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DEVELOPMENT AND IMPROVEMENT OF THE QUALITY OF NATURAL FEED BROILER CHICKEN WITH THE ADDITION OF GARLIC LEAVES MEAL TO PRODUCE PRODUCTION PERFORMANCE, CARCASS QUALITY, AND HEALTHY MEAT QUALITY

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ABSTRACT

Garlic leaves contain a phytochemical compound, namely allicin which functions as an antimicrobial and antioxidant and can reduce cholesterol and fat in the body so that it can produce healthy chicken growth. Research on meat quality and productivity of broilers obtaining the garlic leaves meal percentage (R0=0; R1=2.5; R2=5.0; R3=7.5; P4=10%) in feed. This study used a completely randomized design (CRD) with The Honest Significant Difference (HSD) as an advanced test. The parameters observed were feed consumption, body weight gain, feed conversion, carcass percentage, and carcass component percentage (chest, upper thigh, lower thigh, back, wings, and abdominal fat). The results showed the addition of garlic leaves meal had a very significant effect ($P<0.01$) on protein digestibility, energy metabolism, and feed consumption, but had no effect ($P>0.05$) on body weight gain and feed conversion. Treatment had a significant effect ($P<0.05$) on the percentage of chicken breast carcass components, a very significant effect ($P<0.01$) on the upper thigh and lower thigh carcass components but had no effect ($P>0.05$) on carcass percentage, chicken back and wings. Treatment had a very significant effect ($P<0.01$) on the percentage of abdominal fat. In conclusion, the treatment gave excellent growth in broilers and produced healthier meat due to the low abdominal fat content.

Keywords: Garlic leaves meal, Production performance, Carcass component.

INTRODUCTION

Raising of chicken is a business whose products are mostly absorbed by the consumer community. Chicken meat is a product of the chicken farming business, which is consumed almost every day by the community, apart from being easy to obtain, the price is relatively cheap and affordable.

The main problem in chicken farming is feedstuff. Lack of feed often

occurs in several areas, especially during the dry season, and is a problem that must be overcome. The existing feedstuff still relies on imports, so the price of chicken feed is still overpriced. In the intensive livestock business, feed is a production cost of about 60-70%. The provision of feed raw materials is one of the obstacles to producing competitive poultry products.

Feed plays an important role in livestock metabolism such as for growth, maintenance of body condition, and production. Therefore, it is necessary to look for high-quality feed, but easy to obtain, continuously available, non-competitive with human needs, non-toxic and economical, so breeders must make efforts so that feed costs can produce optimal production. The use of non-organic feedstuff can cause microbial retention and antibiotic residues in the body of chickens. As a result, the resulting product is unhealthy and endangers the health of humans who consume it.

One way to anticipate this problem is to utilize traditional feedstuff. The use of traditional feedstuff has been widely used as animal feed including the use of clove leaf extract as a natural antibiotic that can be used as a substitute for synthetic antibiotics (Hafsah, et l. 2022), the use of garlic extract as an antibacterial which can prevent the body from attack by pathogenic bacteria (Yuli F.N., 2014) and many more.

Garlic contains more than 100 very useful secondary metabolites including alliin, alliinase, allicin, S-allyl cysteine, diallyl sulfide, and allyl methyl trisulfide (Challem, 1994). Allicin is the most abundant organosulfur compound in garlic. This compound will appear when garlic is cut or crushed. Allicin is an unstable compound and is not resistant to heat. These compounds mostly contain sulfur which is responsible for the taste, aroma, and pharmacological properties of garlic such as antibacterial, antifungal, antioxidant, and anticancer. The biological activity of garlic has been widely studied, one of which is antimicrobial, antioxidant, and anti-inflammatory (Borlinghaus, et al., 2014; Charu, et al., 2014). Active volatile components in spices arise after processing. The Nutrient Content of garlic extract, Protein 6.36%; Crude fat 0.50%; Carbohydrates 33.06%; Crude fiber 2.1%, and Energy 149 Kcal/g (USDA, 2016). The nutrient content of garlic powder Protein is 16.78%; Crude fat 4.11%; Carbohydrates 33.06%; Crude fiber 0.42% and energy 3.334 Kcal/g (Ahmad et al., 2017).

