Using garlic (*Allium sativum*) as a feed additive can help hybrid ducks lose belly fat

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Abstract. The purpose of this study is to ascertain the effects of using garlic (*Allium sativum*) as a feed addition at various percentages on hybrid ducks' performance, energy usage, carcass, and belly fat. In this investigation, 80 was a randomized block design (RBD) with 5 replications and treatments. Treatments with garlic flour included A (0%), B (0.5%), C (1%), and D (1.5%). Energy consumption, carcass percentage, and belly fat percentage were the variables that were measured. The findings demonstrated that the performance, energy consumption, and carcass percentage of hybrid ducks were not significantly affected by the use of garlic flour as a feed addition at various percentages. Yet there was a hybrid ducks' belly fat showed a significant influence (P<0.05), however the study's findings revealed that adding garlic meal at a 0.5% percentage had the best effects on calorie intake. Using garlic meal, 1.0%.

1 Introduction

The characteristics of duck meat are tough or chewy meat, rancid smell and high fat. Duck meat that contains fat and high cholesterol is less attractive to consumers because it can cause diseases such as hypercholesterolemia, hyperglycemia, heart disease and stroke. The development of ducks can be done by utilizing the potential of local livestock resources, one of which is Hybrid ducks (Peking x local). Duck breeders in Indonesia have developed broiler ducks that have a fast growth rate, namely hybrid ducks with a short maintenance period of 45 days. The hybrid duck used is a cross between a Peking duck and a Pitalah duck. Pitalah ducks have high body weight and more egg production. The female Pitalah duck weighs 1.4 kg, the number of eggs is 180-200 eggs/year/head and each item weighs between 64-70 grams. The male has a weight of 1.6 kg. The lack of Pitalah ducks has a slow body weight gain so it is not suitable to be used as broiler ducks. Peking ducks are broiler ducks that have fast body weight gain, but low egg production and hatchability, making it difficult to develop. Crossing Peking ducks with Pitalah ducks can produce quality final stock broiler ducks. Day Old Duck (DOD) Hybrid ducks show varying coat color characteristics, ranging from white, brown, and a mixture of brown and white with a distinctive pattern of ribbon.

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Feed is the biggest component that must be met in duck farming. In accordance with the opinion of Ranto [1], the key to success in duck rearing lies in the amount and method of giving Feeds. The Feed given must be highly nutritious and support growth. When provided feed with a high energy level, ducks will consume less of it. If the content of food ingredients, particularly protein, is not taken into account, a shortfall will develop that has a negative impact on production. According to Purba et al. [2] the advantage of ducks compared to chickens is that ducks have the ability to digest crude fiber in feed.

Feed additives or feed supplement are usually used in the Feed mix. The use of feed additives aims to increase productivity, health and nutritional status of livestock. Several types of feed additives commonly used by duck farmers, especially broiler ducks, are antibiotics, enzymes, probiotics, phytobiotics, organic acids, flavors and antioxidants. Garlic (*Allium sativum*) has bioactive activities including antibacterial, antifungal, antiviral, anthelmintic, antioxidant, anti-cancer and bioactive substances. The use of phytobiotics for feed mixtures can inhibit the growth of pathogenic bacteria in the feed, so that there are more bacteria other than harmful ones in the meal. According to Sjofjan [3], bacteria that are not pathogenic can create enzymes that can digest crude fiber, protein, fat, and can detoxify toxins. This is certainly very helpful in the digestive process of feed in livestock, so that the feed consumed can be used optimally for growth.

Garlic (*Allium sativum*) is an herbaceous plant whose undersides are cloves, joined to form large white tubers. Garlic is one type of tuber vegetable that has long been known and grown in various countries in the world. Based on data from a survey of vegetable crop production in West Sumatra [4], the West Sumatra garlic harvest area in 2020 is 646 hectares with a production of 4906.30 tons. The phytochemicals found in garlic help people consume more protein, water, and other nutrients. These phytochemicals can stop dangerous germs from developing in ducks' digestive tracts, allowing for the best possible food use and accelerating development. One of the compounds contained in garlic is scordinin, such as the enzyme oxido-reductase. In garlic, scordinin functions as an effective growth-promoting enzyme in the germination process and root removal. Scordinin is able to increase body development because scordinin is able to combine with proteins and break them down [5]. If allicin is an eradication of disease for people who eat garlic, then it is scordinin that plays a role in providing strength and body growth [6].

