

## **Addition of Feed Additive Binahong (*Anredera Cordifolia* (Ten.) Steenis) Leaf Meal into Diets on Growth Performance of Broiler Chickens**

**Nur Widodo<sup>1</sup>, Wihandoyo<sup>2</sup>, Nanung Danar Dono<sup>2</sup>, Zuprizal<sup>1</sup>**

<sup>1</sup> Students of the Faculty of Animal Husbandry, University of GadjahMada

<sup>2</sup> Faculty of Animal Husbandry, University of GadjahMada

Corresponding email: [nurwidodo85@yahoo.co.id](mailto:nurwidodo85@yahoo.co.id)

### **ABSTRACT**

This study aimed to determine the effect of binahong leaf meal as a feed additive on growth performance of broiler chickens. One hundred and ninety two DOC male broiler chickens were divided into 6 treatments with 4 replications and each replication consisted of 8 chickens. The treatment 1: basal diet (T0); treatment 2: basal diet+ tetracycline 50 ppm (T1); treatment 3, 4, 5, and 6 (T2, T3, T4, and T5) is a basal diet with binahong leaf meal as much as 1.0; 2.0; 4.0; and 8.0%. The data collected was feed intake, weight gain and feed conversion ratio of broiler chickens. The results showed that the binahong leaf meal up to 8% level had no significant effect on feed intake, but it had a significant effect on weight gain and feed conversion ratio of the broiler. Feed intake were 2883.48; 2870.35; 2955.53; 3015.76; 3008.06; and 2997.27 g/head/35 days for T0, T1, T2, T3, T4, and T5 respectively. Weight gain T0, T1, T2, T3, T4, and T5 were 1577.70; 1787.25; 1628.50; 1754.78; 1492.63 and 1294.25 g/head/35 days while feed conversion ratio were: 1.83; 1.61; 1.82; 1.72; 2.02 and 2.32 to T0, T1, T2, T3, T4, and T5. Utilization of binahong leaf meal at 2% increased weight gain and lower feed conversion of broiler compared to the control and were be able to give the same results when compared with the provision of 50 ppm tetracycline, addition of binahong leaf meal level 4 and 8% decrease weight gain and improve feed conversion of broiler chickens. It can be concluded that utilization of binahong leaf meal 2% can increase weight gain and lower feed conversion and had no effect on feed intake so that it can be used as an alternative to replace the use of antibiotics in broiler chicken feed.

**Keywords:** *Anredera cordifolia*, Feed Additive, Growth Performance, Broiler Chickens.

### **INTRODUCTION**

Use of antibiotics in addition to treatment, also used in poultry rations, it as a feed additive to accelerate livestock growth, improve ration conversion and improve the efficiency of rations (Zuprizal, 2006). Antibiotics commonly mixed into poultry feed include zinc bacitracin, penicillin, tylosin, and virginiamycin (Jones and Ricke, 2003). Excessive use of antibiotics and errors in their use can spur the emergence of pathogenic bacterial resistance. Concerns about the potential development of antibiotic-resistant microorganisms spur businesses, researchers, and academics to seek alternatives to antibiotics. Some of the alternatives have been found are fitobiotic, organic acids, probiotics, prebiotics, sinbiotics, and enzymes. The use of fitobiotic in the feed is one of the alternatives to replace antibiotics.

Fitobiotics is a dietary supplement derived from plants that were added to animal feed in order to improve the production performance and health of livestock (Windisch et al.,

2008). Ulfah (2006) defines fitobiotics as herbs that have active ingredients that can be made antibacterial to improve the condition of the digestive tract (pH and microflora balance), improve feed efficiency, and improve the digestibility of food substances.

Binahong (*Anredera cordifolia* (Ten.) Steenis) is a plant that can be used as a medicine. One part of the plant is very useful, binahong leaf because it contains some active chemical compounds that are useful for health. The active compounds contained in the binahong leaves are phenol, flavonoid, alkaloid, terpenoids, saponins, and steroids that have an important role as antimicrobial (Astuti, 2011; Darsana et al., 2012; Garmana et al., 2014; Sutrisno, et al. 2014). Therefore, binahong leaves have the prospect to be used as a feed additive in broiler chicken feed. This study aims to determine the effect of binahong leaf meal on growth performance (feed intake, weight gain, and feed conversion) broiler chicken.