Garlic leaves contain a phytochemical compound, namely allicin which functions as an antimicrobial, and antioxidant and can reduce cholesterol and fat in the body, and scordinin can function as a growth booster because it can bind proteins and decompose them in the body. Nutrient content per 100g of garlic: Protein 7%; Fat 0.3%; Carbohydrates 24.10%; and 1.10% fiber. The nutritional content of garlic leaves meal, Protein 13.52%; Crude fat 2.87%; Crude fiber 24.83%, Energy 1463.66 Kcal; Calcium 0.48%, and Phosphate 0.33% (Dodit, 2010).

The presence of a phytochemical compound in garlic leaves, the alliance compound, will trigger the change of the precursor component to a sulfur component and it is this which is then reported to be efficacious in spurring growth (Wijaya, 1997). Scordinin is believed to provide or enhance body development. It is due to garlic's ability to combine with protein and decompose it so that the protein is easily digested by the body (Syamsiah and Tajudin, 2003). One of the feedstuffs that have the potential to be utilized, does not compete with the needs of the community, and can be easily cultivated and has not received attention is garlic leaves.

The nutrients contained in garlic leaves, if handled seriously can be used as a feedstuff, thereby reducing the high cost of feed, but so far it has not been used as a feedstuff in chicken feed without harming the growth performance of broilers.

MATERIALS AND METHODS

Livestock and Feed

A total of 100 broiler chickens one day old (DOC) were used in this study. The chickens are kept for five weeks and

will be fed according to the feed formulation used. Feed preparation (Table 1) is based on the nutrient content recommended by NRC (1994). Feed treatment in this study can be seen in Table 1.

Parameters and Analysis Data

Broilers were kept and fed with the formulation of feed for five weeks. the variable measurement was feed consumption, body weight gain, feed conversion, energy digestibility, protein digestibility, carcass quality, quality of carcass component, and abdominal fat. The research design was completely randomized design with five treatments and four repetitions. The percentage of addition of garlic leaves meal (0;2.5;5;7.5;10%). If there is a significant effect, will be analyzed by The Honest Significant Difference (HSD) test.

RESULT AND DISCUSSIONS

Protein digestibility and Metabolism Energy.

Protein Digestibility

The analysis of variance (Appendix 1) showed that the treatment with the addition of the percentage of Garlic Leaf Powder (GLP) in the feed had a very significant effect (P<0.01) on protein digestibility, with an average digestibility of 68.78 ± 2.17% - 75.95 ± 1.09%, the more GLP added to the feed, the higher the protein digestibility of R4 (75.95 ± 1.09%).

Research on the addition of boiled durian seed meal to the feed had a very significant effect (P<0.01) on protein digestibility of 73.44% (Sugiarto and Nuun, 2018). Research on the addition of centrifugal rumen fraction had a very significant effect (P<0.01) on protein digestibility 69.35 ± 0.99-74.32 ± 1.26 (Sugiarto et al., 2014). The digestibility value of protein feedstuff is divided into three (digestibility of low quality 50-60%; digestibility of medium quality 60-70% and digestibility of high quality above 70% (Tillman et. al. 1998). Judging from the digestibility of feed protein with the addition of garlic leaves meal, it has a higher digestibility, because it gives the aroma of the feed, so it is preferred by livestock and helps metabolize better digestibility. The aroma, taste, and texture greatly affect the palatability of feed (Sudiyono and Purwatri, 2007). Poultry acceptance is influenced by taste, texture, and smell, the consequences felt after food is swallowed and its behavior where birds have a gustative of taste buds sensory system on their tongue which can affect the taste of their food (Amrullah, 2003).

The result of The Honest Significant Difference shows that treatment R0, R1, R2, and R3 gives a different protein digestibility with treatment R4. The increased protein digestibility with the addition of garlic leaves meal, it is suspected that garlic leaves contain a phytochemical compound, namely allicin which functions as an antimicrobial antioxidant. The nutrient content of garlic leaves meal, Protein 13.52%; Crude fat 2.87%; Crude fiber 24.83%, Energy 1463.66 Kcal; Calcium 0.48%, and Phosphate 0.33% (Dodit, 2010).

Table 1. The Nutrient Content of Rations or Treatment Feed Materials.

Feedstuff	CP	CF	CF	ME (Ckal)	Ca	P
Corn	9,28	2,05	3,8	3370	0,02	0,08
Rice Bran	13,26	13,05	13	1630	0,07	0,22
Bungkil Kelapa	21,04	9,87	6,8	1540	0,19	0,60
Soybean meal	37,5	5,05	0,8	3510	0,29	0,27
Fish meal	50,2	1,03	2,0	3080	4,19	0,37
Garlic leaves meal[a]	13,52	24,83	2,87	1463,66	0,48	0,33
Top Mix	-	-	-	-	5,38	1,44

Table 2. Composition and Nutrient Content of treatment feed.

