

KUALITAS FISIKO-KIMIA DAN MIKROBIOLOGIS KEFIR SUSU SAPI MENGGUNAKAN KULTUR TUNGGAL *Kluyveromyces marxianus* KFA3 DAN KOMBINASI DENGAN *Lacticaseibacillus casei* AP

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INTISARI

Penelitian ini bertujuan untuk membandingkan kualitas fisiko-kimia dan mikrobiologis kefir susu sapi dengan menggunakan kultur starter kefir *grain*, kultur tunggal *Kluyveromyces marxianus* KFA3 dan kombinasi kultur *Kluyveromyces marxianus* KFA3 dan *Lacticaseibacillus casei* AP. Penelitian dilakukan menggunakan Rancangan Acak Lengkap (RAL) pola searah dengan 3 perlakuan kultur starter berbeda, dan masing – masing produk kefir dengan kultur *starter* berbeda dilakukan uji kualitas fisiko-kimia, mikrobiologis, serta organoleptik sebanyak tiga kali pengulangan. Perlakuan yang dilakukan adalah penggunaan kultur kefir *grain* 5% (b/v), kultur tunggal *Kluyveromyces marxianus* KFA3 5% (b/v), serta kombinasi kultur *Kluyveromyces marxianus* KFA3 dan *Lacticaseibacillus casei* AP 5% (v/v; 3:2). Data pengujian fisiko-kimia dan mikrobiologis dianalisis menggunakan *One-way ANOVA*, dilanjutkan dengan uji *Duncan's New Multiple Range Test* (DMRT). Data pengujian organoleptik dianalisis menggunakan uji *Kruskal Wallis* dengan uji lanjutan *Mann-Whitney U Test*. Hasil penelitian menunjukkan bahwa kultur *starter* berbeda berpengaruh sangat nyata ($P < 0,01$) terhadap viskositas, sineresis, pH, keasaman, kadar alkohol dan asam organik, serta berpengaruh nyata ($P < 0,05$) terhadap total bakteri asam laktat dan total yeast. Perbedaan kultur starter tidak berpengaruh nyata ($P > 0,05$) terhadap kadar air dan total solid kefir susu sapi. Hasil uji organoleptik menunjukkan bahwa kultur *starter* berpengaruh nyata ($P < 0,05$) pada daya terima rasa dan kekentalan dengan rerata 3,51 (agak suka) dan 4,26 (agak suka), namun tidak berpengaruh terhadap warna dan aroma yang ditunjukkan dengan rerata 4,88 (suka) dan 4,77 (suka). Kefir dengan kultur *starter* kefir *grain* memiliki kualitas fisiko-kimia, mikrobiologis, dan organoleptik lebih baik dibandingkan dengan kefir dengan kultur tunggal *Kluyveromyces marxianus* KFA3 dan kultur kombinasi *Kluyveromyces marxianus* KFA3 dan *Lacticaseibacillus casei* AP.

Kata kunci: Kefir, Susu sapi, Kefir *grain*, *Kluyveromyces marxianus* KFA3, *Lacticaseibacillus casei* AP, Kualitas kefir.

**PHYSICO-CHEMICAL AND MICROBIOLOGICAL QUALITIES OF
COW MILK KEFIR PRODUCED USING A SINGLE
CULTURE OF *Kluyveromyces marxianus* KFA3 AND A COMBINATION
WITH *Lacticaseibacillus casei* AP**

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ABSTRACT

This study aimed to compare the physico-chemical and microbiological qualities of cow's milk kefir using starter kefir grain culture, single culture of *Kluyveromyces marxianus* KFA3 and combination culture of *Kluyveromyces marxianus* KFA3 and *Lacticaseibacillus casei* AP. The study was conducted using a unidirectional pattern Complete Randomized Design (RAL) with 3 different starter culture treatments, and each kefir product with different starter cultures was tested for physico-chemical, microbiological, and organoleptic quality three times. The treatment was the use of 5% kefir grain culture (b/v), single culture of *Kluyveromyces marxianus* KFA3 5% (w/v), and a combination of culture of *Kluyveromyces marxianus* KFA3 and *Lacticaseibacillus casei* AP 5% (v/v; 3: 2). Physico-chemical and microbiological test data were analyzed using *One-way ANOVA*, followed by *Duncan's New Multiple Range Test* (DMRT). Organoleptic test data were analyzed using the *Kruskal Wallis* test with the follow-up *Mann-Whitney U Test*. The results showed that different starter cultures had a very significantly effect ($P < 0.01$) on viscosity, syneresis, pH, acidity, alcohol and organic acid content, and a significantly effect ($P < 0.05$) on total lactic acid bacteria and total yeast. The difference in starter culture had no significantly effect ($P > 0.05$) on the moisture content and total solid kefir of cow's milk. The organoleptic test results showed that the starter culture had a significant effect ($P < 0.05$) on taste and viscosity acceptability with an average of 3.51 (quite like) and 4.26 (quite like) but did not have a significant effect on color and aroma indicated by an average of 4.88 (likes) and 4.77 (likes). Kefir with starter culture kefir grain has better physico-chemical, microbiological, and organoleptic qualities compared to kefir with single culture *Kluyveromyces marxianus* KFA3 and combination culture *Kluyveromyces marxianus* KFA3 and *Lacticaseibacillus casei* AP.

Keywords: Kefir, Cow's milk, Kefir grain, *Kluyveromyces marxianus* KFA3, *Lacticaseibacillus casei* AP, Quality kefir.