POTENSI SUPLEMENTASI *Lactobacillus plantarum* BJ3, DAN KOMBINASI DENGAN KAYU MANIS (*Cinnamomum burmannii*), DAN/ATAU TEMU HITAM (*Curcuma aeruginosa*) TERHADAP KUALITAS KARKAS AYAM PEDAGING

INTISARI

Penambahan antibiotik ke dalam pakan ternak sebagai pemicu pertumbuhan (*antibiotic for growth promoter atau AGP*) telah dilarang, karena risiko terjadinya residu pada produk ternak dan berpotensi timbulnya bakteri resisten antibiotik. Probiotik, tanaman rempah, dan herbal telah diintroduksi sebagai alternatif pengganti penggunaan antibiotik dalam pakan. Penelitian ini ditujukan untuk mengetahui potensi pemberian probiotik dengan kombinasi prebiotik kayu manis dan/atau temu hitam. Penelitian ini dibagi menjadi tiga tahapan penelitian. Penelitian tahap I adalah isolasi dan identifikasi probiotik *Lactobacillus*. Data yang diperoleh dianalisis secara deskriptif. Berdasarkan identifikasi fenotip dan genotip, sebanyak 72,72% BAL yang diisolasi dari ekskreta itik dari peternakan itik di Kabupaten Bantul, Yogyakarta teridentifikasi sebagai *Lactobacillus*. Berdasarkan uji syarat probiotik, *Lactobacillus* yang berpotensi sebagai probiotik adalah *L. plantarum* BJ3. Penelitian tahap II adalah sifat prebiotik dan aktivitas antibakteri kayu manis dan temu hitam. Data kandungan nutrien, metabolit sekunder, dan aktivitas antibakteri dianalisis deskriptif, sedangkan data aktivitas prebiotik dianalisis statistik menggunakan R (ANOVA pola searah) dan diuji lanjut dengan TukeyHSD. Kayu manis dan temu hitam mengandung karbohidrat sebesar 70,46-81,82%, dan berpotensi sebagai prebiotik apabila diberikan bersama (kombinasi). Kayu manis dan temu hitam mengandung senyawa metabolit sekunder (alkaloid, fenol, flavonoid, minyak atsiri, dan tanin) dan memiliki sifat antibakteri terhadap *E. coli* dan *S. aureus.* Penelitian tahap III adalah suplementasi *Lactobacillus,* dan kombinasi dengan kayu manis, dan/atau temu hitam pada studi *in vivo.* Sebanyak 100 ekor DOC jantan strain Lohmann MB 202 dibagi dalam 5 kelompok perlakuan yaitu P0 (kontrol), P1 (*L. plantarum* BJ3), P2 (*L. plantarum* BJ3+KM), P3 (*L. plantarum* BJ3+TH), dan P4 (*L. plantarum* BJ3+KT). Perlakuan diberikan melalui air minum selama 35 hari pemeliharaan. Data yang diperoleh dianalisis statistik menggunakan R (ANOVA pola searah), dan diuji lanjut dengan TukeyHSD. Perlakuan mempengaruhi performans pertumbuhan (FI, WI), kecernaan (KcBK, KcBO, konsumsi protein, rasio efisiensi protein), berat karkas dan organ (berat limfa, panjang usus dan sekum), serta histomorfometri ileum (panjang vili, kedalaman kripta, dan rasio panjang vili:kripta) secara nyata ($p<0,05$). Dilihat dari nilai kualitas fisik dan kimia daging, kelompok perlakuan memiliki kualitas daging lebih baik dari kontrol. Kesimpulan, *Lactobacillus* dapat diisolasi dari ekskreta itik dan *L. plantarum* BJ3 berpotensi sebagai probiotik; kayu manis dan temu hitam bersifat prebiotik terhadap *L. plantarum* BJ3 apabila diberikan secara bersama (kombinasi); kayu manis dan temu hitam memiiliki sifat antibakteri terhadap *E. coli* dan *S. aureus*; *L. plantarum* BJ3, dan kombinasi dengan kayu manis, dan/atau temu hitam dapat mempengaruhi kualitas karkas.

Kata kunci : *Lactobacillus plantarum* BJ3, Kayu manis, Temu hitam, Ayam, Karkas

POTENTIAL OF Lactobacillus plantarum BJ3, AND COMBINATION WITH Cinnamomum burmannii, AND/OR Curcuma aeruginosa ON THE QUALITY OF CARCASS CHICKEN

ABSTRACT

The addition of antibiotics to animal feed as a growth promoter (antibiotic for growth promoter or AGP) has been prohibited, due to the risk of residues in livestock products and the potential for antibiotic-resistant bacteria. Probiotics, herbs and spices have been introduced as an alternative to the use of antibiotics in feed. This study was aimed to determine the potential of probiotics and combination of cinnamon and/or curucuma prebiotics. This research is divided into three steps of research. The step I was isolation and identification of probiotic Lactobacillus. The data were analyzed descriptively. Based on identification of phenotypes and genotypes, 72.72% LAB isolated from duck excreta from duck farms in Bantul Regency, Yogyakarta were identified as Lactobacillus. Based on the probiotic requirement test, L. plantarum BJ3 had the potential as a probiotic. The step II was the prebiotic properties and antibacterial activity of cinnamon and curcuma. Data of nutrient content, secondary metabolites content, and antibacterial activity were analyzed descriptively, while data of prebiotic activity was analyzed statistically using R (a one-way ANOVA) and the TukeyHSD for multiple comparison. Cinnamon and curcuma contain carbohydrates between 70.46-81.82% and had the potential as prebiotics when combination applied. Cinnamon and curcuma contain secondary metabolites (alkaloids, phenols, flavonoids, essential oils, and tannins) and had antibacterial properties against E. coli and S. aureus. The step III was supplementation of Lactobacillus, and combination with cinnamon, and/or curcuma in study in vivo. A total of 100 male DOCs of the Lohmann MB 202 strain were divided into 5 treatment groups, namely P0 (control), P1 (L. plantarum BJ3), P2 (L. plantarum BJ3+CB), P3 (L. plantarum BJ3+CA), and P4 (L. plantarum BJ3+CB+CA). The treatment was applied drinking water for 35 days. The data were analyzed statistically using R (a one-way ANOVA) and the TukeyHSD for multiple comparison. Treatment affected growth performance (FI, WI), digestibility (DM and OM digestibility, protein consumption, protein efficiency ratio), carcass and organ weight (spleen weight, intestine and cecum length), and ileal histomorphometry (villi length, crypt depth, and villi:crypt length ratio) significantly ($p<0.05$). Based on the physical and chemical quality of the meat, the treatment group had better meat quality than control. In conclusion, Lactobacillus can be isolated from duck excreta and L. plantarum BJ3 had potential as a probiotic; cinnamon and curcuma had potential as prebiotic to L. plantarum BJ3 when combination applied; cinnamon and curcuma had potential antibacterial against E. coli and S. aureus; L. plantarum BJ3, and combination with cinnamon, and/or curcuma affected carcass quality.

Key words : Lactobacillus plantarum BJ3, Cinnamomum burmannii, Curcuma aeruginosa, Chicken, Carcass