

# THE ADDITION OF PROBIOTICS, HERBS, AND COMBINATION IN THE RATION TO SLAUGHTER WEIGHT, RATION EFFICIENCY, CARCASS AND INTERNAL ORGANS OF KAMPONG CHICKENS

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## Abstract

*Kampung chicken is Indonesian local chickens that widely maintained and are very popular in community, because of their distinctive taste and flavor. The growth of kampung chickens is slower than broilers, so to increase the growth rate it must be given a good ration and need to be added with feed additives. There are various kinds of feed additives including AGP (antibiotic Growth Promoter), probiotics or herbs such as ginger (*Zingiber officinale* varr *Rubrum*) and turmeric (*Curcuma domestica*). The addition of probiotics or herbs in kampung chicken rations has been carried out, but the research of addition of a combination of probiotics and herbs is still rare. This study aims to determine the effect of the addition of probiotics, herbs (ginger and turmeric) and their combination on slaughter weight, ration efficiency, carcass and internal organs of kampung chickens. The study used 100 one week old kampung chicks. The design used was a completely randomized design (CRD) with four treatments and every treatment was repeated 5 times. The kampung chicks divided into 4 groups that were given rations with the addition of different feed additives, there were P0 = basal ration (BR), P1 = BR + 1% probiotic, P2 = BR + (0.5% ginger and 0.5% turmeric) and P3 = BR + (Probiotic 0.5% + ginger 0.25%, turmeric 0.25%). Parameters measured were slaughter weight, ration efficiency, carcass, and internal organs. The data obtained were tested with variance analysis and Duncan's test. The results showed that the addition of probiotics, herbs (ginger and turmeric) had an effect on slaughter weight, ration efficiency and carcass weight, but had no effect on carcass percentage, internal organs weight and percentage.*

**Key words :** lo chicken, slaughter weight, ration efficiency, carcass, internal organ

## INTRODUCTION

Kampung chicken or local chickens are widely maintained and very popular with Indonesians, because of their distinctive taste and flavor. Local chicken growth is slower than broilers and is harvested at the age of 60 - 90 days with a slaughter weight of 0.8 - 1 kg. To increase the growth rate of Kampung chickens must be given good rations and need to add growth stimulants or feed additives. There are various kinds of feed additives such as AGP (antibiotic Growth Promoter), probiotic or herbs. Currently the use of AGP in Indonesia has been banned, so many breeders are using probiotics or herbal to increase livestock growth. So many herbs

that can be used as feed additives in Indonesia including red ginger (*Zingiber officinale* varr *Rubrum*) and turmeric (*Curcuma domestica*). The addition of probiotics or herbs in kampung chicken rations has been done, but the combination of probiotics and herbs is still rare, so it is necessary to do to determine the effect on its growth. Probiotics are feed additives in the form of live microbes that benefit the host by improving the balance of microorganisms in the digestive tract. Probiotics can increase the growth and efficiency of animal feed without causing the absorption of probiotic components in the animal's body, so that there are no residues and no mutations in livestock (Jan's, 2007). According to Gunawan and Sundari (2003), the use of probiotic doses from 25 mL / kg of feed given every day can increase body weight

