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The Effect of Phytobiotic Bidara Leaf Powder (*Ziziphus mauritiana*) in Feed to the Percentage of Carcass and Abdominal Fat of Hybrid Duck Un-Sexed (Un-Equal)

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Abstract. *The research investigated the effect of adding phytobiotics in basal feed on live weight, carcass weight, carcass percentage, and abdominal fat percentage of hybrid ducks. The hybrid ducks used for research were 192 ducks. The method used in this research was field experimental with a Completely Randomized Design (CRD) using four treatments and six replications there were basal feed + 0% phytobiotics (T0), basal feed + 0.20% phytobiotics (T1), basal feed + 0.25% phytobiotics (T2) and basal feed + 0.30% phytobiotics (T3). The variables measured were the percentage of carcasses and abdominal fat. The research data were analyzed using variance using the Completely Randomized Design and continued with Duncan's multiple range test to determine whether there were fundamental or real differences. The result showed that the addition of phytobiotics in basal feed to the live weight, carcass weight, carcass percentage, and abdominal fat percentage of hybrid ducks adding leaf flour in hybrid duck feed had no significant effect (P> 0.05) on body weight before slaughtering, carcass percentage of thigh and wing parts and abdominal fat. But as a significant impact (P <0.05) on carcass weight and a very substantial effect (P <0.01) on the percentage of carcass breast*.

Keywords: *Carcass, Feed additive, Phytobiotic, Ziziphus mauritiana*

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INTRODUCTION

The duck farming business is one of the key sectors that can help improve protein consumption among the Indonesian population. According to statistical data from the East Java Livestock Service (2018), the duck population in East Java has consistently increased over the years. From 2015 to 2018, the duck population grew by 57,107 to 560,038 ducks, with the highest increase recorded in 2016. This upward trend indicates that duck farming is becoming an increasingly popular and developing sector within society, reflecting its potential for economic growth and food security.

Ducks are a type of poultry whose meat and eggs are used. One type of duck whose meat is used is a hybrid duck with a cross between a male Peking duck and a female Khaki Campbell duck. Duck meat is an option that can be used as an alternative to meet animal protein needs. Hybrid ducks have one advantage over chickens, namely their protein content is higher, namely 5.3%, than broiler chickens; hybrid duck protein is 23.5% per 100 g, and broiler chicken protein is 18.2% per 100 g (Piliang and Djojosoebagjo. 2000).

When raising these hybrid ducks, we must pay great attention to the feed issue because the feed will determine the nutritional content of the duck meat. The efficiency of feed use needs to be balanced with the addition of feed additives to support production. Feed additives that are often added to broiler duck feed are antibiotics. Antibiotics function to prevent disease and stimulate duck growth so they can achieve optimal performance and feed efficiency. The addition of antibiotics can help reduce the number of microflora in the intestine, suppress pathogenic bacteria, and increase the availability of energy and nutrients for livestock, thereby achieving efficient use of feed (Razak, Kiramang, and Hidayat, 2016).

The use of antibiotics in livestock has been banned. The prohibition on the use of antibiotics is stated in Law Number 18 of 2009, Juncto Number 41 of 2014 concerning Animal Husbandry and Animal Health. The prohibition on adding antibiotics to feed is because it causes many harmful effects both for livestock and for humans who consume them. One alternative effort that can be taken to minimize the use of antibiotics is to increase feed efficiency by using natural feed additives originating from surrounding or native plants. Commonly known as phytobiotics, they support the nutritional needs of livestock.

Phytobiotics are feeds derived from plants that can be added to feed as a substitute for antibiotics. Utami and Pantaya (2016) stated that adding phytobiotic supplementary feed increases digestibility, consumption levels, and nutritional value in livestock products. Phytobiotics can be used as an alternative to replace antibiotics in feed. The bioactive content in phytobiotics does not cause residue in meat, so it is safe for human consumption without causing side effects.

The bidara plant (Ziziphus mauritiana) is a plant that is known to have many benefits, especially for human health. Bidara leaves contain secondary metabolites of alkaloids, glycosides, saponins, tannins, flavonoids, and essential oils (Najafi, 2013). Dangoggo, Hassan, Sadiq, and Manga (2012) reported that the alkaloid compounds in bidara leaves could be antibacterial and antifungal. The antibacterial and antifungal biochemical activity in bidara leaves can inhibit the performance of harmful microorganisms in the digestive tract, thereby increasing feed consumption and productivity of broiler ducks.

LITERATURE REVIEW

Duck Farming and Its Potential

The duck farming industry is crucial in Indonesia's provision of animal protein. According to statistical data from the East Java Livestock Service (2018), the duck population in East Java has significantly increased from 2015 to 2018, indicating that duck farming is becoming a more developed business. One commonly farmed duck type is the hybrid duck, a crossbreed between male Peking and female Khaki Campbell ducks. Hybrid ducks have a nutritional advantage over broiler chickens, with a higher protein content of 23.5% per 100 g compared to broiler chickens at 18.2% per 100 g (LeMieux et al., 2021). Therefore, hybrid ducks are an excellent option for meeting the community's protein needs.

The Influence of Feed on Duck Meat Quality

Feed is a key factor in determining the nutritional quality of duck meat. The efficiency of feed utilization can be enhanced by adding feed additives that support growth and duck health. Antibiotics have traditionally been used in feed to improve performance and efficiency. Antibiotics help reduce the number of microflora in the digestive tract, suppress pathogenic bacteria, and increase the availability of energy and nutrients for livestock (Yadav & Jha, 2019). However, antibiotics in animal feed have

been banned in Indonesia under Law Number 18 of 2009 Juncto Number 41 of 2014 on Animal Husbandry and Animal Health due to concerns over bacterial resistance and negative impacts on human health.

Phytobiotics as an Alternative to Antibiotics

Prohibiting antibiotic use in animal feed has encouraged the search for safer and more natural alternatives. One such alternative is phytobiotics, which are plant-derived feed additives. Phytobiotics improve livestock products' the digestibility, feed consumption, and nutritional value (Zaikina et al., 2022). Compared to antibiotics, probiotics do not leave residues in meat, making them safe for human consumption.

Benefits of Bidara Leaves (Ziziphus mauritiana) in Animal Feed

Bidara (*Ziziphus mauritiana*) is a plant known for its numerous health benefits. Bidara leaves contain secondary metabolites such as alkaloids, glycosides, saponins, tannins, flavonoids, and essential oils (Idris et al., 2020). These bioactive compounds have antibacterial and antifungal properties that inhibit harmful microorganisms in the duck digestive tract (Orimaye et al., 2024). Therefore, adding bidara leaf powder is expected to enhance feed efficiency, increase feed consumption, improve carcass quality, and reduce abdominal fat levels in hybrid ducks. Considering the potential benefits of phytobiotics, especially bidara leaves, this study aims to evaluate the effect of bidara leaf powder in feed on the carcass percentage and abdominal fat of un-sexed hybrid ducks.

RESEARCH METHODS

The research began to be carried out for 3 months in Tegalgondo Village, Karangploso District, Malang City. Marine bidara leaf flour feed additives were manufactured at the Animal Nutrition and Food Laboratory, Faculty of Animal Husbandry, Brawijaya University.

The research method used was an in vivo experimental method using a Completely Randomized Design (CRD). This experiment consisted of 4 treatments with six replications for the variables live weight, carcass weight, carcass percentage (breast, thigh, wing), and five repetitions for the abdominal fat variable, and eight ducks were used in each replication. The treatment feed given was P0: basal feed + 0% phytobiotics, P1: basal feed + 0.20% phytobiotics from bidara leaf flour , P2: basal feed + 0.25% phytobiotics from bidara leaf flour and P3: basal feed + 0.30% phytobiotics from bidara leaf flour.

This research was carried out using unsexed hybrid broiler ducks. Broiler ducks are kept for 42 days. The feed used in this research was divided into 2: Broiler 1 starter feed (0-14 days old) from PT. Japfa Comfeed Indonesia Tbk and finisher feed (15-42 days old) use basal feed obtained from manual mixing. The composition of basal finisher feed can be seen in Table 1. The feed given is weighed according to needs and given to the ducks in the same amount in each box. Treatment feed was given to ducks aged 14 days by mixing basal feed with sea bidara leaf flour according to a predetermined level, and then the treatment feed was tested on the livestock. Ducks that are put into the rearing cage are previously weighed first.

Table 1. Composition of basal finisher feed

Ingredient Protein	Proteins (%)	EM (Kcal/Kg)	Total (%)	Content Contribution	
				Proteins (%)	EM (Kkal/Kg)
Corn (1)	8,6	3307	50	4,3	1653,5
Pollard(1)	11,8	1140	10	1,18	114
Comfeed Duck Concentrate (2)	37	2500	35	12,95	875
Cooking oil (1)	0	9000	5	0	450
Total			100	18.43	3092.5

Source: (1) NRC (1994) (2) Kurniawan (2015)

Phytobiotic Manufacturing Stage

The phytobiotic used as a feed additive in this research is made from sea bidara leaves. Sea bidara leaf flour is made by withering sea bidara leaves without sunlight (air-dried) for 7 days, then grinding using a blender, then filtering using a 60 mesh sieve and the final result is sea bidara leaf flour which is ready to be used.

Cage Preparation

Cage preparation is carried out 7 days before duck, which includes:

a. Clean the cage by removing any remaining dirt, removing unused tools, spraying it with liquid detergent, and then rinsing it with water.
b. Whitewash the cage by sprinkling it with lime so bacteria do not enter it again.
c. Install cage curtains made of tarpaulin, which cover the cage's open sides so that the condition of the cage remains stable.
d. Cleaning cage equipment using detergent, washing in running water, then spraying with disinfectant.
e. Installation of 24 barriers measuring 100 x 100 cm.

f. Sow litter in the form of husks is sown 3 days before ducking in.
g. Installation of lights as lighting in the cage.
h. Installation of a gasolek heating device for the brooding period
i. Disinfectant and formalin spraying is done 2 days before duck-in to eradicate viruses, bacteria, and fungi in the cage

Maintenance Stage

Broiler ducks are kept for 42 days in cages that already have partitions. The cage for ducks aged 3 - 14 days contains a gasolek heater. Ducks are given food according to treatment at the age of 14 days. The feed is weighed according to needs and given in the same amount in each box.

Sampling Stage

Research sampling was done by weighing all the ducks in each treatment replication/plot and calculating the average weight, then taking one duck whose body weight was closest to the average weight of the treatment replications. The carcass that will be observed includes the percentage of the carcass and the proportion of the carcass parts consisting of the breast, wings, and thighs. These parts are separated from other parts to be weighed. The weight of the whole carcass is first weighed, then the parts of the carcass, namely the breast, wings, thighs, and abdominal fat, are cut off, and the weight of each is observed and recorded.

Observed Variables

The variables observed in this study were live weight, carcass weight, carcass percentage, percentage of carcass parts (thighs, breasts, wings) and abdominal fat in hybrid ducks.

Data analysis

The data obtained during the research was processed using the Microsoft Excel program. After the average data was obtained, statistical analysis was continued using analysis of variance with the Completely Randomized Design (CRD) experimental method. If results are obtained that are significantly different ($P<0.05$) or very significantly different ($P<0.01$), then proceed with Duncan's multiple range test. (Sudarwati et al., 2019)**.**

RESULTS AND DISCUSSION

The research results using sea bidara leaf flour (*Ziziphus mauritiana*) as a mixture in feed on live weight, carcass weight, percentage and carcass parts, and complete abdominal fat of hybrid ducks can be seen in Table 2.

Table 2. Effect of giving phytobiotic sea bidara leaf flour (*Ziziphus mauritiana*) in feed on hybrid duckspercentage and carcass portion and abdominal fat

Treatment	Variable						
	Live Weight	Carcass Weight	Carcass (%)	Duck Breast (%)	Duck Thighs (%)	Sayap (%)	Lemak Abdominal (%)
P0	1656±100.53a	900±24.78a	55.54±2.64a	17.42±1.01b	26.98±1.80a	8.57±1.89a	1.49±0.70a
P1	1625± 92.47a	962±51.51ab	58.14±2.24a	15.90±0.96ab	29.26±2.71a	8.29±1.24a	1.41±0.55a
P2	1710±27.57a	1009±67.64b	59.21±3.63a	14.86±0.85a	29.21±2.05a	8.33±1.76a	1.60±0.69a
P3	1623±78.15a	961±72.25ab	59.17±2.01a	15.77±1.53ab	27.58±2.34a	8.20±0.96a	1.72±0.84a

Note: a-b Different superscripts on the same line indicate significant (P<0.05) and very substantial (P<0.01) differences

Effect of Treatment on Live Weight of Hybrid Ducks

The effect of treatment on the live weight of hybrid ducks can be seen in Table 2. Providing phytobiotic sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed had no significant effect (P>0.05) on live weight. This is thought to be because the average results of feed consumption provide results that are not significantly different, so it impacts the live weight of ducks. Avrianti, Muslim, and Imelda (2019) stated that higher feed consumption will affect growth, so body weight gain increases, resulting in increased live weight.

The addition of bidara leaf flour to feed did not have an increasing or decreasing impact on feed consumption. This situation is caused by the phytochemical substances in the feed having no effect, and the factor that influences the decrease in consumption is thought to be because the tannin content in bidara leaves can affect the palatability of ducks. According to Wulandari (2010), increased body weight is influenced by increased feed consumption, followed by optimal digestion and absorption of feed; apart from that, the presence of phytochemical substances in the form of flavonoid compounds in the P1 treatment has not been able to influence increasing feed consumption so that it has an

impact on reducing PBB. This was confirmed by Uddin, Widodo, and Surisdiarto (2011), who that feed efficiency was due to decreased feed consumption due to the addition of seligi leaf flour, which reduced the nutritional value of feed, in addition to the influence of phytochemical substances in the form of flavonoids which did not affect increasing consumption had an impact on reducing PBB. According to Jumiati, Nuraini, and Aka (2017), Feed quality, length of maintenance, and activity can affect body weight. You need to pay attention to body weight because it affects carcass weight, so the quality and quantity of feed consumed must also be considered.

Effect of Treatment on Hybrid Duck Carcass Weight

The treatment effect on hybrid duck carcass weight can be seen in Table 2. Providing phytobiotic sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed had a significant treatment effect ($P<0.05$). The difference in carcass weight is thought to be caused by the different slaughter weights achieved by each treatment. The higher the slaughter weight produced, the higher the carcass weight obtained. Suryana, Darmawan, Hadi, and Suprijono (2013) stated that broiler ducks given different feed protein levels and crude fiber content showed significant differences in carcass weight. A similar statement was made by Uhi, Rukmiasih, and Parakkasi (2004) that the higher the level of crude fiber in the feed, the lower the feed consumption, so it has different consequences for the increase in body weight, final weight, and carcass weight achieved. Yuanita, Martini, and Rahayu (2009) also explained that a reasonable growth rate would result in a high live weight, so the higher the live weight, the higher the carcass weight. Carcass production is closely related to live weight, namely an increase in live weight followed by carcass weight. Pahlepi, Harapanin, and Amiluddin (2015) also stated that the final live weight supports carcass weight due to the livestock's increased live weight.

Livestock slaughter consists of carcass and non-carcass; carcass is the main product of slaughtering meat livestock, which has a higher economic value than non-carcass. According to Nova, Sabrina, and Trianawati (2015), Carcass is the result of slaughtering a duck that has had its blood, feathers, head and neck, legs, stomach contents, and chest cavity removed. Carcass quality is based on meat and the level of fat under the skin; it is free from fine hairs, broken bones, and other damage. Carcasses consist of bones, fat, and meat formed from nutrients from the digestion of feed ingredients that are not wasted. Feed's nutritional content is one-factor influencing carcass weight apart from live weight.

One of the food substances that influences the growth of carcass formation tissue is protein. One of the benefits of protein is building and forming body tissues such as meat, forming and developing body organs, hair growth, etc. (Widodo, 2018).

Effect of Treatment on the Carcass Percentage of Hybrid Ducks

The effect of treatment on the carcass percentage of hybrid ducks can be seen in Table 2. Providing phytobiotic sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed gave no significant treatment effect (P>0.05) on the carcass percentage. This is thought to be because the content in the duck feed is almost the same, and the slaughter weight is almost uniform. According to Dewanti et al. (2013), the carcass percentage results were not significantly different because the energy and protein content contained in the feed was almost the same. Apart from that, carcass percentage can produce results that are not significantly different because carcass percentage is very closely related to the slaughter weight of livestock. If the slaughter weight produces an almost uniform weight, the carcass percentage will also be the same. This is supported by the opinion of Matitaputty, Noor, Hardjosworo, and Wijaya (2011), who state that carcass is a part of the body whose growth and percentage of slaughter weight increases with age. The higher the slaughter weight, the greater the effect on carcass production. According to Saputra, Mangisah, and Sukamto (2016), the percentage of carcasses showing unreal results in each treatment is thought to be because the weight of the internal organs of the ducks has increased.

Based on the research results, it is known that the average percentage of hybrid duck carcasses (Table 2) shows a percentage of 55.54% – 59.21%. The percentage of ducks obtained during the research was still within the range of typical broiler duck carcass percentages, namely between 55.54-57.52% (Rukmiasih, Matatitaputty, Hardjosworo and Prasetyo, 2015). This is also supported by the opinion of Sukirmansyah et al. (2016). This percentage is still higher than the research, namely 51.67 - 54.06%. Live weight, internal organs, wasted parts, and feed quality influence the carcass percentage.

The carcass percentage of hybrid ducks is obtained by comparing the carcass weight with the live weight of hybrid ducks and multiplying by 100%. According to Akhadiarto (2010), carcass weight is the weight of the duck after separating it from non-

carcass parts, such as blood, head, feet (feet), feathers, and the entire contents of the chest and abdominal cavity.

Effect of Treatment on Breast Percentage of Hybrid Ducks

The effect of treatment on the percentage of the breast carcass of hybrid ducks can be seen in Table 2. Providing phytobiotic sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed gave a very significant treatment effect ($P<0.01$) on the percentage of the breast carcass. Adding bidara leaf flour to the feed with a maximum administration level of 0.3% significantly affected the breast percentage of broiler ducks ($P<0.01$). This shows that each treatment responded differently to the percentage of duck breast parts. The percentage of duck breast parts that are very different is thought to be due to the tannin content in bidara leaves. Dangoggo et al. (2012) reported that tannins are compounds that can react with proteins to form stable water-insoluble components. Bacterial cell walls consist of protein, so tannins are seen as active detoxification agents by precipitating protein components and inhibiting the growth of pathogenic bacteria. Anggitasari et al. (2016) stated that the increase in chest percentage was caused by good protein metabolism performance. Consuming enough protein, especially amino acids, will produce optimal meat protein levels. Fanani, Surhama, and Sukamto (2016) added that meat protein mass is the level of protein deposition in the animal's body. The large mass of meat protein is caused by the protein content of the meat, the weight of the meat produced, and the fat content in the body. The percentage of carcass components consisting of pieces of commercial carcass parts is supported by carcass weight as a reflection of the protein formation process going well (Sari, Lubis, and Jaya, 2014).

Daud, Mulyadi, and Fuadi (2016) stated that breast weight decreases faster than a carcass, meaning the lower the carcass weight, the lower the breast percentage. The growth of the chest is relatively constant until 12 weeks of age, so the increase in the breast carcass is not visible. Breast is a duck carcass cut that is in demand by the public. The breast cut is obtained by cutting the breast part of the carcass that has been weighed (Putra et al., 2015). According to Sukirmansyah et al. (2016), the breast is a commercial cut that contains large amounts of meat and little fat. Putri, Widodo, and Osfar (2012) stated that feed or breed did not significantly affect chest percentage.

Effect of Treatment on Thigh Percentage

The effect of treatment on the carcass percentage of the thighs of hybrid ducks can be seen in Table 2. Providing phytobiotic sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed had no significant effect of treatment on the carcass percentage of the thighs (P>0.05). This is in accordance with the opinion of Soeparno (1994) that there is a close relationship between carcass weight and carcass parts and slaughter weight, so that if the results of the analysis of slaughter and carcass weights show results that do not have a significant effect then the results are not much different for the carcass parts. Primasanti, Mahfudz and W. Sarengat, (2014) stated that the thigh percentage results were not significantly different because the thigh muscles play more of a role in movement compared to other parts of the duck's body. Subhan, Yuwanta and Sidadolog, (2010) explained that the results of statistical analysis of the thigh percentage were not significantly different, presumably because the thigh muscles had experienced optimal growth, resulting in the same thigh percentage.Research conducted by Putra, Rukmiasih and Afnan, (2015) shows that the older the age of the duck at the time of slaughter, the lower the thigh percentage. The thigh percentage is obtained by weighing the duck thigh and then comparing it with the carcass weight. The most abundant place for meat deposits on duck carcasses, apart from the chest, is the thighs. The average percentage of thigh weight obtained in this study was around 26-29%. The average weight percentage of local duck thigh pieces given bidara leaf flour in the feed for 7 weeks is higher than what Sjofjan, Adli, Muflikhien, and Nafis (2019) stated that the percentage of thighs for 7 week old ducks is 24-27%.

Thigh is the proportion of the part of the carcass that has the most meat after the breast, where the percentage of thigh is influenced by the protein content in the feed. Thigh development is influenced by nutritional substances in the feed, Resnawati (2004) Separating the back part of the thigh by cutting the Articulatio coxae joint between the Os femur (thigh bone) and Os coxae. The wings can be separated by cutting the joint between Os humerus and Os scapula (Soeparno, 2009). The thigh percentage is obtained by dividing the thigh weight by the carcass weight, then multiplying by 100%. Nova, Sabrina, and Trianawati (2015) argue that thigh weight is obtained by weighing the skin and flesh on the thigh, the flesh attached to the pelvic bone and the thigh bone which is separated at the joint between the femur and tibia.

Effect of Treatment on the Percentage of Hybrid Duck Wings

The effect of treatment on the percentage of carcass parts of hybrid ducks' wings can be seen in Table 2. Providing phytobiotics of sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed gave no significant effect of treatment on the percentage of carcass parts of wings (P>0.05). The average percentage of wing carcass results ranged from 8.20-8.57%. The results obtained during the research were lower when compared to the research results of Resnawati (2004), which stated that the wing percentage ranged from 11.64 – 12.41%. In their research, Randa et al. (2002) showed that the average percentage of wings in ducks ranged from 14.69% to 19.15%.

Wings are a part of the carcass of hybrid ducks that do not contain much meat or fat. The wing is the part that is dominated by bones and muscles. According to Wulandari, Sunarno, and Saraswati (2015), the part of the duck wing measured was the anterior extremity, including the humerus, radius, ulna, and carpals. The wing percentage is obtained by comparing the wing weight with the carcass weight, multiplying by 100%. The wings are the smallest part produced by a duck carcass.

Effect of Treatment on Abdominal Fat Percentage in Hybrid Ducks

The abdominal fat percentage can be obtained by calculating the abdominal fat weight divided by the live weight and then multiplying by 100%. According to Lestari, Rukmiasih, Suryati, and Hardjosworo (2017), abdominal fat was obtained by weighing the fat contained in the gizzard and the fat attached to the abdominal muscles and intestines of the duck. The weight of a duck's abdominal fat can be determined by weighing the fat obtained from the fat around the gizzard and the layers attached between the abdominal muscles and intestines and then weighing it (Salam, Fatahilah, Sunarti, and Isroli. 2013).

The effect of treatment on the percentage of abdominal fat in hybrid ducks can be seen in Table 2. Providing phytobiotic sea bidara leaves (Ziziphus mauritiana) in the form of flour in the feed gave no significant effect of treatment on the percentage of abdominal fat (P>0.05). This is due to the different percentages of added bidara leaf flour. The saponin and flavonoid content in bidara leaf flour works as an anti-microbial, which can damage microbial membranes and suppress bacterial growth, making nutrient absorption more efficient. This is supported by research by Deshpande, Shengule, and Apte (2013), which states that Ziziphus mauritiana has lipase inhibitors and anti-obesity.

The low percentage of abdominal fat in this study is thought to be due to the absence of a significant effect on feed consumption after administering bidara leaf flour in the feed. This is the opinion (Solichedi et al., 2003) that as feed consumption decreases, the nutrients absorbed also decrease, including fat and energy. With decreased energy, fat loss in chickens is also low, as can be seen in abdominal fat, which has decreased significantly. Abdominal fat is influenced by body weight; this is by the growth cycle, which starts with the growth of bones, muscles, and fat. Fat is the last part to form after bones and muscles. Abdominal fat forms as the duck's live weight increases. Fat weight has no significant effect because live weight is no different. The factor in body fat content is feed composition. The formation of body fat occurs due to excess energy consumed (Putri, Busono, and Widodo, 2016). According to Akhadiarto (2010), abdominal fat is one of the parameters used to determine carcass quality. This is because the lower the weight of abdominal fat in a carcass, the better the quality of the carcass. Abdominal fat is between the proventicular, gizzard, duodenum, and around the cloaca.

CONCLUSION

The addition of bidara leaf flour (Ziziphus mauritiana) as much as 0.20%, 0.25%, and 0.30% in the feed of hybrid ducks did not make a difference in the percentage of carcass parts of the wings and thighs and the percentage of abdominal fat. However, the addition of bidara leaf flour in the feed did increase carcass weight and breast carcass percentage.

REFERENCES

Akhadiarto, Sindu. 2010. Pengaruh pemberian probiotik temban, biovet dan biolacta terhadap proporsi karkas, bobot lemak abdomen dan organ dalam ayam broiler. Jurnal Sains dan Teknologi Indonesia 12 (1): 53-59.

Anggitasari, S., Osfar Sjofjan., dan Irfan H. Djunaidi. 2016. Pengaruh beberapa jenis pakan komersial terhadap kinerja produksi kuantitatif dan kualitatif ayam pedaging. Buletin Peternakan 40 (3):187-196.

Anonymous. (2018). Data Statistik Populasi Ternak. Retrieved September 15, 2018, from http://disnak.jatimprov.go.id/web/data/datastatistik/sta istikpopulasiternak#

Avrianti, Muslim dan Imelda S., 2019. Pengaruh Subtitusi Ransum Komersil Dengan Tepung Daun Trembesi (*Samanea saman*) Terhadap Bobot Hidup, Persentase

Karkas dan Persentase Lemak Abdominal Ayam Broiler. Jurnal Green Swarnadwipa. 1(1): 33-38

Dangoggo, S. M., L.G. Hassan., I. S. Sadidiq., and S.B. Manga. 2012. Phytochemical analysis and antibacterial screening of leaves of *Diospyros mespiliformis* and *Ziziphus spina-christi*. Journal of Chemical Engineering 1 (1): 31-37.

Daud, M., Mulyadi dan Z. Fuadi. (2016). Persentase Karkas Itik Peking yang Diberi Pakan dalam Bentuk Wafer Ransum Komplit Mengandung Limbah Kopi. Agripet, 16(1), 62–68.

Deshpande M, Shengule S, Apte K, Wani M, Piprode V, Parab P. (2013). Anti-obesity activity of *Ziziphus mauritiana*: A potent pancreatic lipase inhibitor. Asian J Pharm Clin Res. 6(2):168–173.

Dewanti, R., M. Irham, dan Sudiyono. (2013). Pengaruh penggunaan enceng gondok (*Eichornia crassipes*) Terfermentasi dalam Ransum terhadap Persentase Karkas, Non-Karkas, dan Lemak Abdominal Itik Lokal Jantan Umur Delapan Minggu. Buletin Peternakan, 37(1), 19–25.

Fanani, A. F., N. Suthama dan B. Sukamto. 2016. Efek penambahan umbi bunga dahlia sebagai sumber inulin terhadap kecernaan protein dan produktivitas ayam lokal persilangan. J. Kedokteran Hewan 10 (1): 58 – 62.

Idris, K., Yusof, N. N. M., Rahman, T. A. F. T. A., & Adnan, L. A. (2020). Analysis of antimicrobial compound in Ziziphus mauritiana extract using attenuated total reflection-fourier transform infrared (ATR-FTIR). *Malaysian Journal of Science Health & Technology*, *7*.

Jumiati, S., Nuraini., dan R. Aka. 2017. Bobot Potong, Karkas, Giblet Dan Lemak Abdominal Ayam Broiler Yang Diberi Temulawak (*Curcumaxanthorrhiza roxb*) Dalam Pakan. Jitro. 4 (3).

Kurniawan, M. (2015). Inventarisasi dan Analisis Protein Kasar Pakan Komplit dan Konsentrat Unggas yang Dipasarkan Di Kota Mataram. Skripsi. Fakultas Peternakan Universitas Mataram. Mataram.

LeMieux, F. M., Villemarette, C. P., Lyons, E. K., Shields, T. H., & German, N. (2021). Effect of hybrid rice varieties on growth and development of broilers and ducks. *Animal Nutrition*, *7*(1), 127-133.

Lestari, D., Rukmiasih, T. Suryati dan P. S. Hardjosworo. (2017). Performa Itik Lokal (*Anas platyrhynchos Javanica*) yang diberi Tepung Daun Beluntas atau Kenikir sebagai Sumber Pakan Aditif. Jurnal Ilmu Produksi Dan Teknologi Hasil Peternakan, 05(1), 34–40.

Matitaputty, P. R., R. R. Noor, P. S. Hardjosworo dan C. H. Wijaya. (2011). Performans, persentase karkas dan nilai heterosis itik Alabio, Cihateup dan hasil persilangannya pada umur delapan minggu. JITV, 16(2), 90–97.

Najafi, S. (2013). Phytochemical screening and antibacterial activity of leaf extract of *Ziziphus mauritiana Lam.* International Research Journal of Applied and Basic Sciences 4 (10): 3274–3276.

Nova, T. D., Sabrina dan Trianawati. (2015). Pengaruh Level Pemberian Tepung Kunyit (Curcuma domestica Val) dalam Ransum terhadap Karkas Itik Lokal. Jurnal Peternakan Indonesia, 17(3), 200–209.

NRC (National Research Council). (1994). Nutrient Requirements of Poultry: 9th Revised Edition. Washington D.C.: National Academy Press.

Orimaye, O. E., Ekunseitan, D. A., Omaliko, P. C., & Fasina, Y. O. (2024). Mitigation potential of herbal extracts and constituent bioactive compounds on salmonella in meat-type poultry. *Animals*, *14*(7), 1087.

Pahlepi, R., Harapin H dan Amiluddin I. 2015. Bobot Akhir Persentase Karkas Dan Lemak Abdominal Ayam Broiler Dengan Pemberian Ekstrak Daun Sirih (*Piper betle L.*) Dalam Air Minum. JITRO 2(3): 1-7

Piliang, W.G dan S. Djojosoebagjo. 2000. Fisiologi Nutrisi. Volume 1.

Primasanti, R.R., L. D. Mahfudz., dan W. Sarengat. 2014. Pengaruh penggunaan tepung rumput laut (*Gracilaria verrucosa*) terfermentasi dalam ransum terhadap produksi karkas ayam broiler. Animal Agriculture Journal 3(2): 155-162.

Putra, A., Rukmiasih dan R. Afnan. (2015). Persentase dan Kualitas Karkas Itik Cihateup-Alabio (CA) pada Umur Pemotongan yang Berbeda. Jurnal Ilmu Produksi Dan Teknologi Hasil Peternakan, 03(1), 27–32.

Putri, M., E. Widodo dan O. Sjofjan. (2012). Pengaruh penambahan betain dalam pakan rendah metionin terhadap kualitas karkas itik Mojosari jantan. Jurnal Ilmu - Ilmu Peternakan, 25(2), 1– 9.

Putri, R.A., W. Busono dan E. Widodo. 2016. Pengaruh Penambahan Sari Kunyit (*Curcuma domestica Val*) Terhadap Persentase Karkas, Persentase Lemak Abdominal Dan Kadar Kolestrol Daging Itik Hibrida. Skripsi. Universitas Brawijaya.

Randa, S. Y., I. Wahyuni, G. Joseph, H. T. Uhi, Rukmiasih, H. Hafid, dan A. Parakkasi. 2002. Efek pemberian serat tinggi dan vitamin-E terhadap produksi karkas dan non karkas itik Mandalung. Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner.Pusat Penelitian dan Pengembangan Peternakan. Badan Penelitian dan Pengembangan Pertanian. Departemen Pertanian, Bogor. Hal: 261-264

Razak, A.D., K, Kiramang., dan M.N, Hidayat. 2016. Pertambahan bobot badan, konsumsi ransum dan konversi ransum ayam ras pedaging yang diberikan tepung daun sirih (*Piper betle linn*) sebagai imbuhan pakan. JIP Jurnal Ilmu dan Industri Perternakan 2(3): 135-147.

Resnawati, Heti. 2004. Bobot potongan karkas dan lemak abdomen ayam ras pedaging yang diberi ransum mengandung tepung cacing tanah (*Lumbricus rubellus).* Seminar Nasional Teknologi Peternakan dan Veteriner. Balai Penelitian Ternak Bogor.

Salam, S., Fatahilah, A., Sunarti, D dan Isroli. 2013. Berat karkas dan lemak abdominal ayam broiler yang diberi tepung jintan hitam (*Nigella sativa*) dalam ransum selama musim panas. Sains Peternakan. 11 (2): 84-89.

Saputra, Y. A., I. Mangisah dan B. Sukamto. (2016). Pengaruh penambahan tepung kulit bawang terhadap kecernaan protein kasar pakan , pertambahan bobot badan dan persentase karkas itik Mojosari. Jurnal Ilmu-Ilmu Peternakan, 26(1), 29–36.

Sari, Meisji L., Fitri N.L.L dan Lia D.J. 2014. Pengaruh Pemberian Asap Cair Melalui Air Minum Terhadap Kualitas Karkas Ayam Broiler. Agripet 14(1): 71-75

Sjofjan, O., Adli, D. N.., Muflikhien, F.A dan Nafis, F.A.D. 2019. Pengaruh Penggunaan Tepung Bonggol Pisang (*Musa paradiciasa L.*) Sebagai Pengganti Bekatul Dalam Pakan Terhadap Penampilan Produksi, Persentase Karkas, Organ Dalam dan Lemak Abdominal Itik Hibrida. Seminar Nasional Peternakan Berkelanjutan Fakultas Peternakan, Universitas Padjajaran.

Soeparno. 1994. Ilmu dan Teknologi Daging. Yogyakarta: Gadjah Mada University Press.

Solichedi, K., U. Atmomarsono dan V.D. Yunianto. 2003. Pemanfatan kunyit (*Curcuma domestica VAL*.) dalam ransum broiler sebagai upaya menurunkan lemak abdominal dan kadar kolestrol darah. J. Indon. Trop. Anim. Agric. 28 (3): 172-178.

Subhan, A., T. Yuwanta dan J. H. P. Sidadolog. (2010). Pengaruh kombinasi sagu kukus (*Metroxylon Spp*) dan tepung keong mas (*Pomacea Spp*) sebagai pengganti jagung kuning terhadap penampilan itik jantan alabio, mojosari dan hasil persilangannya. Buletin Peternakan, *34*(1), 30–37.

Sudarwati, Herni., M.H. Natsir Dan V.M.A. Nurguartiningsih. 2019. Statistika dan Rancangan Percobaan Penerapan Dalam Bidang Peternakan. Malang: UBPress.

Sukirmansyah, M. Daud dan H. Latif. (2016). Evaluasi Produksi dan Persentase Karkas Itik Peking dengan Pemberian Pakan Fermentasi Probiotik. Jurnal IImiah Mahasiswa Pertanian Unsyiah, 1(1), 719–730.

Uddin, D., E. Widodo dan Surisdiarto. 2011. Pengaruh Penggunaan Tepung Daun Seligi (*Phyllanthus buxifolius Muell*) terhadap Penampilan Produksi Ayam Pedaging Periode Finisher. Fakultas Peternakan Universitas Brawijaya. