Abdominal Fat Percentage and Carcass Quality of Broiler Given Probiotics *Bacillus*spp.

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Abstract: The use of feed additive developed enough at this time with the intent to reduce the fat content in the broiler carcass.This study aimed to examine the effect of feed additives probiotic bacteria Bacillus spp against the percentage of abdominal fat and carcass quality of broiler. This research was conducted in the Laboratory of Poultry Production and Food Chemistry Laboratory Faculty of Animal Husbandry, Hasanuddin University, Makassar. The method used in this study is completely randomized design (CRD) consisting of three treatments: (P1) basal diet (negative control) (P2) basal diet + probiotic *Bacillus* spp 50 mg / kg of feed (8 x 10^8 CFU), (3) basal diet + probiotic *Bacillus* spp 60 mg/ kg of feed (11.2 x 10^8 CFU). Each treatment consisted of four (4) replicates containing four (4) day old chicken). Data were analyzed using analysis of variance. The results showed that giving the probiotic Bacillus spp insignificant effect (P> 0.05) on the percentage of abdominal fat and carcass quality. However, based on the results of against the calculation, the increase in the level of use of probiotic *Bacillus* spp tends to decrease the percentage of abdominal fat, as well as the percentage of carcass weight tended to be better.

Keywords: Probiotic;*Bacillus* spp; abdominal fat; carcass quality

1. Introduction

Food safety is a very important thing to consider in towards providing animal foods for public consumption, because it is closely associated with public health. Products of poultry origin like meat, eggs and processed products is one of the animal food sources for public consumption. The food can provide the energy and protein of human needs.

Food of livestock has a high nutrient content, especially the protein. The nutrients are needed by humans for growth, brain development, and repair damaged tissue. One type of source of animal protein is a broiler. Broiler breeds genetically have a rapid growth rate. Already, there are strains of broiler which has a period of faster growth, only by maintenance period of 30 days has been accepted in the market live weight. It is certainly a very important role in relation to the provision of food of animal. Therefore, efforts to raise broilers have the chance to constantly be developed.

Besides the quantity aspectthat needs to be improved, it is no less important to consider is the quality of the resulting meat products acceptable to consumers. One reason that is often taken into conside diet for consumers to consume meat broiler is its fat content. Fat on broiler is largely found in the abdominal part. High triglyserides on animal fatsmost often are associated

with an increase in LDL cholesterol and a decrease in HDL cholesterol (Musa *at al*., 2007). Saw this phenomenon the various attempts have been done by a nutritionist fodder to reduce the fat content in broiler meat, such as manipulating the energy and protein content of feed given.

In addition to the manipulation of feed that can be done, the use of feed additives (feed additive) is also fairly currently developing to reduce the fat content in livestock, especially broiler. Among feed additives are quite popular today conducted the assessment as an effort to reduce abdominal fat content is the use of microbes as probiotic. Giving probiotics in poultry has already begun to be developed as a way to help improve the performance of poultry livestock production (Febrisiantosa *at al.*, 2012), or used as growth promoters (Miliá*net al*., 2013).Therefore, through this study, the authors try to look at the effectiveness of the use of *Bacillus* spp as probiotic against abdominal fat content and quality of broiler carcasses.

2. Materials and Method

The study was conducted at the Laboratory of Poultry Production, Laboratory of Food Chemistry and Faculty of Animal science Hasanuddin University, Makassar. In this research, the tools used, i.e. scales, the knife, feed and drink containers, cages litter system 12 equipped with one piece swath of container feed, drinking water (gallons) and 40 watt incandescent lamp as heaters.

The materials used in this research are purebred chicken cattle (a broiler) with the code CP 707 a total of48 the tail of a strain of gender mix, home, sanitary materials vanand b1 and lasota, drinking water, diets basal, a bacillus spp probiotics. In a form of spore obtained from commercial sources.

This research using Completely Randomize Designconsisting of three treatments and four replaces. Every replace is consist four chickens the age of one day (DOC). The treatment was studied: (P1) basaldiet as control negative, (P2) basaldiet + *Bacillus* spp 50 mg/kg of feed (contain $8x10^8$CFU) and (P3) basal diet + *Bacillus* spp) 60 mg/kg of feed (contain 11.2x108CFU).