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gain of broilers up to 6 weeks of age. Red ginger and turmeric contain essential oils that can regulate the release of HCL (Darwis et.al, 1991). The smoother regulation of HCl and pepsin secretion will lead to smoother digestion and absorption of food substances, thereby causing fast emptiness in gastric which will affect an increase consumption and growth. According to Setyanto at.al. (2012), ginger essential oil is stimulated to light up the mucous membranes of the large stomach and intestines, resulting in an empty stomach and encouraging chickens to consume feed. The essential oil in turmeric is effective in regulating the release of stomach acid so as not to overdo it and reducing the intestinal work that is too heavy in digesting food substances (Darwis et.al, 1991). Curcuminoids in turmeric function as antibacterial and improve the digestive process, stimulate the bile walls to release bile so as to accelerate fat metabolism and can kill harmful bacteria in the digestive tract (Pratikno, 2010). Turmeric has pharmacological effects on blood smoothing, anti-inflammatory, antibacterial, accelerates the excretion of bile, and is an astringent (Winarto, 2004). One of the main ingredients in turmeric is curcumin which functions to increase the production and excretion of bile and pancreatic enzymes. Curcumin is known to affect gallbladder contractions, and the essential oils contained in turmeric can stimulate an increase in bile production (Winarto, 2004). Curcumin is the main component of turmeric curcuminoids and has been found to have antioxidants functions (Chattopadhyay, 2004). Mariani (2018) stated that chickens fed with a combination of 0.5% probiotics and 0.5% turmeric flour tend to have high ration consumption.

## MATERIAL AND METHOD

This study used 100 local Indonesian chicks aged 7 days with an average initial weight of 94.04 grams and a coefficient of variation of 5.28%. Chicks were put into 20 cages and each cage was filled with 5 chicks. The probiotic used is Heriaky powder obtained from the Laboratory of Poultry Nutrition, Faculty of Animal Husbandry, Padjadjaran University. Heriyaki Powder

Probiotic contains a total of bacteria  $6.9 \times 10^8$  CFU/ml, lactic acid bacteria  $1.3 \times 10^8$  CFU/ml, and mold  $2.18 \times 10^5$  with a pH of 3.57. The microorganisms contained in this probiotic are *Candida ethanolica*, *Monascus fumeus* sp, *Bacillus subtilis* sp, *Lactobacillus cesei* sp, which have protease, amylase and cellulase enzyme activities (Supratman, 2017). Red ginger and Turmeric flour obtained from Multierbs Shops in Bandung. The cage size is 0.7 meters long, 0.7 meters wide and 0.7 meters high. Each cage unit is equipped with a feed bin with a capacity of one kilogram and a container for drinking water with a capacity of 800 ml. The research basal ration (BR) consisted of 55.5% corn; 17% bran; Soybean meal 16.3%; 10% Fish Flour and 1.2% Bone Flour with a nutritional composition of 2797 Kcal / kg of Metabolic Energy; 17.26% protein; Fat 5.15%; 4.6% Crude Fiber; Ca 1.01%; P 0.42%, methionine 0.34% and Lysine 0.77%. The needs of local chickens for growth are Metabolic Energy 2750 kcal / kg; 17% protein (Tuti Wisjastuti, 1996). There are 4 kinds of treatment rations, namely P0 = basal ration (BR); P1 = BR + Probiotic 1%; P2 = BR + 0.5% ginger and 0.5% turmeric; P3 = BR + Probiotic 0.5% + ginger 0.25%, turmeric 0.25%. Chickens are raised until the age of 70 days. Rations and drinking water were given ad libitum. Parameters measured were slaughter weight, Rations efficiency, carcass weight, carcass percentage, liver weight, heart weight and internal organ weight. The **design used** was a completely randomized design (CRD) with four treatments and every treatment was repeated 5 times.

## RESULTS AND DISCUSSIONS

The result of the research on kampung chicken fed rations that had been added feed additive, a probiotics, herb or the combination probiotics and herbs can be seen in Table 1. The results of the analysis of variance showed that the treatment had a significant effect ( $P < 0.05$ ) on the slaughter weight. In Table 1. can be seen that the slaughter weight at the chickens that P1 (given probiotics), P2 (given red ginger and turmeric) and P3 (the combination probiotics, red ginger and

turmeric) were significantly higher ( $P < 0.05$ ) than chickens that given P0 (Basal Ration). The slaughter weight of the treatment P1, P2 and P3 were not different. Probiotics and herbs in the P1, P2 and P3 treatment had given a positive effect to gastrointestinal of the kampung chicken. The addition probiotic at 1% and the active substance in ginger at 0.5% and turmeric at 0.5% in the ration, gave an effective effect on kampung chickens. Probiotics are microbes that can live or develop in the intestine and can benefit their host, either directly or indirectly from the

