

KUALITAS FISIKOKIMIA DAN MIKROBIOLOGIS KEFIR SUSU SAPI MENGGUNAKAN KULTUR STARTER *Kluyveromyces marxianus* KFA 3 DAN KEFIR GRAIN

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INTISARI

Penelitian ini bertujuan untuk membandingkan kualitas fisikokimia, mikrobiologis, dan organoleptik kefir susu sapi menggunakan kultur *starter* berbeda. Kultur *starter* yang digunakan diantaranya kefir *grain* asal “Kefira” (S1), kefir *grain* asal “Anugerah Kefir” (S2), kefir *grain* asal “Family Kefir” (S3), dan kultur *Kluyveromyces marxianus* KFA 3 (S4) dengan konsentrasi kefir *grain* sebanyak 5% (b/v) dan kultur *Kluyveromyces marxianus* KFA 3 sebanyak 5% (v/v). Susu pasteurisasi yang telah diinokulasi *starter* diinkubasi pada suhu ruang ($\pm 28^{\circ}\text{C}$) selama 15 jam untuk kefir *grain* dan 18 jam untuk kultur *starter Kluyveromyces marxianus* KFA 3. Kefir diuji kualitas fisikokimia, mikrobiologis, dan organoleptiknya. Setiap penelitian dilakukan sebanyak 3 kali pengulangan. Data hasil pengujian fisikokimia dan mikrobiologis dianalisis dengan metode *One-way ANOVA* dan dilanjutkan dengan uji *Duncan’s Multiple Ranges Test* (DMRT) apabila terdapat perbedaan signifikan ($P < 0,05$). Data hasil pengujian organoleptik diolah dengan uji *Kruskal Wallis* dan dilanjutkan dengan uji *Mann-Whitney* apabila terdapat perbedaan signifikan ($P < 0,05$). Hasil penelitian menunjukkan bahwa kefir yang difermentasi dengan kultur *starter Kluyveromyces marxianus* KFA 3 menghasilkan kualitas fisikokimia berupa viskositas ($629,500 \pm 168,06$ cP), sineresis ($51,255\% \pm 2,51$), total *solid* ($11,799\% \pm 0,24$), pH ($5,05 \pm 0,03$), keasaman ($0,59\% \pm 0,00$), alkohol ($0,85\% \pm 0,01$), dan kualitas mikrobiologis berupa total BAL ($4,237 \pm 0,55$ log CFU/ml), total *yeast* ($6,560 \pm 0,12$ log CFU/ml), serta kualitas organoleptik berupa warna, aroma, rasa, dan kekentalan secara berturut-turut sebesar $5,20 \pm 0,78$ (suka), $4,60 \pm 8,28$ (suka), $3,93 \pm 1,22$ (agak suka), dan $3,67 \pm 0,62$ (agak suka). Kefir yang difermentasi dengan kefir *grain* menghasilkan kualitas fisikokimia, mikrobiologis, dan organoleptik lebih tinggi dibandingkan kefir yang difermentasi dengan *Kluyveromyces marxianus* KFA 3.

(Kata kunci: Kefir *grain*, Kefir susu sapi, *Kluyveromyces marxianus*, Kualitas).

PHYSICOCHEMICAL AND MICROBIOLOGICAL QUALITY OF COW MILK KEFIR USING *Kluyveromyces marxianus* KFA 3 AND KEFIR GRAIN STARTER CULTURE

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ABSTRACT

This study aimed to compare the physicochemical, microbiological, and organoleptic qualities of cow's milk kefir using different starter cultures. The starter cultures used were kefir grain from "Kefira" (S1), kefir grain from "Anugerah Kefir" (S2), kefir grain from "Family Kefir" (S3), and *Kluyveromyces marxianus* KFA 3 (S4) with 5% (b/v) kefir grain and 5% (v/v) *Kluyveromyces marxianus* KFA 3 culture. The pasteurized milk inoculated with starter was incubated at room temperature ($\pm 28^{\circ}\text{C}$) for 15 hours for kefir grain and 18 hours for *Kluyveromyces marxianus* KFA 3. Kefir was tested for physicochemical, microbiological, and organoleptic qualities. Each study was carried with 3 replications. Data from physicochemical and microbiological tests were analyzed using One-way ANOVA method and continued with Duncan's Multiple Ranges Test (DMRT) if there were significant differences ($P < 0.05$). Organoleptic test data were analyzed by Kruskal Wallis test and followed by Mann-Whitney test if there were significant differences ($P < 0.05$). The results showed that kefir fermented with *Kluyveromyces marxianus* KFA 3 produced physicochemical quality as viscosity ($629,500 \pm 168.06$ cP), syneresis ($51.255\% \pm 2.51$), total solid ($11.799\% \pm 0.24$), pH (5.05 ± 0.03), acidity ($0.59\% \pm 0.00$), and alcohol ($0.85\% \pm 0.01$), microbiological quality as total LAB (4.237 ± 0.55 log CFU/ml) and total yeast (6.560 ± 0.12 log CFU/ml), also organoleptic quality as color, aroma, taste, and viscosity were 5.20 ± 0.78 (liked), 4.60 ± 8.28 (liked), 3.93 ± 1.22 (rather liked), and 3.67 ± 0.62 (rather liked). Kefir fermented with kefir grain produced higher physicochemical, microbiological, and organoleptic quality than kefir fermented with *Kluyveromyces marxianus* KFA 3.

(Keywords: Cow's milk kefir, Kefir grains, *Kluyveromyces marxianus*, Quality).