method. Chemical analyses included total acid content (titration), levels of acetic acid and alcohol (GC-MS), and identification of bioactive compounds (LC-HRMS).

Results: Antibacterial activity increased with fermentation time, with the largest inhibition zones observed on day 10: 8.2 mm against *E. coli* and 9.2 mm against *S. typhi*. Total acid increased from 0.99% to 1.42%, alcohol from 0% to 1.35%, and acetic acid peaked at 21.57% on day 10 before declining. Bioactive compounds such as 2-Furancarboxaldehyde, linoleic and oleic acids, D-Glucono- δ -lactone, and hydroquinone contributed to the antibacterial effects.

Conclusion: Ten days of fermentation produced mango ginger kombucha with optimal antibacterial activity and favorable chemical characteristics, suggesting its potential as a functional beverage with natural antibacterial properties.

Keywords: Kombucha, *Curcuma mangga*, Fermentation, Antibacterial, *Escherichia coli*, *Salmonella typhi*