results of their metabolites (Kompiang, 2009). The research of Yusufahrizal (2018) result that probiotic application of 0.75% produces the highest final body weight and carcass percentage. The research conducted by Wiryawan (2003) showed that probiotic supplementation in broiler chicken feed, causes an increase in weight of 38.7% compared to with control. The addition of probiotics consisting of *Lactobacillus* spore genes into broiler feed containing mildly moldy maize increased body weight gain.

Table 1 The Effect of Addition Feed Additive to Kampung Chicken

No.	Parameter	P0	P1	P2	P3
1.	Slaughter weight (g)	719.00 <sup>a</sup>	807.80 <sup>b</sup>	854.40 <sup>b</sup>	846.40 <sup>b</sup>
2.	Ration Efficiency (%)	34.10 <sup>a</sup>	36.92 <sup>b</sup>	38.41 <sup>b</sup>	39.55 <sup>b</sup>
3.	Carcass weight (g)	505.00 <sup>a</sup>	563.40 <sup>b</sup>	622.20 <sup>b</sup>	597.60 <sup>b</sup>
4.	Carcass percentage (%)	70.38	69.66	72.88	70.60
5.	Liver weight (g)	18.60	19.80	18.60	18.80
6.	Liver weight (%)	2.59	2.54	2.17	2.22
7.	Heart weight (g)	4.00	4.00	4.20	4.40
8.	Heart weight (%)	0.56	0.51	0.49	0.52
9.	Gizzard weight (g)	23.80	24.00	26.40	24.20
10.	Gizzard weight (%)	3.20	3.07	3.09	2.86

Note : The similar superscript in the same row show non significant difference ( $P > 0.05$ )

P0 = Basal Ration (BR), P1= BR + Probiotics 1%; P2 = BR + red ginger 0,5% dan turmeric 0,5%; P3 = BR + Probiotics 0,5% + red ginger 0,25%, turmeric 0,25%

The increased slaughter weight in P2 (the ration which added 0.5% ginger and 0.5% turmeric) occurred because of the active substances in ginger and turmeric had a positive effect on chickens. According to Kafi (2017) nine composites found in ginger may bind to serotonin receptors which may affect gastrointestinal function. Red Ginger contains bioactive components in the form of essential oleoresin and gingerol which function to help in optimizing the function of body organs to stimulate the digestive system by controlling pH, enzyme activity and microbial activity. Herawati (2006) who conducted research on broiler chickens showed that giving red ginger at a level of 2% was able to affect weight gain. In line with previous research, Prabewi and Junaidi (2015) showed that kampung chickens that were given herbal treatment, one of which was turmeric, had higher body weight gain. Giving turmeric to broilers aged 2 weeks at a level (0.2%) can increase weight gain and show the most efficient value of ration

efficiency (Rahmat and Kusnadi, 2009). Giving turmeric flour as much as 0.5% in the research of Mondal et al. (2015) produced the highest body weight.

The results of the analysis of variance showed that the treatment had a significant effect on ration efficiency ( $P < 0.5$ ). In the Table 1. showed that ration efficiency of the treatments P1, P2 and P3 higher than the treatment P0 (control). Meanwhile between the treatment P1, P2 and P3 were not different. The addition of Probiotic in the rations also increase ration efficiency, because probiotics act on the intestines by providing conditions that will improve absorption of nutrients. According to Mountzouris (2010), probiotics can change the microbial population in the intestines of chickens, so they can improve intestinal function and health, improve the microflora in the cecum, and increase the absorption of nutrients. Bonner (1997) said that addition of the balance of microbes in the digestive tract, probiotics also function to increase immunity, support

growth, increase efficiency, and help optimize absorption in the body Durrani et.al. (2006) stated that broilers fed the ration turmeric at a level of 0.5% significantly increased body weight and ration efficiency.