Allicin, allyl, and diallyl sulfide, which have been identified as active components from garlic, have the ability to prevent the growth of a variety of bacteria. Allicin in garlic is able to kill microbes that cause mold growth, and serves to reduce fat and cholesterol, so it has the potential as a feed additive for animal feed [7]. In addition to allicin, garlic also has other compounds that are efficacious as drugs, namely allil. Most allyl compounds are found in the form of diallyl sulfide, which is efficacious in fighting degenerative diseases, has antibiotic power and activates the growth of new cells.

The allicin element in garlic flour that contains sulfur is able to shed cholesterol and fat. Garlic contains a lot of fiber has the ability to break down fat and drag it out of the body, besides allicin along with unabsorbed food ingredients will stimulate bowel movements in breaking down food and excreting it. The rest is as feces, resulting in regular bowel movements [5].

In order to increase consumer interest in duck meat by seeking to reduce fat content and increase protein content of duck meat, one of them is by adding garlic flour. According to the description given above, the author wants to study the effects of administering different doses of garlic in the form of flour. The use of garlic flour in Feeds is expected to improve the performance of ducks. According to Rukmana [8] the best body weight gain was given with 0.04% garlic flour, namely: 1519.16 g/head. The best production performance came from adding garlic flour to broiler chicken feed at a level of 0.04%. Another study revealed how adding up to 2% of each of shrimp waste or garlic flour might boost egg production,
but not with a combination of the two. Shrimp waste can improve the yolk color score whereas garlic flour or shrimp waste are equally efficient in reducing egg cholesterol [9].

2 Method and materials

2.1 Materials

The study's duck subjects were hybrid ducks (Peking x Local Pitalah) as many as 80 tails obtained from local breeders in Payakumbuh. Data collection starts from week 3 to week 10.

2.2 Method

Four treatments were utilized in the Randomized Block Design (RBD) approach in this investigation. namely: Giving garlic in Feeds as much as 0%, which was referred to as A, (control). Giving garlic in Feeds as much as 0.5%, which is called B. Giving garlic in Feeds as much as 1%, which is called C. Giving garlic in Feeds as much as 1.5%, which is called D. The collected data were statistically examined for variety, and after determining that the variance analysis was substantially different (P>0.05), additional testing was conducted using Duncan's Multiple Range Test (DMRT), which was based on Steel et al. [10].

The mathematical model of the Randomized Block Design (RBD) is:

\[ Y_{ij} = \mu + \tau_i + \beta_j + \epsilon_{ij} \]

Information:
- \( Y_{ij} \) = Response or observation value of treatment i and level factor of garlic flour concent
- \( \mu \) = General mean.
- \( \tau_i \) = Effect of Treatment to i
- \( \beta_j \) = Group Effect to j
- \( \epsilon_{ij} \) = Effect of error in treatment i and replication I to j
- \( i \) = A,B,C,D
- \( j \) = 1,2,3,4,5

2.3 Observed variables

Performance was measured by feed intake, namely the feed consumed during the trial, and it contained grams of units. Increase in Body Weight, which is measured in grams and results from comparing the study's starting weight to the end weight. Conversion of Feeds, namely the division between Feed consumption and body weight growth during the study.

2.3.1 Energy intake

The formula used to calculate energy intake is as follows:

\[ \text{Energy intake} = \text{Feed energy content (kcal/kg) \times Feed consumption (g)} \]

2.3.2 Carcass percentage

The formula used to calculate the carcass percentage is as follows:
Before to slaughter, the ducks were weighed to determine their live weight, then after they had been dissected and all organs save the kidneys and lungs had been removed, they were weighed to determine their carcass weight.

### 2.3.3 Stomach fat

The layer of fat that clings between the abdominal and intestinal muscles is separated from the layer that surrounds the gizzard to determine the proportion of belly fat. By comparing the weight of belly fat with live weight multiplied by 100\%, the percentage of belly fat was determined.

Determination of belly fat is calculated according to Waskito [11] as follows:

\[
\text{Abdomen Fat (\%)} = \frac{\text{Belly fat}}{\text{Live weight}} \times 100\%
\]

### 2.3.4 Feed consumption (g/head/week)

Consumption. feed is the feed consumed during the study, and has units of grams. Feed consumption data was obtained by weighing each feed given to the ducks, and the remaining feed every week.

\[
\text{Feed Consumption (g/head/week)} = \text{amount of feed given} – \text{leftover feed}
\]

### 2.3.5 Body weight gain (g/head/week)

Body weight gain is the result of reducing the final weight with the weight at the beginning of the study, and has units of grams. Weighing the ducklings’ weight every week and deducting the weight from the previous week during the maintenance period in the cage obtained body weight growth data.