Feedstuff (%)	Treatment s				
	R0	R1	R2	R3	R4
Corn	56,0	56,0	56,0	56,0	56,0
Rice Bran	6,0	6,0	6,0	6,0	6,0
Bungkil kelapa	10,0	7,5	5,0	2,5	0,0
Soybean meal	10,0	10,0	10,0	10,0	10,0
Fish meal	17,0	17,0	17,0	17,0	17,0
Premix	1,0	1,0	1,0	1,0	1,0
Garlic leaves meal	0,0	2,5	5,0	7,5	10,0
Total	100	100	100	100	100
Nutrient content	R0	R1	R2	R3	R4
Crude protein (%)	20,38	20,19	20,01	19,82	19,63
Crude fat (%)	4,01	3,91	3,81	3,71	3,62
EM (Ckal/kg)	3013,60	3011,69	3010,21	3009,12	3009,73
Crude fiber (%)	3,60	3,97	4,35	4,72	5,09
Ca (%)	0,77	0,78	0,79	0,80	0,81
P (%)	0,21	0,20	0,19	0,19	0,18

Table 3. The average of protein digestibility (%) and Metabolism energy (Kcal/kg).

Digestibility	Treatments				
	R0	R1	R2	R3	R4
Protein**	68,78±2,17^{a}	69,30±0,85^{ab}	72,49±1,30 ^{ab}	73,54±1,05^{b}	75,95±1,09^{b}
ME**	2549,37±26,52^{a}	2602,61±32,87^{ab}	2656,08±46,43^{ab}	2725,36±48,56^{bc}	2793,31±53,53^{c}

Note: ** = had a very significant effect.

Table 4. The average of feed consumption (g), body weight gain (g), and Feed Coversion

Parameters	Treatments				
	R0	R1	R2	R3	R4
Feed Consumption**	3692,50±40,10^{a}	3793,68±58,18^{ab}	3831,50±51,84^{b}	3876,78±36,45^{b}	3893,45±54,16^{b}
Body Weight Gain^{ns}	1899,90±146,89	1955,08±168,96	2018,48±209,04	2065,48±168,46	2115,35±90,48
Feed converssion^{ns}	1,95±0,16	1,95±0,14	1,92±0,22	1,89±0,15	1,84±0,08

Note; ** = had a significant effect, ^{ns} non significant

Digestibility of Metabolism Energy

The results of the analysis of variance showed that the treatment with the addition of the percentage of Garlic Leaf meal in the feed had a very significant effect (P<0.01) on the digestibility of metabolic energy 2549.37 ± 26.52-2793.31 ± 53, 53. Research on the treatment of the addition of durian seed meal in providing digestibility of metabolic energy 2128.73 - 2474.06 Kcal/kg (Sugiarto et al., 2014).

Feed consumption is influenced by the nutrient content of the feed, especially the feed energy content (Scoot et al., 1992). Energy use is available for all purposes, including daily life needs, growth, and egg production. Excess energy will be stored as fat, and excess metabolic energy is not excreted by the chicken body, so the most efficient way of feeding chickens is to make feed balanced between energy levels and other feed substances (Wahju 2004).

The Honest Significant Difference (HSD) stated that the R0, R1, R2, and R3 treatments resulted in significantly different metabolic energy digestibility from the R4 treatment. Increased energy digestibility, it is suspected that garlic leaves contain a phytochemical compound, namely allicin which has function as an antimicrobial, and antioxidant. The nutritional content of garlic leaves meal, Protein 13.52%; Crude fat 2.87%; Crude fiber 24.83%, Energy 1463.66 Kcal; Calcium 0.48% and Phosphate 0.33% (Dodit, 2010).

Table 5. The average of carcass percentages and carcass component of broilers (%).

