

## PENGARUH PENAMBAHAN SPIRULINA (*Spirulina platensis*) BUBUK TERHADAP KUALITAS DAN AKTIVITAS ANTIOKSIDAN KEFIR SUSU KAMBING

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### INTISARI

Kefir merupakan produk olahan susu yang dibuat dengan proses fermentasi menggunakan *kefir grain*. Tujuan penelitian ini adalah untuk mengetahui pengaruh penambahan bubuk spirulina (*Spirulina platensis*) terhadap kualitas fisikokimia, mikrobiologis, dan sensoris kefir susu kambing. Penelitian ini menggunakan susu kambing dan spirulina dengan persentase 0 (K0), 0,50 (K1), dan 1,00% (b/v) (K2). Masing-masing perlakuan digunakan ulangan sebanyak tiga kali. Kefir pada setiap perlakuan diuji kualitas fisikokimia, mikrobiologis, dan sensorisnya. Uji kualitas fisikokimia meliputi viskositas, sineresis, *total solid*, protein terlarut, keasaman, pH, aktivitas antioksidan, dan alkohol, dan uji kualitas mikrobiologis meliputi uji total bakteri asam laktat (BAL) dan *yeast*. Data kualitas fisikokimia dan mikrobiologis yang diperoleh dianalisis menggunakan *One Way ANOVA* dan dilanjutkan dengan *Duncan's New Multiple Range Test*, analisis data sensori menggunakan uji non parametrik Kruskal Wallis dan dilanjutkan dengan *Mann-Whitney Test*. Hasil penelitian menunjukkan penambahan bubuk spirulina menyebabkan adanya perbedaan signifikan ( $P < 0,05$ ) terhadap *total solid*, keasaman, dan aktivitas antioksidan, serta warna, rasa, dan *overall* tetapi tidak signifikan terhadap viskositas, sineresis, total BAL dan *yeast*, aroma dan kekentalan. Rerata *total solid* K0, K1, dan K2 berturut-turut adalah  $13,886 \pm 2,01\%$ ,  $16,047 \pm 1,34\%$ , dan  $17,579 \pm 0,44\%$ ; protein terlarut  $2,50 \pm 1,17\%$ ,  $4,55 \pm 2,27\%$ , dan  $5,68 \pm 2,45\%$ ; keasaman  $0,96 \pm 0,03$ ,  $1,03 \pm 0,04$ , dan  $1,15 \pm 0,15$ ; dan aktivitas antioksidan  $34,58 \pm 4,08\%$ ,  $40,71 \pm 1,09\%$ , dan  $44,35 \pm 3,55\%$ . Sensoris K0, K1, dan K2 memiliki rerata skor warna  $5,07 \pm 0,74$ ,  $4,57 \pm 0,86$ , dan  $4,00 \pm 0,98$ ; rasa  $4,80 \pm 0,85$ ,  $4,00 \pm 0,83$ , dan  $3,53 \pm 0,63$ , dan *overall*  $4,97 \pm 0,77$ ,  $4,30 \pm 0,60$ , dan  $4,07 \pm 0,87$ . Kesimpulan penelitian ini yaitu penambahan spirulina 1,00% (K2) memberikan hasil terbaik pada aktivitas antioksidan, *total solid* dan keasaman. Kefir tanpa penambahan spirulina memiliki nilai terbaik pada kualitas sensoris.

**Kata kunci:** Aktivitas antioksidan, Kefir susu kambing, Kualitas kefir, Spirulina.

**THE EFFECT OF ADDITIONAL SPIRULINA (*Spirulina platensis*)  
POWDER ON ANTIOXIDANT ACTIVITY AND QUALITY  
GOAT MILK KEFIR**

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**ABSTRACT**

Kefir is a dairy product made by a fermentation process using kefir grains. The purpose of this study was to determine the effect of adding spirulina powder (*Spirulina platensis*) to the physicochemical, microbiological, and sensorial qualities of goat milk kefir. This study used goat's milk and spirulina with percentages of 0 (K0), 0.50 (K1), and 1.00 (w/v) (K2). Each treatment was replicated three times. Kefir in each treatment was then tested for its physicochemical, microbiological, and sensorial qualities. Physicochemical quality tests in the form of viscosity, syneresis, total solids, dissolved protein, acidity, pH, antioxidant activity, and alcohol. Microbiological quality test in the form of total LAB and yeast test. The physicochemical and microbiological quality data obtained were analyzed using One Way ANOVA and followed by Duncan's New Multiple Range Test, sensory quality data analysis used the Kruskal Wallis non-parametric test and continued with the Mann-Whitney Test. The results showed that the addition of spirulina powder caused a significant difference ( $P < 0.05$ ) to total solid, acidity, and antioxidant activity, color, taste, and overall value but not significant to viscosity, syneresis, total LAB and yeast, odor and viscosity. The mean total solids K0, K1, and K2 were  $13.886 \pm 2.01\%$ ,  $16.047 \pm 1.34\%$ , and  $17.579 \pm 0.44\%$ ; soluble proteins  $2.50 \pm 1.17\%$ ,  $4.55 \pm 2.27\%$ , and  $5.68 \pm 2.45\%$ ; the acidity  $0.96 \pm 0.03$ ,  $1.03 \pm 0.04$ , and  $1.15 \pm 0.15$ ; antioxidants activity  $34.58 \pm 4.08\%$ ,  $40.71 \pm 1.09\%$ , and  $44.35 \pm 3.55\%$ . Sensory K0, K1, and K2 had a mean color score of  $5.07 \pm 0.74$ ,  $4.57 \pm 0.86$ , and  $4.00 \pm 0.98$ ; taste  $4.80 \pm 0.85$ ,  $4.00 \pm 0.83$ , and  $3.53 \pm 0.63$ ; and overall  $4.97 \pm 0.77$ ,  $4.30 \pm 0.60$ , and  $4.07 \pm 0.87$ . The conclusion of this research is the addition of spirulina 1.00% (K2) gives the best results on antioxidant activity, total solid and acidity. Kefir without the addition of spirulina has the best value on sensory quality.

**Keywords:** Antioxidant activity, Goat's milk kefir, Quality of kefir, Spirulina.