\[
\text{PBB (g/head/week)} = \text{ultimate body weight minus the starting weight}
\]

### 2.3.6 Conversion feed

The partition of feed consumption and body weight gain during the trial leads to conversion. Data on conversion values are provided by dividing the feed consumption given to the ducks by the weight growth of the ducklings during the study. The Conversion Value is formulated as follows.

\[
\text{Conversion} = \frac{\text{Feed consumption}}{\text{Weigh growth}}
\]
3 Conclusion and results

3.1 Treatment's impact on energy intake, carcass percentage, abdomen fat hybrid ducks

Average caloric intake, carcass and belly fat percentages in different Feeds with the energy contained in the Feed varies resulting in differences in energy intake, which as seen in Table 1.

Table 1. The hybrid ducks given garlic had an average weekly calorie intake, a proportion of carcasses, and belly fat.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Energy Intake (kcal/head/week)</th>
<th>Carcass (%)</th>
<th>Belly fat (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (without garlic flour)</td>
<td>2459,21</td>
<td>65,90</td>
<td>2,13&lt;sup&gt;A&lt;/sup&gt;</td>
</tr>
<tr>
<td>B (garlic flour 0.5%)</td>
<td>2428,09</td>
<td>66,82</td>
<td>1,44&lt;sup&gt;B&lt;/sup&gt;</td>
</tr>
<tr>
<td>C (1% garlic flour)</td>
<td>2416,86</td>
<td>63,77</td>
<td>1,21&lt;sup&gt;B&lt;/sup&gt;</td>
</tr>
<tr>
<td>D (1.5% garlic flour)</td>
<td>2379,12</td>
<td>62,59</td>
<td>1,06&lt;sup&gt;B&lt;/sup&gt;</td>
</tr>
<tr>
<td>Mean</td>
<td>2420,82</td>
<td>64,77</td>
<td>1,46</td>
</tr>
<tr>
<td>SE</td>
<td>17,92</td>
<td>1,34</td>
<td>0,17</td>
</tr>
</tbody>
</table>

Description: SE = Standard Error
ns stands for non-significant or no impact (P > 0.05).
A,B = different superscripts showed an extremely substantial impact (P < 0.01)

The average calorie intake obtained after the study ranged from 2379.12 to 2459.21 (Table 1), which was not significant, additionally with garlic flour in the Feed had no appreciable impact. on energy intake. This can indicate that the garlic flour applied to duck feed is up to 1.5% without changing energy intake. Energy intake in this study was lower than [12] in kamang the adding of chicory flour to the ducks, which ranged from 2489.32 to 2698.03. With different doses it does not result in a significant difference in energy intake, because the garlic flour consumed by hybrid ducks has phytochemical compounds, in which there is an allinase compound that will trigger the change of precursor components into sulfur components and this is then efficacious for maximizing energy consumption for basic life, free activity, activity and reproduction. Thus minimizing excess energy that will become fat.

The amount of protein and calorie consumed is almost identical. The metabolic energy contained in the Feed was almost the same, and the consumption of ducks in each treatment was the same, resulting in the treatment of giving garlic flour to the energy intake which had no significant effect. If the poultry is given a Feed that has sufficient nutritional content during its growth period, the feed consumption is only to meet its energy needs per day. Harris [13], reported that Allin, allicin, and diallyl disulfide are the active components that are derived from garlic and have the ability to stop the growth of several microorganisms. The increased growth of ducks will cumulatively increase the need for nutrients and as a logical consequence the ducks will increase the consumption of Feeds and other nutrients.

The average carcass percentage obtained during the study ranged from 62.59 to 66.82%. (Table 1) which was not significant, the proportion of carcasses was unaffected greatly by the inclusion of garlic flour in the feed. This might mean that garlic meal can be utilized up to 1.5% in duck Feeds without changing the carcass. The proportion of corpses in the study was higher than [14] which ranged from 53.10 to 57.67% in 10-week maintenance treated with temulawak flour. The difference in the various therapies applied raised questions about the study's findings.
Bidura [15], Allicin, scordinin, allyl, and diallyl sulfides, which are the active components derived from garlic, can prevent the growth of a variety of bacteria. So that the absorption of nutrients is maximized because the disturbing microbes in the digestive tract are reduced. The weight of the duck’s carcass increases with its overall weight. Zulkifli et al. [16], stated that giving garlic as much as 0.5% can increase the ratio of feed consumption because it contains allicin, an organosulfur compound obtained from garlic which can stimulate intestinal performance thereby improving digestion and increasing growth.