The composition of ransum basal research on the Table 1. Probiotics worn are spores *Bacillus* sppwith the level of $1.6x10^{10}$CFU/grams. A spore of *Bacillus* spp activated for an hour with regular water as many as 25 mililitres. Probiotics was activated sprayedinto one kilograms basal ransum.

Tabel 1.Basal diet composition

Components of feedstuff	Persentage
Corn	58.5
Palm meal	9
Soybealmeal	13.6
Coconut meat	2.1
Fish meal	12.3
Palm oil	1
MBM	0.1
Urea	3
Salt	0.1
Limestone	0.1
Vitamin Premix[1]	0.1
	0.2
Total	100
Crude Protein (%)	22.10
Metabolism Energy (Kcal/kg)	3.060

[1]**The vitamin premi supplied the following per kilogram of diet** Vitamin A 4000.000 IU, Vitamin D3 800.000 IU, Vitamin E 4.500 mg, Vit K3 450 mg, Vitamin B1 450 mg, Vitamin B2 1.350 mg, Viamint B6 480 mg, Vit B12 6 mg, Ca-d-P 2.400 mg, As folat 270 mg, As nikotinat 7.200 mg, kolin klorida 28.000 mg, DL-Met 28.000 mg, L-Lys 50.000mg, Fe 8.500 mg, Cu 700 mg, Mg 18.500 mg, Zn 14.000 mg,Co 50 mg, I 70 mg, Se 35 mg, dan antioksidan.

Maintenance and treatment research on purebred chicken cattle (a broiler) started from the age of 1 day (day old chicken) until the age of 42 days. Chicken (day old chicken) who arrive there cage of poultry shop first given drinking water (one liter) that has been given a total of 250 grams of sugar.

Vaccination done much as twice namely at the time of chicken was four days with NDB1 and the age of 21 days with NDLasota. Two days before and after vaccine done granting of vitamins (Vitachick) that does not contain antibiotic into the water to drink to prevent stress. Diet and drinking water given in ad libitum. Lighting in cage was given at 18.00. until06.00 the cage was use of fluorescent lamp 40 watts. Every plot cage system of litter given the lights.

The percentage of abdominal fat are calculated according to Waskito (1983), the percentage of carcasses are calculated according to Bundy and Diggins

3. Results and Discussion

Results of the study the use of probiotic microbe *Bacillus* spp in broiler against abdominal fat percentage, percentage weight of the carcass is presented in table 2. The results showed that the granting of youth probiotic *Bacillus* spp insignificant difference (P > 0.05) of the final weight, and percentage of abdominal fat percentage broiler carcass.

3.1 Percentage of Abdominal Fat

Abdominal fat is the fat that is around the abdomen, the organs in and around the cloacae. Fat that is formed in the area can be caused by a variety of factors, including excess energy consumption from normal needs for metabolism. The excess fat is used by livestock as energy reserves.But the presence of excess fat on the carcass has provoked angst on consumers, because it is considered may increase cholesterol levels in the blood so that the paint risk to the rise of heart disease.

One of the efforts made to reduce abdominal fat content, namely the use of the feed additive, such as medicinal plants, enzymes and probiotics. Though not much explanation is about the mechanism of the feed to affix abdominal fat but interesting to further examined with respect to food safety for consumers. In this study, the use of probiotic *Bacillus* sppstatistical test insignificant difference (P> 0.05) against abdominal fat percentage and carcass weight percentage, however, the use of *Bacillus* spp better than P1 (the basal diet).

Abdominal fat percentage tends to be lower with increasing levels of provision of probiotic *Bacillus* spp the basal diet probiotic *Bacillus* spp 60 mg/kg feed (P3). Various hypotheses have explained how the mechanism of probiotics in lowering levels of abdominal fat.

