ISOLASI BAKTERI ASAM LAKTAT DARI SALURAN PENCERNAAN ITIK LOKAL DARI ACEH DAN POTENSINYA SEBAGAI PROBIOTIK

INTISARI

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Tujuan penelitian ini adalah untuk mendapatkan bakteri asam laktat (BAL) yang diisolasi dari saluran pencernaan itik lokal asal Aceh sebagai probiotik untuk perbaikan performan dan histomorfologi usus itik. Penelitian diawali dengan mengisolasi BAL dari saluran pencernaan itik lokal asal Aceh yang meliputi segmen tembolok (crop), *proventrikulus*, *gizzard*, *duodenum, jejunum, ileum* dan *sekum*. Identifikasi bakteri dilakukan berdasarkan morfologi, fisiologi, biokimiawi dan molekuler. Isolat BAL yang diperoleh di uji kemampuan sebagai agensia probiotik. Sebanyak 120 ekor itik pedaging jantan yang digunakan dalam perlakuan pemberian BAL. Perlakuan yang diberikan adalah tanpa pemberian BAL (*Non probiotic/* NP), pemberian antibiotik *Zinc bacitracin* 40 mg/kg dalam pakan (ZB), pemberian *Pediococcus acidilactici* 10^6 CFU/ml/ekor/hari (PA1), 10^7 CFU/ml/ekor/hari (PA2), 10^8 CFU/ml/ekor/hari (PA3), pemberian *Lactobacillus fermentum* 10^6 CFU/ml/ekor/hari (LF1), 10^7 CFU/ml/ekor/hari (LF2), 10^8 CFU/ml/ekor/hari (LF3). Rancangan yang digunakan adalah Rancangan Acak Lengkap (RAL) pola searah, masing-masing perlakuan menggunakan 3 replikasi kandang, setiap kandang berisi 5 ekor itik. Data dengan perbedaan yang nyata diuji lanjut menggunakan uji kontras ortogonal. Hasil penelitian tahap 1 diperoleh BAL yaitu satu strain *Lactobacillus plantarum* strain C1, dua strain *Pediococcus acidilactici* strain V2 dan J2 dan tiga strain *Lactobacillus fermentum* strain D3, I1 dan S4. Hasil penelitian tahap 2 diperoleh dua kultur BAL yang mampu tumbuh pada 0,5% garam empedu (*bile salt hydrolase*/BSH) yaitu *Pediococcus acidilactici* strain V2 sebesar 86,20% dan *Lactobacillus fermentum* strain I1 sebesar 80,97%, memiliki aktivitas penghambatan terhadap *Escherichia coli* dan *Salmonella pullorum* yang tergolong pada kategori kuat (>10 mm) serta menunjukkan kemiripan dengan *Lactobacillus fermentum* strain 845 *bsh gene* dan *Lactobacillus fermentum* strain BCS87 *mucus and mucin binding protein*. Hasil penelitian tahap 3 menunjukkan histomorfologi pada perlakuan pemberian BAL *Pediococcus acidilactici* strain V2 dan *Lactobacillus fermentum* strain I1, masing-masing dengan dosis 10^6, 10^7 dan 10^8 CFU/ml/ekor/hari meningkatkan tinggi vili, lebar vili dan kedalaman kripta dan juga dapat memperbaiki performan dari pada perlakuan kontrol dan antibiotik *Zinc bacitracin. Pediococcus acidilactici* strain V2 dan *Lactobacillus fermentum* strain I1 dengan dosis 10^6 CFU/ml/ekor/hari dapat digunakan sebagai probiotik pengganti antibiotik pada ternak itik.

Kata kunci: BAL, itik, performa, histomorfologi

ISOLATION OF LACTIC ACID BACTERIA FROM DIGESTIVE TRACT OF A NATIVE ACEH DUCK AND THE POTENTIAL AS A PROBIOTIC

ABSTRACT

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The purpose of this research is to acquire lactic acid bacteria (LAB) isolated from the digestive tract of local Aceh ducks as a probiotic to improve performance and intestinal histomorphology of ducks. This research begins with isolating and identifying LAB from the digestive tract of local Aceh ducks, consisting of part is the crop, proventriculus, gizzard, duodenum, jejunum, ileum and cecum. Bacteria identification was based on morphology, physiology, biochemistry and molecular structure. LAB isolates obtained were tested for their ability as probiotic agents. A total of 120 males of ducks were use in the treatment. The research treatment given is without giving LAB (NonProbiotic/NP), *Pediococcus acidilactici* 10^6 CFU/ml/bird/day (PA1), 10^7 CFU/ml/bird/day (PA2), 10^8 CFU/ml/bird/day (PA3), *Lactobacillus fermentum* 10^6 CFU/ml/bird/day (LF1), 10^7 CFU/ml/bird/day (LF2), 10^8 CFU/ml/bird/day (LF3). The experimental design used was a Completely Randomized Designs (CRD) One Way ANOVA with each treatment consisting of 3 replication cages and each replication consisting of five duck. Data with significant differences were further tested using orthogonal contrast test. The stage 1 research showed that one strain has similarities to *Lactobacillus plantarum* (C1), two strain *Pediococcus acidilactici* (V2 and J2) and three strain *Lactobacillus fermentum* (D3, I1 and S4). The stage 2 research showed that two LAB isolates have the ability to grow on 0,5% bile salt (*bile salt hydrolase/bsh*), *Pediococcus acidilactici* strain V2 of 86,20% and *Lactobacillus fermentum* strain I1 of 80,97%, have antibacterial compounds against *Escherechia coli* and *Salmonella pullorum* which is included the strong category (>10 mm) and showed similirities to *Lactobacillus fermentum* strain 845 *bsh gene* and *Lactobacillus fermentum strain BCS87 mucus* and *mucin binding protein*. The stage 3 result showed that histomorfology in the treatment of LAB *Pediococcus acidilactici* and *Lactobacillus fermentum* at doses of 10^6, 10^7 and 10^8 CFU/ml/bird/day respectively gave the different effect as treatment on control and antibiotic *zinc bacitracin*. Treatment of LAB isolates of *Pediococcus acidilactici* strain V2 and *Lactobacillus fermentum* strain I1, doses of 10^6, 10^7 and 10^8 CFU/ml/bird/day respectively, increased vili height, vili width and crypt depth and also improved performance than control treatment and antibiotic *Zinc bacitracin*. *Pediococcus acidilactici* strain V2 and *Lactobacillus fermentum* strain I1 at doses of 10^6 CFU/ml/bird/day can replace the function of the antibiotics *Zinc bacitracin*.

Key words: LAB, duck, performance, histomorphology.