The ration in this study were prepared with balanced protein and energy. So that the feed does not have a significant effect on growth and also carcass weight. This is in line with the claim that a balanced energy and protein diet for ducks has no impact on their conversion value or ultimate weight [17]. Live weight and carcass weight are inversely correlated; the higher the slaughter weight, the higher the resulting carcass weight, and vice versa. The low cutting weight will affect the carcass percentage to be low as well, because more pieces are necessary when reducing weight is low. wasted. According to Iskandar et al. [18], the aging of ducks as measured by their age of 5 to 10 weeks brought an increase in the carcass percentage of 50 – 58% to 59 – 62%.

Proportion of belly fat in hybrid ducks showed that the mean ranged from 1.06 to 2.13%. The highest average percentage of belly fat was found in treatment A (0% garlic flour) which was 2.13%, nonetheless, the lowest average % of belly fat was discovered during therapy D (1.5% garlic flour) which was 1.06%. Based on the analysis' findings of diversity showed that the effect of giving garlic with different percentages had a tremendous impact. effect (P<0.01) on the percentage of belly fat in hybrid ducks. This shows that in this study the administration of garlic flour in the feed resulted in different abomen fat percentage results but still within normal limits.

The outcomes of the DMRT additional test revealed that the proportion of belly fat in treatment A (0% garlic flour) was very significantly different from B (0.5% garlic flour), C (1% garlic flour) and D (1.5% garlic flour). garlic. This shows that the administration of garlic flour in the feed can reduce the percentage of belly fat in hybrid ducks. Based on the average's findings abomen fat percentage of hybrid ducks in Table 1. There was a reduction following therapy. A 2.13%, treatment B 1.44%, treatment C 1.21%, treatment D 1.06%. The administration of garlic flour in the hybrid ducks' feed can be demonstrated to lower their proportion of belly fat.

This proportion of belly fat is higher than [19] research which ranges from 0.66 to 1.37%, the proportion of belly fat male nearby ducks given 6% garlic leaf flour and lower than [14] which ranges from 1.4 – 1.8% in 10-week maintenance treated with temulawak. If as compared to research findings conducted. The feed given during maintenance is one of the factors that went into various chemical and physiological activities that convert feed nutrients into animal body substances. The allicin element in garlic flour that contains sulfur is able to shed cholesterol and fat. Garlic contains a lot of fiber has the ability to break down fat and drag it out of the body, besides allicin along with unabsorbed food ingredients will stimulate bowel movements in breaking down food and excreting it. The rest is as feces, resulting in regular bowel movements [5].

When food enters the intestine, the intestine will experience contractions, which stimulate the release of the hormone cholecystokinin. This hormone stimulates the gallbladder and produces bile that contains salt which functions to emulsify fat into fat globules with a smaller size. The smaller size facilitates the process of hydrolysis of fat by lipase produced by the pancreas. Fatty acids will be digested and then broken down to produce energy or stored as energy reserves. The process of fat metabolism mostly occurs in the intestines and also in the liver, muscle cells and fat cells are used as energy and as energy reserves.

Fat deposition in the body occurs through the process of lipogenesis. Lipogenesis is a process of fat deposition and includes the process of fatty acid synthesis and then triglyceride
synthesis that occurs in the liver in the cytoplasm and mitochondria and adipose tissue. Pratikno [20], suggested that broiler fat deposits originate from triglycerides, of which 95% of triglycerides in poultry tissue are components derived from feeds and only 5% are synthesized in the liver. The triglycerides formed in the liver are released into the plasma in the form of Very Low Density Lipoprotein (VLDL), then fat tissue is taken for storage. This shows a decrease in the percentage of belly fat which is thought to be due to the allicin compound present in garlic causing lipolysis, so that the metabolic effect of using fat as an energy source is greater, Syamsiah [5] said that garlic contains allicin which contains sulfur, capable of shedding fat.

Lehninger [21] stated that excess energy will be able to increase acetyl Co-A which is needed in the biosynthesis of fatty acids which will then be stored in body fat, especially under the skin and abdominal cavity. Allicin has the property of binding the functional part of Co-A in the sulphydryl group, while Co-A is required for the biosynthesis of cholesterol [22] and fatty acids [21]. So that the biosynthesis of these fatty acids can be inhibited and there is a decrease in belly fat. Meanwhile, acetyl Co-A bound by Allicin is used as an energy source.