## MATERIALS AND METHODS

A total of 192 male DOC (Lohmann MB 202 strain) were randomly divided into 6 treatment groups with 4 replications consisted of 8 chickens. This research was conducted at Poultry Production Laboratory, the research was conducted in January until March 2017.

Treatment of TO: Basal feed, T1: Basal feed + Tetracycline 50 ppm (positive control), whereas T2, T3, T4, and T5 are basal feed added with binahong leaf meal 1, 2, 4, and 8%. This study used a single feed and given ad libitum. The research feed formulation used is shown in Table 1.

**Table 1.** Composition and calculation of nutrient content of the experimental feed

Feed ingredients	Amount (kg)					
	T0	T1	T2	T3	T4	T5
Corn	54.50	54.50	54.50	54.50	54.50	53.50
Bekatul	3.00	3.00	3.00	3.00	3.00	2.00
White pollard	3.00	3.00	3.00	3.00	3.00	2.00
SBM	13.50	13.50	13.50	13.50	13.50	12.50
MBM	8.00	8.00	8.00	8.00	8.00	8.00
PMM	9.50	9.50	9.50	9.50	9.50	9.50
Palm oil	3.00	3.00	3.00	3.00	3.00	3.00
DL-Met	0.25	0.25	0.25	0.25	0.25	0.25
L-LysinHcL	0.25	0.25	0.25	0.25	0.25	0.25
Calcium Phospate	0.50	0.50	0.50	0.50	0.50	0.50
Premix	0.25	0.25	0.25	0.25	0.25	0.25
NaCl	0.25	0.25	0.25	0.25	0.25	0.25
BinahongMeal	0.00	0.00	1.00	2.00	4.00	8.00
Tetrasiklin	0.00	0.00	0.00	0.00	0.00	0.00
Filler	4.00	4.00	3.00	2.00	0.00	0.00
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
ME (kcal/kg)	3041.05	3041.05	3061.73	3082.40	3123.76	3091.87
PK (%)	21.24	21.24	21.39	21.54	21.83	21.63
LK (%)	7.60	7.60	7.65	7.70	7.81	7.83
SK (%)	3.15	3.15	3.23	3.31	3.47	3.55
Ca (%)	1.48	1.48	1.50	1.51	1.53	1.58
P (%)	0.53	0.53	0.53	0.54	0.55	0.56
Lis (%)	1.40	1.40	1.40	1.40	1.40	1.36
Met (%)	0.66	0.66	0.66	0.66	0.66	0.65

Description: Calculation results, SBM : *soybean meal*, MBM : *meat bone meal*, PBM : *poultry meatbone meal*

There were 24 pens using litter floor (rice husk), and floor space were a 1 x 1 m equipped with feeding and drinking water. Other tools are weighing scales and chicken scales. Parameters observed were feed intake (g/head/35 days), weight gain (g/head/35 days), and feed conversion of broiler chickens.

This study used a completely randomized design (CRD) and the data obtained were analyzed of analysis of variance (ANOVA) and the different effects were testing by the Duncan's multiple range test (DMRT) (Gomes and Gomez, 2007).

## RESULTS AND DISCUSSION

Performance of broiler growth with addition of binahong leaf meal at level 1, 2, 4 and 8% into feed showed in Table 2.

**Table 2.** Average feed intake, weight gain and feed conversion of broiler chicken by addition of binahong leaf meal in feed (g/tail/35 days)

