

FERMENTASI *WHEY* KEJU MENGGUNAKAN KULTUR BAKTERI ASAM LAKTAT LOKAL TUNGGAL DAN CAMPURAN DENGAN VARIASI KONSENTRASI SUSU SKIM

INTISARI

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Penelitian ini dilakukan pengembangan minuman fermentasi dari *whey* keju dengan menggunakan starter bakteri asam laktat lokal *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13 dan *Streptococcus thermophilus* Dad-11 dengan variasi kadar susu skim. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh variasi kadar susu skim 0%; 1.25%; dan 2.5% terhadap pertumbuhan sel dan pH selama fermentasi serta stabilitas selama penyimpanan minuman fermentasi *whey* keju oleh starter tunggal (Dad-13) dan starter campuran (Dad-13 & Dad-11). Pengujian yang dilakukan diantaranya pertumbuhan sel BAL dan probiotik, serta pengujian pH dilakukan selama fermentasi, viabilitas sel BAL dan probiotik, pengujian pH, pengujian asam tertitrasi, dan pengujian viskositas dilakukan selama penyimpanan 4 minggu. Hasil penelitian menunjukkan bahwa variasi kadar susu skim tidak berpengaruh nyata terhadap pertumbuhan sel BAL dan probiotik serta perubahan pH, namun berpengaruh nyata terhadap kadar asam laktat serta viskositas. Pertumbuhan sel BAL setelah fermentasi 24 jam pada *whey* menggunakan starter tunggal (Dad-13) dan starter campuran (Dad-13 & Dad-11) mencapai 9 log CFU/mL. Sementara itu, pertumbuhan sel probiotik pada starter campuran mencapai 8 log CFU/mL. Setelah penyimpanan 4 minggu, viabilitas sel BAL pada starter tunggal dan campuran masih berkisar di 8 log CFU/mL dan viabilitas sel probiotik pada starter campuran masih sekitar 7 log CFU/mL. pH akhir menggunakan starter tunggal berkisar 4,44-4,83 dan starter campuran berkisar 4,25-4,38 dengan jumlah asam laktat pada starter tunggal berkisar 0,50-0,67 dan starter campuran berkisar 0,73-0,98. Viskositas starter tunggal berkisar 7,40-14,47 cP dan starter campuran berkisar 10,53-30,37 cP.

Kata kunci: *whey* keju, susu skim, bakteri asam laktat lokal, *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13, *Streptococcus thermophilus* Dad-11.

CHEESE *WHEY* FERMENTATION USING SINGLE AND MIXED LOCAL LACTIC ACID BACTERIA STARTER WITH VARIATIONS OF SKIM MILK CONCENTRATION

ABSTRACT

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This study was conducted to develop fermented beverages from cheese *whey* using local lactic acid bacteria starters *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13 and *Streptococcus thermophilus* Dad-11 with variations in skim milk content. The purpose of this study was to determine the effect of variations in skim milk content of 0%; 1.25%; and 2.5% on cell growth and pH during fermentation and stability during storage of fermented cheese *whey* beverages by a single starter (Dad-13) and a mixed starter (Dad-13 & Dad-11). The tests carried out included the growth of LAB and probiotic cells, as well as pH value carried out during fermentation, viability of LAB and probiotic cells, pH value, titratable acidity, and viscosity carried out during 4 weeks of storage. The results showed that variations in skim milk content did not significantly affect the growth of LAB and probiotic cells and changes in pH, but significantly affected the levels of lactic acid and viscosity. The growth of LAB cells after 24 hours of fermentation in *whey* with a single starter (Dad-13) and a mixed starter (Dad-13 & Dad-11) reached 9 log CFU/mL. Meanwhile, the growth of probiotic cells in the mixed starter reached 8 log CFU/mL. After 4 weeks of storage, the viability of LAB cells in the single and mixed starters was still around 8 log CFU/mL and the viability of probiotic cells in the mixed starter was still around 7 log CFU/mL. The final pH with a single starter ranged from 4.44-4.83 and the mixed starter ranged from 4.25-4.38 with lactic acid in the single starter ranging from 0.50-0.67 and the mixed starter ranging from 0.73-0.98. The viscosity of the single starter ranged from 7.40-14.47 cP and the mixed starter ranged from 10.53-30.37 cP.

Keywords: cheese whey, skim milk, indigenous lactic acid bacteria, *Lactiplantibacillus plantarum* subsp. *plantarum* Dad-13, *Streptococcus thermophilus* Dad-11.