The results of the analysis of variance showed that the treatment had significant effect ( $P < 0,5$ ) to carcass weight. The addition of probiotic and herbs (red ginger and turmeric) and their combination gave a better effect on carcass weight. It was seen that the carcass weight of P1 (ration was added probiotics 1%), P2 (ration was added ginger 0.5% + turmeric 0.5%) and P3 (ration was added Probiotics 0.5% + ginger 0.25%, turmeric 0.25%) was significantly higher than the treatment P0 (basal ration). The feed additive mixture is better because the active substances in each ingredient are complementary. The ration that given the addition of probiotics and herbs, its good to be given to livestock, because this mixture can work together in the digestion process of broiler chickens. The results of the study Nurhaeda. (2013) showed that the mixture probiotic and herbs (consisting of ken cur, garlic, ginger, turmeric, and ginger) resulted in higher body weight (1.25 kg), than the control which only had added probiotics (1.22 kg), the treatment had added probiotics + katuk leaves (1.10 kg), and the treatment had added probiotic + betel leaf (1.13 kg). The provision of complete probiotic herbal can be recommended because the probiotics used are supplements that contain live microbes and can have a beneficial effect on health, the digestive tract and increase the body's resistance to disease and hot weather so that it can increase feed consumption and ultimately increase carcass weight (Nurhaeda, 2013). Carcass weight is influenced by age, type of livestock (species), ration and body weight or body size (Priyatno, 2000).

The results of the analysis of variance showed that the addition probiotik, had no significant effect to heart, liver and gizzard weight or heart, liver and gizzard percentage of kampong chicken. The addition of probiotic, red ginger and turmeric and their combination does not give a negative effect to chicken's heart, liver and gizzard. It can be said that the condition of the heart, liver and gizzard of chicken is still normal. The heart

weight in this research are 4,0 – 4,2 gram or 0,49-0,56% from slaughter weight. This result is close than the results of the study of Wandono et.al. (2013) which 0.43% - 0.57%. According Putnam (1991) the percentage of heart of broiler is 0.42% -0.70%. The heart in this research is normal and the kampong chicken is healty. The liver weight in this research are 18,6-19,8 gram or 2,17 -2,59%. This results close to the research Wandono et.al. (2013) which is 2.04% - 2.15%. Frandson (1992) said that an increase in liver weight is caused by a disease or poison that is carried along with feed. The Percentage of liver weight in this studi still normal and can be said that the addition probiotics and hebs to the ration not give negative affect. The gizzard weight are 23,8 -26,4 gram or 2,86 – 3,2%. The result of this research is higher then the study by Wandono et.al. (2013) which a gizzard percentage 1.77% - 2.08% and Putnam (1991) with a gizzard percentage 1.60% - 2.30%. This is because of the ration of kampong chicken contain a higher fiber also lower in protein and energy then the ration of broiler chicken. According to Usman (2010) gizzard weight increase is due to an increase in fiber in the feed. This gizzard load to physically reduce the ration particle size so that the gizzard vein will be thicker thereby increasing the gizzard size. Weiss and Scott 1979 in Rosyani (2013) said that high fiber in the feed will increase the size of the gizzard because this organ is stimulated to work more physiologically in processing fiber both mechanically and enzymatically. The internal organs in this research not different in all treatment because the age is the same and has the normal condition. Internal organs are parts of the body that mature early and its mature about 3-4 weeks. This kampong chicken in this research is ten week old so the internal organ has mature and the percentage will shrink in line with the age of the chicken.

## CONCLUSIONS

The conclusion of this research is the addition of probiotics, herbs (ginger and turmeric) had an effect on slaughter weight, ration efficiency, carcass weight, but had no effect on carcass percentage and the weight and percentage of internal organs.

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