THE INFLUENCE OF *Ulva lactuca* Linn. EXTRACT SUPPLEMENTATION ON THE PROCESS AND QUALITY OF FERMENTED MILK

Arisa Ayuda Prasmiasari

16/393150/BI/09570

ABSTRACT

Ulva lactuca contain nutrients such as ulvan sulphate polysaccharides that are useful in the fermentation process of milk. Those ulvan are water soluble, therefore they can be added to the fermentation process of milk. This research was conducted to determine the influence of Ulva lactuca extract supplementation on the process and quality of milk fermentation by Lactococcus lactis. For observing that effect, the research was designed using a completely randomized design method (CRD) using two factors and three replications. First factor was concentration of Ulva lactuca extract which consisted of two treatments, including 1% and 2% Ulva lactuca extract. The second factor is the duration of fermentation which consists of 12, 24, 36 and 48 hours. Data were analzed using ANOVA test then further carried test Honestly Significant Difference (HSD). The results showed the addition of Ulva lactuca extract increased the viability decreased pH, and increased TTA. The addition of Ulva lactuca extract significantly influence the water content and total solids ($p<0.05$). The addition of 2% Ulva lactuca extract to the milk fermentation process showed the most effective results, with the highest viability of lactic acid bacteria (1.1×10^7 CFU/mL), the lowest pH (4.34). the highest TTA value (1.37%),and the highest protein content (4.62 ± 0,07 mg/ml). This indicates ulvan with sulphate polysaccharide composition improves the process and quality of fermented milk.

***Keywords**: Fermented milk, Lactococcus lactis, Protein, Sulfated polysaccharide*

PENGARUH PENAMBAHAN EKSTRAK *Ulva lactuca* Linn. TERHADAP PROSES DAN KUALITAS SUSU FERMENTASI

Arisa Ayuda Prasmiasari

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ABSTRAK

Alga spesies *Ulva lactuca* mengandung nutrien berupa polisakarida sulfat ulvan yang bermanfaat pada proses fermentasi susu. Polisakarida ulvan bersifat larut dalam air, sehingga dapat ditambahkan dalam susu fermentasi. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan ekstrak *Ulva lactuca* terhadap proses dan kualitas fermentasi susu dengan kultur starter *Lactocccus lactis*. Untuk mengamati pengaruh tersebut, penelitian dirancang menggunakan metode rancangan acak lengkap (RAL) dengan menggunakan dua faktor dan tiga kali ulangan. Faktor pertama adalah konsentrasi ekstrak *Ulva lactuca* yang terdiri dari konsentrasi ekstrak *Ulva lactuca* 1% dan 2%. Fakor kedua adalah lama waktu fermentasi yang terdiri dari waktu perlakuan 12, 24, 36 dan 48 jam. Data dianalisis menggunakan uji *analysis of variance* (ANOVA) dan diuji lanjut dengan uji Tukey. Hasil penelitian menunjukan penambahan ekstrak *Ulva lactuca* meningkatkan viabilitas bakteri asam laktat, menurunkan pH, dan meningkatkan total asam. Penambahan ekstrak *Ulva lactuca* berpengaruh nyata terhadap kadar air dan total padatan susu fermentasi ($p<0,05$) Penambahan ekstrak *Ulva lactuca* 2% pada proses fermentasi susu menunjukkan hasil paling efektif yaitu dengan viabilitas bakteri asam laktat tertinggi ($1,1 \times 10^7$ CFU/ml) , pH terendah (4,34), total asam tertinggi (1,37%), dan kadar protein tertinggi (4,62 mg/ml). Hal ini mengindikasikan ulvan dengan komposisi polisakarida sulfat meningkatkan proses dan kualitas fermentasi susu.

Kata Kunci: *Lactococcus lactis, Polisakarida sulfat, Protein, Susu Fermentasi*

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