PENGARUH ENZIM TRANSGLUTAMINASE PADA PEMBUATAN YOGURT SUSU KAMBING UNTUK MENINGKATKAN KUALITAS YOGURT DAN *CONCENTRATED* YOGURT

ABSTRAK

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Penelitian berjudul “Pengaruh Enzim Transglutaminase pada Pembuatan Yogurt Susu Kambing untuk Meningkatkan Kualitas Yogurt dan *Concentrated* Yogurt” telah dilaksanakan di Laboratorium Teknologi Hasil Ternak, Fakultas Peternakan, Universitas Jenderal Soedirman, Purwokerto, pada tanggal 25 Juni – 30 Agustus 2019. Tujuan penelitian ini adalah mengkaji pengaruh penggunaan enzim transglutaminase dan kombinasinya dengan protein eksternal (skim dan WPC) pada pembuatan yogurt susu kambing terhadap kualitas yogurt dan *concentrated* yogurt. Materi yang digunakan adalah susu kambing Peranakan Etawah, starter yogurt kering (komersial), enzim transglutaminase (mTGase), susu skim dan *whey protein concentrate* (WPC). Peralatan yang digunakan yaitu pH meter, viscometer, timbangan digital, kain saring, sentrifuge, *color reader*, dan inkubator yogurt. Variabel kualitas yogurt yang diukur yaitu *water holding capacity* (WHC), viskositas, sineresis, pH, dan warna yogurt. Variabel kualitas *concentrated* yogurt yang diukur meliputi persentase produk (*yield*), *whey* bebas, sineresis, pH *curd* dan *whey*, warna *curd* dan *whey*. Perlakuan terdiri atas T_0 (yogurt susu kambing tanpa penambahan), T_1 (yogurt susu kambing + mTGase 0,03%), T_2 (yogurt susu kambing + mTGase 0,03% + susu skim 1%), dan T_3 (yogurt susu kambing + mTGase 0,03% + WPC 1%) dengan 5 kali ulangan. Data dianalisis menggunakan analisis variansi dan dilanjutkan dengan Uji Ortogonal Kontras. Hasil penelitian menunjukkan penambahan mTGase berpengaruh nyata ($P<0,05$) dalam meningkatkan WHC, viskositas, dan menurunkan sineresis, namun tidak berbeda nyata terhadap pH dan warna yogurt, sedangkan pada *concentrated* yogurt mampu meningkatkan *yield*, menurunkan *whey* bebas, sineresis, serta pH *curd* dan *whey*, namun tidak berbeda nyata terhadap warna. Kombinasi mTGase + sumber protein eksternal berpengaruh nyata ($P<0,05$) dalam menurunkan sineresis, namun tidak berbeda nyata terhadap WHC, viskositas, pH, dan warna yogurt; sedangkan pada *concentrated* yogurt mampu meningkatkan *yield*, menurunkan *whey* bebas, sineresis, dan pH (*curd* dan *whey*), namun tidak berbeda nyata terhadap warna. Kombinasi mTGase + WPC 1% menghasilkan kualitas yogurt yang tidak jauh berbeda dengan kombinasi mTGase + skim 1% terhadap semua variabel; sedangkan pada *concentrated* yogurt mampu meningkatkan *yield* dan menurunkan sineresis, namun tidak berbeda nyata terhadap *whey* bebas, pH (*curd* dan *whey*), dan warna (*curd* dan *whey*). Kesimpulan penelitian ini adalah penambahan mTGase maupun kombinasi dengan sumber protein eksternal lebih baik dalam meningkatkan kualitas fisik *concentrated* yogurt dibandingkan kualitas fisik yogurt.

Kata kunci : mTGase, susu fermentasi, susu kambing, protein tambahan, kualitas fisik

THE EFFECT OF TRANSGLUTAMINASE ENZYME IN THE MAKING OF GOAT MILK YOGURT TO INCREASE THE QUALITY OF YOGURT AND *CONCENTRATED* YOGURT

ABSTRACT

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The research entitled "The Effect of Transglutaminase Enzyme in The Making of Goat Milk Yogurt to Increase the Quality Yogurt and Concentrated Yogurt" has been done in Animal Products Technology Laboratory, Animal Science Faculty, Jenderal Soedirman University, Purwokerto, from June 25 until August 30, 2019. The purpose of this research was to study the effect of transglutaminase enzyme and combination with external protein (skim and WPC) on the manufacture of goat milk yogurt on the quality of yogurt and *concentrated* yogurt. The material used is PE goat's milk, dry yogurt starter (commercial), the enzyme transglutaminase (mTGase), skim milk and *whey protein concentrate* (WPC). The equipment used is a pH meter, viscometer, digital scales, filter cloth, centrifuge, *color reader*, and yogurt incubator. Yogurt variables measured were *water holding capacity* (WHC), viscosity, syneresis, pH, and yogurt color. The variable *concentrated* yogurt is the percentage of product (*yield*), free *whey*, syneresis, pH *curd* and *whey* , *curd* and *whey* color. The treatments of this research consisted of T_0 (goat milk yogurt without addition), T_1 (goat milk yogurt + 0.03% mTGase), T_2 (goat milk yogurt + 0.03% mTGase + 1% skim milk), and T_3 (goat milk yogurt + mTGase 0.03% + WPC 1%) with 5 replications. The result of this research were analyzed using analysis of variance and then proceeded using Contrast Orthogonal Test. The results showed that the addition of mTGase had a significant effect ($P<0.05$) in increasing WHC, viscosity, and reducing syneresis, but not significantly different from the pH and color of yogurt, whereas *concentrated* yogurt could increase *yield*, decrease free *whey*, syneresis, and pH *curd* and *whey*, but not significantly different from color. The combination of mTGase + external protein source has a significant effect ($P<0.05$) in decreasing syneresis, but not significantly different from WHC, viscosity, pH, and yogurt color; whereas *concentrated* yogurt can increase *yield*, decrease free *whey*, syneresis, and pH (*curd* and *whey*), but not significantly different from color. The combination of mTGase + WPC 1% produces a quality of yogurt that is not much different from the combination of mTGase + skim 1% for all variables; whereas *concentrated* yogurt can increase *yield* and decrease syneresis, but not significantly different from free *whey*, pH (*curd* and *whey*), and color (*curd* and *whey*). The conclusion of this research is the addition of mTGase or combination with an external protein source is better in improving the physical quality of *concentrated* yogurt than the physical quality of yogurt.

Keywords: mTGase, fermented milk, goat milk, additional protein, physical quality