POTENSI PEPTIDA BIOAKTIF SUSU KAMBING PERANAKAN AFRICAN DWARF DAN KAMBING KACANG YANG DIFERMENTASI MENGGUNAKAN *LACTOBACILLUS ACIDOPHILUS* DAN *BIFIDOBACTERIUM LONGUM* SEBAGAI ANTIBAKTERI

INTISARI

Fauzi Anwar
21/489273/PPT/01193

Susu kambing secara alami memiliki kemampuan antibakteri untuk mempertahankan kualitas susu terhadap serangan bakteri lain. Aktivitas antibakteri pada susu semakin tinggi apabila dilakukan proses fermentasi oleh bakteri yang menghasilkan bakteriosin. Bakteriosin merupakan senyawa protein berupa peptida yang dihasilkan oleh metabolit Bakteri Asam Laktat (BAL). Penelitian ini bertujuan untuk menganalisis aktivitas antibakteri yang dihasilkan akibat dari proses fermentasi susu kambing spesies Peranakan African Dwarf dan susu kambing Kacang oleh bakteri *Lactobacilus acidophilus* dan *Bifidobacterium longum*. Parameter yang diamati meliputi komposisi kimia susu segar, komposisi susu fermentasi meliputi kadar air, keasaman, pH, protein kasar, laktosa, dan diameter penghambatan bakteri yang sejenis maupun yang diujikan antar bakteri *Lactobacillus acidophilus* dengan *Bifidobacterium longum*. Hasil analisis menunjukkan kadar protein, dan laktosa pada kambing Kacang lebih rendah dibanding kambing PAD ($P<0,05$). Lama fermentasi susu berpengaruh sangat nyata ($P<0,01$) terhadap bahan kering, keasaman, nilai pH, protein dan laktosa susu fermentasi serta diameter zona hambat bakteri. Uji aktivitas antibakteri pada ekstrak sephadex G-25 susu kambing fermentasi berwarna kuning (<1,5 Kda) menunjukkan penghambatan lebih tinggi dibanding ekstrak susu kambing fermentasi berwarna bening (>1,5 Kda). Diameter penghambatan tertinggi terjadi pada ekstrak berwarna kuning susu kambing Kacang yang difermentasi menggunakan *Lactobacillus acidophilus* selama 12 jam yakni 4,30 mm. Kesimpulan dari penelitian bahwa susu kambing yang difermentasi menggunakan *Lactobacillus acidophilus* dan *Bifidobacterium longum* memiliki sifat bakteriostatik atau menghambat pertumbuhan bakteri, dengan perlakuan terbaik yakni kambing Kacang yang difermentasi menggunakan *Lactobacillus acidophilus*.

Kata Kunci : Antibakteri, *Bifidobacterium longum*, *Lactobacilus acidophilus*, Peptida bioaktif, Susu kambing.

POTENTIAL OF BIOACTIVE PEPTIDES OF AFRICAN DWARF CROSSBREED AND KACANG GOAT MILK FERMENTED BY LACTOBACILLUS ACIDOPHILUS AND BIFIDOBACTERIUM LONGUM AS ANTIBACTERIA

ABSTRACT

Fauzi Anwar
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Goat's milk naturally has antibacterial abilities to maintain the quality of milk against attacks by other bacteria. The antibacterial activity of milk is higher if the fermentation process is carried out by bacteria that produce bacteriocins. Bacteriocins are protein compounds in the form of peptides produced by metabolites of Lactic Acid Bacteria (LAB). The aim of this study was to analyze the antibacterial activity produced by the fermentation process of African Dwarf cross breed goat milk and Kacang goat milk by the Lactobacilus acidophilus and Bifidobacterium longum. The parameters observed include the chemical composition of fresh milk, the composition of fermented milk including water content, acidity, pH, crude protein, lactose, and the inhibitory diameter of similar bacteria as well as those tested between Lactobacillus acidophilus and Bifidobacterium longum bacteria. The results showed that protein and lactose levels in Kacang goats were lower than in PAD goats ($P<0.05$). The duration of milk fermentation has a very significant effect ($P<0.01$) on dry matter, acidity, pH value, protein and lactose of fermented milk as well as the diameter of the bacterial inhibition zone. The antibacterial activity test on the yellow fermented goat's milk extract (MW<1,5 Kda) of Sephadex G-25 showed higher inhibition than the clear fermented goat's milk extract (MW>1,5 Kda). The highest inhibition zone occurred in the yellow extract of Kacang goat's milk which was fermented using Lactobacillus acidophilus for 12 hours, was 4.30 mm of diameter. The conclusion from the research is that goat's milk fermented using Lactobacillus acidophilus and Bifidobacterium longum has bacteriostatic properties or inhibits the growth of bacteria, with the best treatment being goat's milk fermented using Lactobacillus acidophilus.

Keywords: Antibacterial, Bifidobacterium longum, Lactobacilus acidophilus, Bioactive peptides, Goat's milk.