Treatment	Parameter		
	Feed Intake	Weight gain	FCR
T0	2883,48 ± 68,43	1577,70 ± 46,07 <sup>c</sup>	1,83 ± 0,10 <sup>b</sup>
T1	2870,35 ± 65,44	1787,25 ± 46,46 <sup>d</sup>	1,61 ± 0,03 <sup>a</sup>
T2	2955,53 ± 63,59	1628,50 ± 44,24 <sup>c</sup>	1,82 ± 0,12 <sup>b</sup>
T3	3015,76 ± 61,71	1754,78 ± 46,29 <sup>d</sup>	1,72 ± 0,05 <sup>ab</sup>
T4	3008,06 ± 17,94	1492,63 ± 56,55 <sup>b</sup>	2,02 ± 0,09 <sup>c</sup>
T5	2997,27 ± 23,08	1294,25 ± 69,75 <sup>a</sup>	2,32 ± 0,11 <sup>d</sup>

T0: Basal feed (negative control)

T1: Basal feed + tetracylin 50 ppm (positive control)

T2: Basal feed + 1% binahong leaf meal

T3: Basal feed + 2% binahong leaf meal

T4: Basal feed + 4% binahong leaf meal

T5: Basal Feed + 8,% binahong leaf meal

The results showed that the giving of binahong leaf meal at level 1, 2, 4 and 8% showed had no significant effect on feed intake, but showed significant differences effect ( $P < 0,01$ ) on weight gain and feed conversion of broiler chickens.

**Feed intake.** Binahong leaf meal up to the level of 8% had not affect on intake. The intake of broiler chicken were 2883,48 ± 68,43; 2870,35 ± 65,44; 2955,53 ± 63,59; 3015,76 ± 61,71; 3008,06 ± 17,94; and 2997,27 ± 23,08 g/head/35 days for T0, T1, T2, T3, T4, and T5 respectively. The intake of broiler chicken feed is determined by the nutrient composition in the ration. The inclusion of binahong leaf meal up to 8% does not disturb the nutrient content or disturb the digestibility so that the intake of feed from each treatment is no different.

**Weight gain.** The results showed that the provision of binahong leaf meal gives had significant effect on the weight gain. Basal diets with tetracycline 50 ppm (T1) resulted in higher body weight gain (1787.25 ± 46.46 g/head/35 days) than basal diets (T0) (1577.70 ± 46.07 g/35days). This showed that tetracycline 50 ppm is a good growth promoter for increase body weight of broiler chicken.

Binahong leaf meal at level 2% (T3) has the same performance as IT. The weight gain of T3 (1754.78 ± 46.29 g/head/35 days) matched as same as tetracycline 50 ppm (1787.25 ± 46.46 g/head/35 days). The increase in broiler chickens weight on T3 level 2% was due to the leaves of binahong have secondary metabolite content: total phenol 85,30 mg/kg, total flavonoid 47,40 mg/kg, saponin 66,00 mg/Kg, and alkaloid 2.60 mg/kg (Widodo, et al.,

2016). This secondary metabolite had potency with the tetracycline content of 50 ppm as anti-bacterial. The mechanism of action of secondary metabolites in inhibiting bacterial growth is by inhibiting the function of the bacterial cytoplasmic membrane, inhibiting bacterial cell wall synthesis, and inhibiting nucleic acid synthesis (Chusnie and Lamb, 2011).

The mechanism of action of fitobiotic in improving the performance of production starts from inhibition of growth of pathogenic microflora in the gut (Lopez et al., 2005). Inhibition of the growth of pathogenic bacteria will maintain the balance of microflora in the digestive tract that will indirectly stimulate the functions of the digestive organs and increase the absorption of nutrients in the feed (Ulfah, 2006). The increased absorption of nutrients will be followed by an increase in the rate of weight gain of broiler chicken produced.

Using of binahong leaf meal at level 4 and 8% (T4 and T5) that is  $1492,63 \pm 56,55$  and  $1294,25 \pm 69,75$  g/head/35 days had not effective either to inhibit bacteria and growth promoter so that weight gain on T4 and T5 was lower than (T1)  $1787.25 \pm 46.46$  g/head/35 days.

**Feed conversion ratio.** The results showed that the provision of binahong leaf meal had significant effect on the conversion of broiler feed. Basal diets with tetracycline 50 ppm (T1) reduced the feed conversion ( $1.61 \pm 0.03$ ) compared with basal diets (T0) ( $1.83 \pm 0.10$ ). Using of binahong leaf meal at level 2% (T3) can decrease FCR as same as tetracycline 50 ppm (T1) was ( $1,61 \pm 0,03$  and  $1,72 \pm 0,05$ ). This decrease of feed conversion means showing that binahong leaf meal at level 2% in the diets have function as anti bacteria and growth promoter in broiler.