Parameters	Treatments				
	R0	R1	R2	R3	R4
Carcass percentages^{ns}	73,71±2,18	73,90±5,10	74,15±2,59	74,76±2,83	75,29±3,51
Carcass component:	35,48±0,66^{a}	36,59±1,5^{ab}	37,38±1,05^{ab}	37,60.±1,06^{ab}	37,93±0,72^{b}
- Breast*	12,60±0,29^{a}	13,11±0,65^{ab}	14,22±0,41^{ab}	15,12±0,76^{b}	15,98±1,29^{bc}
- Upper thigh**	10,83±0,86^{a}	10,98±0,42^{a}	12,53±0,34^{b}	12,69±0,26^{b}	13,95±1,22^{b}
- Lower thigh**	20,61±1,58	21,74±1,759,66±0,24	22,28±2,14	22,95±3,03	24,07±0,07
- Back ^{ns}	9,48±0,20		9,91±0,34	9,93±0,20	10,09±0,36
- Wings ^{ns}					

Feed consumption

Feed consumption is a very important factor because the capacity to consume feed is a limiting factor in feed utilization in addition to the feed palatability factor. The analysis of variance showed that the treatment of the use of garlic leaves meal up to a level of 10% in the feed had a very significant effect ($P<0.01$) on feed consumption. The higher level of the giving of garlic leaves meal, the higher the consumption of broiler feed. The lowest feed consumption was in treatment R0 = 3692.50g and the highest in treatment R4 = 3893.45g/head during the study. It can be interpreted that the addition of garlic leaves meal up to a level of 10% can be tolerated by broilers. Changes in palatability, especially smell and taste, occur in the ration due to the addition of garlic leaves meal have a significant effect on the consumption of broiler. The research conducted by Nuningtyas (2014) on broiler chickens with 35 days of maintenance, feed consumption ranged from 2663.8 - 2847.1 g/head/day.

One of the factors that influence the higher level of feed consumption is palatability. Palatability is the level of preference for livestock of feed. Physical appearance, especially color is the more important characteristic of feed and is a determinant factor in the choice of feed by livestock (Nuningtyas, 2014). In addition, the increase in feed consumption in the treatment feed, which received the addition of garlic leaves meal, was due to the active compounds in the form of allicin, selenium, and methylate trisulfide. The allicin compound is anti-bacterial and can prevent the body from being attacked by pathogenic bacterial infections. Methylallyl trisulfide prevents blood coagulation, while selenium works as an antioxidant that can prevent blood clots, blood flow becomes smoother so that metabolic processes are better, and appetite increases. The second possibility is due to the active component of allicin in garlic, which acts as an anti-microbial and anti-inflammatory. Allicin can fight infections by gram-negative and positive bacteria and can prevent damage to the small intestine (Rabinowitch and Currah, 2002). So that chickens fed with the addition of garlic leave meal can grow optimally because the active compounds of

garlic can inhibit the growth of harmful microorganisms in the digestive tract of chickens, so the utilization of nutrients by chickens can be optimal, and the growth will increase (Nuningtyas, 2014).

Body weight gain

One of the criteria for assessing whether livestock productivity is good enough is knowing the body weight gain of the livestock. The increase in feed consumption occurs due to the influence of the level of use of garlic leaves meal on feed consumption which will result in the appearance of body weight. The increase in feed consumption occurs due to the influence of the level of use of garlic leaves meal on feed consumption which will result in the appearance of body weight. The analysis of variance showed that the treatment of giving garlic powder up to a level of 10% in the feed had no significant effect (P>0.05) on broiler body weight gain, meaning that the addition of garlic leave meal into the feed did not have a significant effect on the increase in body weight gain. The higher the level of garlic leaves meal additions, the higher the body weight gain of broilers. The lowest body weight gain was in treatment R0 = 1899.90 g, and the highest was in treatment R4 = 2115.35g/head during the study.

Increasing feed consumption in this study did not give significant results on body weight gain. The use of garlic leaves meal that is too high has not resulted in maximum body weight gain. Giving garlic leaves meal at a level of 7.5 – 10% has a high consumption, but the resulting body weight gain is not optimal because the protein in garlic leaves meal at a level that is too high is not used efficiently to increase body weight gain. It is because the nutrient content consumed does not meet the needs resulting feed quality decrease, and the achieved body weight gain is not optimal. It means that the content of feed substances is less efficiently utilized by the body to increase body weight gain. It may be due to the less optimal work of the active compound scordinin found in garlic leaves meal. Compounds in garlic are volatile, which means that they evaporate easily when there is a heating process (Bintang and Muhammad, 2007).

