KARAKTERISTIK WHEY FERMENTASI DENGAN PENAMBAHANSTARTER BAKTERI ASAM LAKTAT ASAL SUSU KAMBING

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INTISARI

Penelitian ini bertujuan mengetahui karakteristik produk whey fermentasi dengan penambahan starter bakteri asam laktat asal susu kambing, kemudian dibandingkan dengan produk minuman susu fermentasi komersial (Yakult). Whey fermentasi dibuat dengan penambahan starter *L. paracasei*, *P. pentosaceus*, dan kombinasi *L. paracasei* + *P. pentosaceus* (1:1) sebanyak 5% dan menggunakan *whey protein concentrate* (WPC) sebanyak 4%, 6%, 8%, dan 10%. Semua perlakuan diinkubasi pada suhu 42^{o}C sampai pH 4,5 (selama 5 jam). Uji kualitas whey fermentasi yang diamati yaitu total bakteri asam laktat, keasaman, pH, viskositas, kadar air, dan uji organoleptik. Data dianalisis dengan analisis variansi pola faktorial 3x4, dan dilanjutkan dengan Duncan's New Multiple Range Test (DMRT). Data hasil organoleptik dianalisis dengan analisis non parametrik *Kruskal Wallis*. Hasil penelitian menunjukkan perbedaan jenis starter tidak berpengaruh terhadap total bakteri asam laktat, keasaman, pH, dan kadar air, tetapi berpengaruh (P≤0,05) terhadap viskositas whey fermentasi. Hasil penelitian menunjukkan presentase WPC berpengaruh (P≤0,05) terhadap keasaman, viskositas, dan kadar air, tetapi tidak berpengaruh terhadap pH dan total bakteri asam laktat. Berdasarkan hasil penelitian menunjukkan tidak terdapat interaksi antara penambahan jenis starter bakteri asam laktat dan presentase WPC terhadap karakteristik whey fermentasi. Karakteristik whey fermentasi yaitu total bakteri asam laktat 8,18±0,46 Log.CFU/mL, pH 4,28±0,16, keasaman 0,56±0,04%-0,80±0,09%, viskositas 11,24±2,50cP-17,14±1,32cP, dan kadar air 89,76±0,11%-94,24±0,06%. Perbedaan jenis *starter* dan presentase WPC tidak berpengaruh terhadap aroma, rasa asam, dan penampakan, tetapi berpengaruh (P≤0,05) terhadap warna. Produk hasil penelitian dengan penggunaan 4% dan 6% *whey protein concentrate* memiliki kualitas yang sama dengan produk minuman fermentasi komersial yakult setelah diinkubasi selama 5 jam dengan menggunakan bakteri asam laktat asal susu kambing berdasarkan total bakteri asam laktat, kadar asam laktat, dan rasa asam.

Kata kunci: whey fermentasi, bakteri asam laktat, *L.paracasei*, *P. pentosaceus, whey protein concentrate.*

CHARACTERISTICS OF WHEY FERMENTATION WITH STARTER LACTIC ACID BACTERIA FROM GOAT'S MILK

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ABSTRACT

The aim of this research was to investigate characteristics of whey fermentation with the differences of starter lactic acid bacterial from goat's milk, than the commercial products fermented milk (yakult) is used as a comparison. Whey fermentation products were manufactured with *L. paracasei, P. pentosaceus* and combinations (1:1) *L. paracasei* + *P. pentosaceus* (5%) and use of whey protein concentrate (WPC) (4%, 6%, 8% and 10%).. All treatments were incubated at 42°C for 5 hours. Products were analyzed for the total lactic acid bacteria, acidity, pH, viscosity, water content, and organoleptic properties. Data were analyzed with 3x4 factorial analysis of variance, followed by Duncan's New Multiple Range Test (DMRT). Organoleptic data were analyzed by Kruskal Wallis non-parametric analysis. The results showed that the differences of starter hadn't significant effect (P≥0.05) on total lactic acid bacteria, acidity, pH, and water content, but had a significant effect (P≤0,05) on viscosity of whey fermentation. The results showed that use of WPC had a significant effect (P≤0,05) on acidity, viscosity, and water content, but hadn't a significant effect (P≥0.05) on pH and total lactic acid bacteria. The research results showed that there wasn't interaction between the differences of starter lactic acid bacteria and percentage of WPC on the characteristics of whey fermentation. Whey fermentation products have 8.18±0.46 $Log_{10}CFU.mL^{-1}$ of total lactic acid bacteria, 4.28±0.16 of pH, 0.56±0.04%-0.80±0.09% of acidity, 11.24±2,50cP-17.14±1,32cP of viscosity, and 89.76±0.11%-94,24±0.06% of water content. The differences of starter and percentage of WPC hadn't a significant effect (P≥0.05) on aroma, sour taste, and appearance, but there was significant effect (P≤0,05) on color of whey fermentation products. Research could be concluded that whey fermentation product with the use of 4% and 6% whey protein concentrate has a quality that is equal to the product of fermented beverages commercial (yakult) after incubation for 5 hours by using lactic acid bacteria origin goat milk based on total lactic acid bacteria, lactic acid levels, and taste acid.

Keyword: whey fermentation, lactic acid bacteria, *L.paracasei*, *P. pentosaceus, whey protein concentrate.*