Binary leaf meal at levels 4 and 8% (T4 and T5) could increased feed conversion ( $2.02 \pm 0.09$  and  $2.32 \pm 0.11$ ) compared with tetracycline 50 ppm T1 ( $1.61 \pm 0,03$ ; 1.82). The increase of feed conversion ratio indicates that the giving of binahong leaf meal at level 4 and 8% had no effective for broiler chicken diets.

## CONCLUSIONS

From this research can be concluded that:

1. Utilization of binahong leaf meal up to level 8% into the diets had no change intake.
2. The binahong leaf meal at level 2% in the diets potency equivalent with tetracycline 50 ppm.
3. Utilization of binahong leaf meal at level 4 and 8% into feed could decrease weight gain and increase conversion of broiler feed.

## REFERENCES

- Astuti, S.M., M. Sakinah, R. Andayani, and A. Risch. 2011. Determination of saponin compound from *Anrederacordifolia*(Ten) Steenis plant (Binahong) to potential treatment for several diseases. J. Agric. Sci. 3 : 224-232
- Cushnie, T.PT., and A.J. Lamb. Recent advances in understanding the antibacterial properties of flavonoids. International Journal of Antimicrobial Agents. 38 : 99-107.
- Darsana, I.G.O., I.N.K. Besung. dan H. Mahatmi. 2012. Potensi daun binahong (*Anredera cordifolia* (Tenore) Steenis) dalam menghambat pertumbuhan bakteri *E. coli* secara *in vitro*. Indonesia Medicus Veterinus. 1 : 337 – 351.

- Garmana, A.N., E.Y. Sukandar, and I. Fidrianny. 2014. Activity of several plant extracts against drug-sensitive and drug-resistant microbes. *Procedia Chemistry* 13 : 164 -169
- Gomez, K.A. and A. A. Gomez. 2007. *Prosedur Statistik Untuk Penelitian Pertanian*. Penerjemah E. Sjamsuddin dan B.S. Baharsjah. Edisi Kedua. Universitas Indonesia, Jakarta
- Jones, F.T. and S.C. Ricket. 2003. Observation on the history of the development of antimicrobials and their use in poultry feeds. *Poult. Sci.* 82 : 613-617.
- Sutrisno, E., I.K. Adnyana, E.Y. Sukandar, I. Fidrianny, dan T. Lestari, 2014. Kajian aktivitas penyembuhan luka dan antibakteri binahong (*Anredera cordifolia* (Ten.) Steenis, pegagan (*Centellaasiatica*(L.) Urban) serta kombinasinya terhadap bakteri *Staphylococcus aureus* dan *Pseudomonas aeruginosa* dari pasien luka kaki diabetes. *Bionatura-Jurnal Ilmu-ilmu Hayati dan Fisika.* 16 : 78 - 82
- Ulfah, M, 2006. Potensi tumbuhan obat sebagai fitobiotik multifungsi untuk meningkatkan penampilan dan kesehatan satwa di penangkaran. *Media Konservasi.* 11 : 109 – 114
- Widodo, N., Wihandoyo, N.D. Dono, dan Zuprizal. 2016. Potensi tepung daun binahong (*Anredera cordifolia* (Ten.) Steenis) sebagai fitobiotik pada pakan ayam broiler. *Prosiding Seminar Nasional Optimalisasi Teknologi Dan Agribisnis Peternakan Dalam Rangka Pemenuhan Protein Hewan Asal Ternak.* 42-5 : 165-170
- Windisch, W., K. Schedle, C. Plitzner, and A. Kroismayr. 2008. Use of phytogenic products as feed additives for swine and poultry. *J. Anim. Sci.* 86:40-148.
- Zuprizal. 2006. *Nutrisi Unggas*. Jurusan Nutrisi dan Makanan Ternak. Fakultas Peternakan Universitas Gadjah Mada. Yogyakarta.