The Combination Effect of Probiotic Prebiotic Lactic Acid Bacteria on Effi ciency of Feed Usage on Broiler Chicken

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The Combination Effect of Probiotic Prebiotic Lactic Acid Bacteria on Efficiency of Feed Usage on Broiler Chicken

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Abstract

This study aimed to replace antibiotics that have been used for antimicrobial activity for years with probiotics. T0: normal feed, T1: feed+probiotic *L.acidophilus*, T2: feed+probiotics *L.casei*, T3: feed+probiotics *L.fermentum*, T4: feed+probiotic *L.plantarum*, T5: feed+probiotic Pediococcus, T6: feed+mixture of probiotics. Two research stages: 1.basic feed: 23% protein (1st–3th weeks age), 2. grower-finisher feed: 21% protein (3st–5th weeks age). Result of the research: significantly different feed efficiency, the highest yield on T6, which wass provided with feeding+mixed probiotic (*L.acidophilus, L.casei, L.fermentum, L.plantarum*, Pediococcus).

Key words : Probiotic Prebiotic, Lactic Acid, Feed Efficiency, Broiler

The issue of avoiding antibiotic resistance is one reason to exploit natural resources

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Table I. Average Feed Consumption, weight gain, and feed efficiency on the broiler given probiotics in drinking water

Treatments	Feed Consumption	Weight gain (g)	Feed Efficiency
T0	0,893.75^{a} ± 0.89	1590.00^{a} ± 1.59	0,4543^{a} ± 0,00
T1	1043.75^{c} ±1.04	1632.50^{a} ± 1.63	0,5000^{c} ± 0,00
T2	966.00^{abc} ± 0.96	1620.00 ^{a} ± 1.62	0,4764^{b} ± 0,00
T3	910.00^{ab} ± 0.b 91	1532.50^{a} ± 1.53	0,4758^{b} ± 0,00
T4	997.50^{abc} ± 0.99	1545.00^{a} ± 1.54	0,5000^{c} ± 0,00
T5	1023.75^{bc} ± 0.10	1585.00^{a} ± 1.58	0,5000^{c} ± 0,00
T6	1317.25^{d} ± 1.31	1660.00^{a} ± 1.66	0,5881^{d} ± 0,00

Note: Values having different superscripts in the same column differ significantly ($p < 0.05$)

that have benefits for livestock and human health (Willey *et al.*, 2009). Lactic acid bacteria that lives around us can be inoculated, replicated in large amounts, so that it can be used for production and disease prevention functions in broiler. The biomass content of lactic acid bacteria proteins can survive in extremely low pH conditions (3.0-3.5) is the nature of lactic acid bacteria that can kill pathogenic bacteria which do not survive in very acidic pH conditions (Jin *et al.*, 2000).

Material and Methods

The experimental design used was Completely Randomized Design (CRD) due to the homogeneous environmental conditions and body weight, and the samples were randomly conducted with seven types of treatment groups, each treatment consisted of four replications. T0: normal feed, T1: feed+probiotic *L.acidophilus*, T2: feed+probiotics *L.casei*, T3: feed+probiotics *L.fermentum*, T4: feed+probiotic *L.plantarum*, T5: feed+probiotic Pediococcus, T6: feed+mixture of probiotics. Data obtained were analyzed by Anova (*Analysis of Variant*). If there is a significant difference ($P < 0.05$), the statistical test is continued with Tukey test. Data analysis in this study used is SPSS 13 for Windows XP (Safitri *et al.*, 2016).

Results and Discusion

Based on the ANOVA test, in each treatment were not significantly different from feed consumption and chicken production, but in significantly different from the highest value on T6 which was equal to 0.5881 ($p < 0.05$) on the efficiency of feed use (Table I).

The results of this study has shown that the feed consumption and body weight did not differes significantly, but the feed efficiency was significantly different. The treatment P6 with probiotic mixture was the best Probiotic mix is a combination of all bacteria used, namely *L. acidophilus*, *L. casei*, *L. fermentum*, *L. plantarum*, and *Pediococcus*.

As lactic acid increases, the pH of the environment becomes low and causes other microbes not to grow. When colonization occurs on the surface of the digestive tract, lactobacilli prevents fungal growth and suppresses *E. coli* growth and gram-negative pathogenic bacteria in the small intestine. *L. acidophilus* and *L. casei* performs to act as probiotics which can increase chicken body weight (Zulkifli *et al.*, 2000). *L.fermentum*, *L. plantarum*, and *Pediococcus* includes lactic acid bacteria which are capable of playing the role of antimicrobial activity thus inhibiting *E. coli* and *S. aureus* (Jin *et al.*, 1998).

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