Feed conversion

Giving garlic leaves meals from the lowest P1 (2.5%) to the highest P4 (10%) showed a decrease in feed conversion value compared to the control treatment. The results of the analysis of the various effects of giving garlic powder up to a level of 10% had no significant effect (P> 0.05) on feed conversion. The results showed that the highest feed conversion was in treatment R0 (1.95), and the lowest was in treatment R4 (1.84). Feed consumption R0 was low and resulted in low body weight gain. The addition of 10% garlic leaves meal gave the best contribution compared to other treatment feeds because the increase in feed consumption in the treatment was offset by an increase in body weight so that feed conversion was low while R0 was not given garlic leaves meal had a higher feed conversion value than giving garlic leaves meal to a level of 10%. It is due to the feed consumed being less efficiently utilized in body weight gain. Feed conversion is the ability of livestock to convert feed into several products in a certain time unit, both for meat and egg production (Anggorodi, 1994).

There was a decrease in feed conversion for all treatments with the addition of garlic leaves meal. But able to produce the most optimal body weight gain so that the lowest feed conversion is obtained. It shows that in terms of the active compounds in garlic, it acts as an antioxidant and prevents the coagulation of red blood cells. Garlic also contains active ingredients belonging to essential oils, namely allicin and scordinin (Amagase, 2006). Scordinin plays a role in providing strength and growth for the body. It shows that the garlic leaves meal also acts as a natural antibiotic, where people can consume meat safely to avoid the effects

of drug residues due to excessive use of antibiotics.

Carcass Percentages

The results variance analysis showed no significant effect (P>0.05) on broiler carcass percentage 75.81 ± 3.58-78.04 ± 2.80. The treatment of adding mustard greens meal 0-20% had no significant effect (P> 0.05) on the percentage of broiler carcasses 69.99-77.79% (Jola et al., 2019). Research on the addition of 0-10% banana weevil meal had a significant effect (P<0.05) on the percentage of broiler carcasses aged five weeks 61.32+2.81-67.72±3.63 (Dwi et al., 2019). The addition of market waste vegetables increases farmers' profits and reduces environmental pollution, the more vegetable waste meal is given, and the carcass presentation will increase more. The broiler carcass percentage is 73% (Lesson and Summers, 2008). Treatment of 5% Fermentation Rations Gayo Coffee Peel Flour and Probiotics and the addition of 1% probiotics significantly different (P<0.05) Carcass percentage 69.59 ± 2.03-73.29 ± 1.28%.

Percentage of Chicken Breast Carcass Components

The result of variance analysis showed that the treatment had a significant effect (P<0.05) on the chicken breast carcass component 35.48 ± 0.66-37.93 ± 0.72. Research on feed addition containing palm kernel meal resulted in a chicken breast percentage of 31.26-32.26% (Oktavia, 2013). The carcass percentage parts are closely related to carcass weight, while carcass weight is affected by live weight (Suswono et al., 1992). The more given garlic leaves meal, increase the percentage of chicken breast carcass.

The Honest Significant Difference (HSD) test stated that the R0, R1, R2, and R3 treatments were significantly different from the R4 treatment. Increasing the percentage of chicken breast, it is suspected that garlic leaves meal contains a phytochemical compound, namely allicin which functions as an antimicrobial, and antioxidant, so feed consumption increases and increases the percentage of chicken breast carcass components. Feed restriction treatment had no significant effect (P>0.05) on chicken breast percentages 39.16±0.57-42.69±0.38% (Mohammed et al., 2020). The effect giving garlic, black pepper, and red chili in the feed had a significant effect (P<0.05) on broiler carcass quality, with a breast percentage of 33.8-35.1% (Nikola et. al. 2016)

Percentage of Upper Thigh and Lower Thigh Carcass Components

The results of the analysis of variance, the treatment had a very significant effect (P <0.01) on the percentage of the carcass component of the chicken upper thigh 12.60 ± 0.29-15.98 ± 1.29 and the lower thigh 10.83 ± 0.86-13, 95±1.22. The percentage of chicken thigh carcass components is 23.43-29.93%. The effect of giving garlic, black pepper, and red chili herbs in the feed had a significant effect (P <0.05) on broiler carcass quality, with a thigh percentage of 31.4-32.6% (Nikola et. al., 2016). Feed restriction treatment had no significant effect (P>0.05) on the percentage of upper thigh 14.50□1.35-13.00□2.33% and lower thigh 10.27□0.27-16.85□1, 85% (Mohammed et al, 2020).

The Honest Significant Difference (HSD) results stated that the R0, R1, R2, and R3 treatments were significantly different from the R4 treatment. Increasing the percentage of thighs, due to the presence of antimicrobials, so that the feed will be digested better and have a very real effect on increasing the chicken thighs percentage. Research on the treatment of 1.0% black pepper supplementation in the feed had a significant effect (P<0.05) on the percentage of chicken thigh carcass components (Tazi et. al., 2014).

Percentage of Chicken Back Carcass Components

The results of variance analysis, treatment had no effect (P>0.05) on the percentage of chicken back components 20.61 ± 1.58-24.07 ± 0.07%. Giving

chicken herbs produces about 20% of the back carcass (Zaenab et al., 2005). The effect of giving garlic, black pepper, and red chili herbs in the feed had a significant effect (P <0.05) on broiler carcass quality, with a percentage of backs of 20.9-21.8% (Nikola et al., 2016). In its growth, chickens need natural herbs that can help their digestive metabolism to increase chicken body weight, carcass percentage, and chicken back carcass components (Sari et al., 2014). The use of garlic leaves meal flour increases the percentage of chicken carcass components which are higher, because it contains protein, vitamins, energy and antimicrobials, which play a role in carbohydrate metabolism and chicken growth.

Percentage of wings carcass component of Broilers

The variance analysis result had no effect (P>0.05) on the percentage of chicken wing components 9.48 ± 0.20-10.09 ± 0.36%. Feed restriction treatment had no significant effect (P>0.05) on the percentage of chicken wings 9.26±0.31-10.20±0.71% (Mohammed et al, 2020). The effect of giving garlic, black pepper, and red chili herbs in the feed had a significant effect (p <0.05) on broiler carcass quality, with wing percentages of 11.4-12.6% (Nikola et al, 2016). The percentage of chicken wings ranges from 10.52-13.75% (Helena, 2011).

The variance analysis result treatment had a very significant effect (P<0.05) on the abdominal fat content of broilers 4.49 ± 0.19-5.82 ± 0.40 mg. The addition of 0-10% banana weevil meal had a very significant effect (P<0.01) on the percentage of chicken abdominal fat 1.21 ± 0.09-2.24 ± 0.30 mg (Dwi et al., 2019). Salam (2013) the broiler carcass abdominal fat percentage ranged from 0.73%-3.78%. Treatment of Fermented Rations 5% Gayo Coffee Peel meal and Probiotics and the addition of 1% probiotics Not significantly different (P>0.05) Percentage of abdominal fat 0.48 ± 0.23-0.10 ± 0.37%, there was a decrease in the percentage of fat broiler stomachs. Abdominal fat is body fat stored in the abdominal cavity, including the fat that protects the gizzard. Fat deposits in the body of chickens, including abdominal fat, are the result of metabolic processes of nutrients in the body of chickens that exceed the level needed by the body of the chicken itself, both as maintenance and for reproduction (Oktaviana et al., 2010). It is due to the energy content in the rations is not too different, so the level of energy storage in the body in the form of fat is the same between treatments. Reducing the energy value of the ration, or increasing the percentage of protein, will increase the growth rate and increase the amount of fat.

HSD test results show that treatments P1, P2, P3, and P4 resulted in a lower percentage of abdominal fat than treatment P0. Effect of andaliman (zanthoxylum acanthopodium DC) supplementation in rations. Very significant effect (P>0.01) on the abdominal fat content of chickens from 0.83 to 0.06-0.46 to 0.06% (Pajri et al., 2019). Fiber can reduce fat absorption so that fat deposition into the chicken body can be suppressed (Sutardi, 1992). Mahfudz et al., (2000) to digest crude fiber requires a lot of energy so that chickens do not have excess energy to be stored in the form of fat.

Table 5. The average of abdominal fat content (mg/100g).

Fat Percentage	Treatments				
	P0 50:0	P1 40:10	P2 30:20	P3 20:30	P4 = 10:40
Abdominal Fat**	5,82±0,40	5,74±0,22	5,24±0,16	4,84±0,24	4,49±0,19

Note: ** had a very significant effect

CONCLUSION

Treatment of the addition of Garlic Leaves meal in the feed gave higher protein digestibility and metabolic energy, thereby increasing feed consumption, body weight gain, feed conversion, and an increase in the percentage of breast, upper thigh, and lower thigh carcass components. The treatment lowered the abdominal fat content lower than the control

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