

**PENGARUH SIKLUS PEREMAJAAN DAN KONSENTRASI
TEMULAWAK (*Curcuma zanthorrhiza*) TERHADAP KARAKTERISTIK
MIKROBIOLOGI DAN FITOKIMIA KOMBUCHA**

INTISARI

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Penelitian ini bertujuan untuk mengevaluasi pengaruh siklus peremajaan dan konsentrasi temulawak (*Curcuma zanthorrhiza*) terhadap karakteristik mikrobiologi dan fitokimia kombucha. Proses peremajaan dilakukan sebanyak tiga siklus dengan variasi konsentrasi temulawak sebesar 0,5%, 1,5%, dan 2%. Hasil penelitian menunjukkan bahwa siklus peremajaan berpengaruh nyata terhadap adaptasi mikroba dan profil fitokimia (aktivitas antioksidan, total fenolik, total flavonoid). Populasi mikroba (TPC, khamir, dan BAA) mengalami fase adaptasi pada peremajaan awal, dengan puncak populasi khamir mencapai 6,85 log CFU/mL pada siklus ke-3. Secara fitokimia, peningkatan siklus peremajaan memicu asidifikasi medium dan fluktuasi senyawa bioaktif, dimana aktivitas antioksidan, kadar total fenolik dan flavonoid tertinggi ditemukan pada siklus ke-2. Penentuan perlakuan terbaik menggunakan metode Simple Additive Weighting (SAW) menetapkan siklus peremajaan ke-2 dengan konsentrasi temulawak 2% sebagai kondisi optimal. Perlakuan tersebut menghasilkan aktivitas antioksidan sebesar 73,86%, total fenolik 811,44 mg GAE/L, dan total flavonoid 0,84 mg QE/L. Penelitian ini menyimpulkan bahwa peremajaan siklus ke-2 efektif untuk menghasilkan kombucha temulawak dengan densitas nutrisi fungsional tertinggi.

Kata kunci: temulawak, kombucha, peremajaan, fitokimia, mikrobiologi

EFFECT OF REJUVENATION CYCLES AND TEMULAWAK (*Curcuma zanthorrhiza*) CONCENTRATION ON THE MICROBIOLOGICAL AND PHYTOCHEMICAL CHARACTERISTICS OF KOMBUCHA

ABSTRACT

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This study aimed to evaluate the effect of rejuvenation cycles and temulawak (*Curcuma zanthorrhiza*) concentration on the microbiological and phytochemical characteristics of Javanese turmeric (*Curcuma zanthorrhiza*) kombucha. The rejuvenation process was carried out for three cycles with variations in turmeric concentrations of 0.5%, 1.5%, and 2%. The results showed that the rejuvenation cycle had a significant effect on microbial adaptation and the phytochemical profile, including antioxidant activity, total phenolics, and total flavonoids. The microbial population (TPC, yeast, and AAB) underwent an adaptation phase during the initial rejuvenation and reached growth stability in later cycles, with the peak yeast population reaching 6.85 log CFU/mL in the third cycle. Phytochemically, the increase in rejuvenation cycles triggered medium acidification and fluctuations in bioactive compounds, where the highest antioxidant activity, total phenolic content, and total flavonoid content were found in the second cycle. The determination of the best treatment using the Simple Additive Weighting (SAW) method established the second rejuvenation cycle with a 2% turmeric concentration as the optimal condition. This treatment produced an antioxidant activity of 73.86%, a total phenolic content of 811.44 mg GAE/L, and a total flavonoid content of 0.84 mg QE/L. This study concludes that the second rejuvenation cycle is effective for producing Javanese turmeric kombucha with the highest functional nutrient density

Keywords: javanese turmeric, kombucha, rejuvenation, phytochemistry, microbiology.