Table 2: The average value and percentage of abdominal fat percentage broiler carcass being maintained for 6 weeks

variable	**Treatment**		
	P1 **(**the basal ration**)**	**P2** **(**The basal ration probiotic *Bacillus*spp 50 mg/kg feed**)**	**P3** **(**The basal ration probiotic *Bacillus*spp 60 mg/kg feed**)**
Abdominal fat (%)	3.79± 1.59	3.18 ± 0.65	3.15 ± 0.64
Carcas (%)	63.75± 2.97	66.71 ± 1.76	66.20 ± 1.95

[ab]Means in the same row with different significantly (P<0.05)

In the present study probiotics *B. subtilis*culture influenced fatty acid synthesis in the liver of female broilers as indicated by a decrease in the activity of acetyl-CoA carboxylase, the rate limiting enzyme in fatty acid synthesis (Santoso *et al.*,

1995). Decline in acetyl-CoA activitycarboxylase stimulates the fat cells to hydrolyze and oxidize the fat, adding that the cells of fat will oxidize glucose; this means the adipose tissue (including abdominal fat) is becoming less involved in the synthesis and storage of fat in the process (Abu-Elheiga *et al*., 1997).

Abdominal fat percentage in the treatment of *Bacillus* spp 50 mg/kg of feed (P2), *Bacillus* spp 60 mg/kg of feed (P3), and 3.18 each 3.51 and higher 3.78 controls (P1) compared to the results of research conducted Waskito (1983), 2 to 2.5% of the weight of the carcass. According to Bidura *et al*., (2007) the one that affects the body's fat content is the composition of the ration given to the chicken. There is a possibility the ratio of nutrients and energy is more than a necessity.

3.2 Persentase of Carcass weight

Carcass broiler the broiler is part of life, after the cut, released its featherr, offal and fats secreted in abdominal, cut off the head and neck as well as both legs. According to Pangestinengsih *et al*., (2012), that the greater the percentage of weight of the carcass and the smaller percentage of abdominal fat, then the better the quality of the carcass because only a small part of the body of the cock and hens wasted a bit of fat.

On the study of probiotic *Bacillus* spp administration of 50 mg/kg feed had higher carcass weight of persentage (percent), while the lowest 66,708 is on the control treatment (63,746%). Percentage strain of Arbor Acres broiler carcass is 69.19% to 71.43% for males and 69.70% to 72.84% for females (Anonymous, 2008).

Carcass weight percentage related to the growth of the chicken and the chicken at the time of final weight is harvested. Chicken growth influenced by nutritional intake, and mainly protein consumed. The existence of microbes, both beneficial and pathogenic will make use of some substances from feed given to food including protein (amino acids). According to Sun, 2004; Zhang *et al*., (2005), that microbes pathogens in the gut (intestine) can produce toxins which may cause intestinal villus surface smooth gnarled and exploit nutrient essential for the growth of poultry, and suppress the growth of microbes that can synthesizes vitamin.

At the controls (P1) there is no provision of treatment feed additive (probiotic), so the numerical probability of pathogens in the gut (intestine) is growing. It looks at the treatment of P1 has a lower end of the weight as well as the percentage carcass weight. Different treatment of *Bacillus* spp both P1 and P2 has the percentage of weight of the carcass better. This may be caused by the absorption of nutrients in the small intestine. According to Khaksefidi and Ghoorchi (2006), that one of the benefits of probiotics is can increase absorption in the digestive tract of livestock feed.

The increased absorption of feed may be cause by the ability of probiotics inhibit the growth of pathogens that produce compounds that are toxic in the digestive tract. According to Khaksedifi and Ghoorchi, (2006), the compound can cause thickening of the walls of the digestive tract, so the amount of nutrient absorption is reduced and thereafter resulted in the growth of poultry will be disturbed.

Bacillus spp. has its privileges as a probiotic to add on livestock feed (pellets) that are created through the process of warming up for being able to live up to a temperature of 100^0C.Besides that, according to Teo and Tan (2006), *Bacillus* spp can also benefit symbioses with microbes in digestive tract of poultry livestock, such as *Lactobacillus*. Another privilege owned *Bacillus* spp are immune to the effects of bile salts which is one of the criteria for the microbes to become candidate probiotics (Teo and Tan, 2006).

4. Conclusion

The addition of probiotic*Bacillu s* spp 50 mg/kg of feed (P2) and *Bacillus* spp 60 mg/kg in the ration can reduce abdominal fat content and improved carcass weight as compared to the persentage ration control (P1). The best carcass quality is obtained at the treatment of the P2 because it has lower fat percentage and carcass weight percentage higher.

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