

KUALITAS FISIKO-KIMIA, MIKROBIOLOGIS, DAN AKTIVITAS ANTIOKSIDAN SUSU SAPI TERFERMENTASI DENGAN INOKULUM KOMBUCHA TEH HITAM DAN TEH HIJAU

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INTISARI

Penelitian ini bertujuan untuk membandingkan kualitas fisiko-kimia, mikrobiologis, dan aktivitas antioksidan susu sapi terfermentasi dengan inokulum kombucha teh hitam, kombucha teh hijau, serta kultur *Streptococcus thermophilus* dan *Lactobacillus bulgaricus* (STLB). Penelitian menggunakan rancangan acak lengkap pola searah, dengan 3 perlakuan yaitu penggunaan inokulum kombucha teh hitam, kombucha teh hijau, dan kultur STLB. Hasil penelitian yang menunjukkan perbedaan dilanjutkan dengan uji *Duncan's Multiple Range Test* (DMRT). Parameter yang diuji yaitu kualitas fisiko-kimia, kualitas mikrobiologis, dan aktivitas antioksidan. Pengujian aktivitas antioksidan dilakukan dengan metode DPPH (1,1-difenil-2-pikrihidrazil) dengan menentukan nilai *inhibitory concentration* 50% (IC₅₀). Hasil analisis statistik didapatkan bahwa penggunaan inokulum berbeda berpengaruh nyata ($P < 0.05$) terhadap kualitas fisiko-kimia dan kualitas mikrobiologis susu fermentasi. Penggunaan inokulum kombucha menghasilkan kualitas fisik (viskositas, sineresis, kadar air, dan total solid), kualitas kimia (pH, keasaman, dan kadar etanol), dan kualitas mikrobiologis (total BAA dan total yeast) yang berbeda dibandingkan dengan produk susu fermentasi menggunakan inokulum STLB. Nilai IC₅₀ pada pengujian antioksidan untuk susu fermentasi dengan inokulum kombucha teh hitam, kombucha teh hijau, dan STLB masing-masing adalah 11.571 ppm, 13.655 ppm, dan 4.213 ppm. Menurut klasifikasi Blois (1958) aktivitas antioksidan pada produk susu fermentasi dengan inokulum kombucha dan STLB tergolong lemah.

Kata kunci: Fermentasi susu sapi, Kombucha, Teh hitam, Teh hijau, Antioksidan

**PHYSICOCHEMICAL AND MIRC BIOLOGICAL QUALITY, AND
ANTIOXIDANT ACTIVITY OF FERMENTED COW'S MILK
INNOCULATED WITH BLACK TEA AND GREEN TEA KOMBUCHA**

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ABSTRACT

The aim of this present study was to compare the physicochemical and microbiological quality, and antioxidant activity of fermented cow's milk produced using inoculum of black tea kombucha, green tea kombucha, as well as *Streptococcus thermophilus* and *Lactobacillus bulgaricus* (STLB) cultures. The study used a complete randomized design, with three different inoculum treatments being used, that were black tea inoculum, green tea inoculum, and STLB culture. If there were significant differences, the Duncan's Multiple Range Test (DMRT) was used for further analysis. The parameters tested included physicochemical qualities, microbiological qualities, and antioxidant activity. The evaluation of antioxidant activity was conducted using the DPPH (1,1-difenil-2-pikrihidrazil) method, and the inhibitory concentration 50% (IC₅₀) value was determined. The statistical analysis revealed that the use of different inoculum significantly influenced the physical quality (viscosity, syneresis, total solid, and water content), chemical quality (pH, acidity, and total ethanol), and microbiological quality (total BAA and total yeast) ($P < 0.05$) of the fermented milk products compared to the use STLB inoculums. The IC₅₀ values for antioxidant testing of fermented milk with black tea kombucha inoculum, green tea inoculum, and STLB were 11.571 ppm, 13.655 ppm, and 4.213 ppm, respectively. According to the Blois (1958) classification, the antioxidant activity of fermented milk with kombucha and STLB inoculum is considered weak.

Keywords: Fermented cow's milk, Kombucha, Black tea, Green tea, Antioxidant