Energy content in the food, age, sex, species, and ambient temperature are other variables that may have an impact on the amount of belly fat. In the opinion of Rasyaf [23] states that excess energy can affect the formation of fat. The duck's physique is overflowing with vitality. Will be stored in the form of Belly fat is often fat that accumulates in the abdominal cavity. Moreover, belly fat will be eliminated during processing, which will reduce the amount of energy wasted by the fat build up and may injure the carcass. The energy consumed by the ducks during the treatment was the same amount so revealed there was not a significant change in belly fat.

### 3.2 Effect of Treatment on Gaining weight, eating more food, and feeding conversion

Table 2 below shows the impact of varying doses of garlic flour (Allium sativum) on body weight increase, feed consumption, and feed conversion of hybrid ducks during each treatment of the research.

Based on the findings of the analysis of variance, it was determined that the administration of garlic flour increased the intake of hybrid duck feeds. at a level of 1.5% had no significant effect (P>0.05) on the Feed consumption of hybrid ducks. This is in accordance with the research of Saleh et al. [24] in which the administration of garlic flour up to a level of 3.75% did not significantly affect the consumption of Peking duck feeds. This means that the feeds given garlic flour are not able to improve the quality of the feeds.

**Table 2.** Average body weight gain, hybrid duck feed consumption, and conversion during the study (g/head).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Consumption Feed</th>
<th>Increase in Body Weight (g/head)</th>
<th>Conversion Feed</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (garlic flour 0%)</td>
<td>6463.50</td>
<td>1323.77</td>
<td>4.88</td>
</tr>
<tr>
<td>B (garlic flour 0.5%)</td>
<td>6390.15</td>
<td>1391.94</td>
<td>4.59</td>
</tr>
<tr>
<td>C (1% garlic flour)</td>
<td>6361.65</td>
<td>1405.18</td>
<td>4.53</td>
</tr>
<tr>
<td>D (1.5% garlic flour)</td>
<td>6265.50</td>
<td>1312.42</td>
<td>4.77</td>
</tr>
<tr>
<td>SE</td>
<td>40.78</td>
<td>23.49</td>
<td>0.48</td>
</tr>
</tbody>
</table>

Description: SE = Standard Error
Non-significant (P> 0.05) is ns.
This contrasts with the research by Setiawan [25], in which it was said giving garlic to ducks up to a level of 8% had a very substantial impact on the consumption of duck feeds. This is due to the presence of additives in these materials. These additives are thought to impede the development of undesirable bacteria in ducks' digestive tracts, thereby increasing the absorption of nutrients in the intestines.

In this study, all treatments were given the same feed so that the composition of the feed obtained in each treatment was also the same. Giving garlic flour in small amounts does not change the nutritional composition of the feed given to ducks. This shows that in this study the administration of garlic flour did not affect the amount of feed consumed by the ducks in each treatment. In addition, adding garlic flour to the level of 1.5% did not feel good smell or color. The difference in the amount of garlic flour which was relatively small between one treatment and another made the palatability of the feed relatively the same besides that the feed given contained relatively the same energy and protein.

According to Parakkasi [26] that the quantity palatability has an impact on feed consumption. Palatability depends on the smell, taste and appearance of the feed. Feed palatability affects the amount of feed consumption [27]. Feed palatability is related to the liking and amount of feed eaten by livestock. Changes in palatability, mainly smell and taste that occurred in the Feed due to the addition of garlic flour, did not have a significant effect on the consumption of the Feed. The lack of a noticeable impact on the therapy was also possible because the feeds and garlic flour were given in the same form, namely flour.

The increase in body weight by giving several levels of garlic flour (*Allium sativum*) to Table 2 shows the hybrid ducks' body weight growth during the course of the trial for each treatment.

The application of garlic flour at a level of 1.5% had no discernible impact (P>0.05) on the body mass gain of hybrid ducks. In accordance with the research of Saleh et al. [24] giving garlic flour at levels up to 3.75% did not have a significant effect on body weight gain in duck.

This is different from the opinion of Setiawan [25] where the application of garlic flour to a level of 8% has a very significant effect on the weight gain of ducks. This is due to the active compounds of garlic, namely allin and allinase. Jones et al. [28], stated that allin compounds in garlic by the allinase enzyme will be converted into allicin which is a component of garlic which contains a lot of sulfur. The sulfur component in garlic will increase the availability of sulfur-containing amino acids such as methionine in the duck's body. The amino acid methionine is an essential amino acid which has a very important role in supporting growth [29].

The treatment of garlic flour there was no discernible impact on weight gain from on the Feed. This is thought to be caused by the less than optimal work of the active compound scordinin found in garlic flour. The scordinin compound is expected to promote weight gain in hybrid ducks. Scordinin is able to increase body development because scordinin is able to combine with proteins and decompose them [5].

The body to increase body weight gain less efficiently utilizes the content of compounds in garlic. Compounds in garlic are volatile, that is, they evaporate easily when there is a heating process when drying garlic before it is made into garlic flour [30]. Because the evaporation of compounds in garlic which was originally expected to increase body weight gain did not work optimally.

Hybrid ducks had no discernible impact on body weight increase. between treatments was also influenced based on the kind of cattle used in each treatment was the same and the nutrition contained in the Feed of each treatment was the same with the level of addition of different garlic flour. This is in accordance with the statement of Suharno [31], that the type of livestock, environmental temperature, sex, and nutrients in the food intake affects body weight increase. Poultry growth is influence by consumption of feed and the content of...
nutrients contained in the feed. The low digestibility of feed indicates the nutrients ingested by animals are eliminated through feces rather than being utilized extensively by the body, consequently reducing gaining body weight.

To find out the difference in body weight gain in each treatment, it is presented in Figure 1 below.

Fig. 1. Graph of hybrid increase in duck body weight during research.

The body weight growth graph of hybrid ducks as shown in Figure 1 shows that the increase in weight of hybrid ducks in the maintenance of 10 weeks each week varies and reaches a peak in the 6th week. The increase in body weight that continues to rise occurs because the ducks are 1-7 weeks old in the growth phase. During the growth phase, hybrid ducks generally require relatively large amounts of feed so that livestock can grow and develop perfectly. The seventh to tenth week of body weight growth is not as fast as weeks one to six, growth has decreased this is due to a decrease in consumption levels in hybrid ducks.

Feed Conversion. The effect of giving several levels of *Allium sativum* (garlic flour) on the conversion of hybrid duck Feeds in each treatment Table 2 shows what was done during the study above.

The analysis's findings of variance showed which the administ Feed of garlic flour to the level of 1.5% showed no significant effect (P>0.05) on the Feed conversion of hybrid ducks. In accordance with the research of Salet et al. [24] where including garlic flour into the feed a level of 3.75% did not significantly affect the conversion of the Feed. The Feed conversion was determined by age and type of Peking ducks utilized for the investigation, the nutritional content of the Feeds contained in the Feeds of each treatment was almost the same and none of the ducks employed during the research were sick. This is consistent with the assertion made by Anggorodi [32], that the transformation of the nutritional value of feeds, country, climate, and the age of the cattle are only a few of the variables that affect feeds. conditions therefore, poultry health. Lestari [33], also stated that the Feed conversion rate was influenced by strain and environmental factors, namely all external influences including dietary factors, especially the lowest nutritional value.

In contrast to Setiawan [25] where the administFeed of garlic 8% or higher had a substantial impact. effect on the conversion of Feeds. The feed conversion in the treatment that received garlic leaf flour generally less than the control. This is due to the increase in feed consumption in the garlic treatment offset by gaining body weight. Excessive consumption does not necessarily increase in feed conversion and body weight gain. This is according to the statement of Bidura [34] which states that the use of garlic flour in feed can significantly increase intake of food, drinking water and protein. Allinase compounds trigger the change of precursor components into sulfur components and this is then reported to be efficacious in stimulating growth [35]. The higher the levels of use of garlic flour, the higher the feed conversion. This is because the feed consumed is not efficiently utilized for body
weight gain. According to Kartasudjana [36] that whether or not a Feed is given to ducks is efficient, it can be seen through the Feed conversion rate. The lower the conversion rate and accompanied by an increase in duck performance, it will reduce production costs.

The capacity of bird to transform their feed into a number of productions in a certain time unit, both for meat and egg production [33]. The capacity of bird to transform their feed into a number of productions in a certain time unit, both for meat and egg production.

4 Conclusions and suggestions

Using the research's findings as evidence, it can be said that the administration of garlic with different doses (0.5%; 1%; 1.5%) as a feed additive did not show a substantial impact on energy intake and the percentage of hybrid duck carcasses but could reduce percentage of belly fat. Giving garlic with a level of 1.5% produces the best fat percentage, which is 1.06%. Meanwhile, giving using garlic powder as a feed supplement in hybrid duck Feeds up to a level of 1.5% had no impact on feeding behavior, weight increase, and hybrid duck conversion of feed.

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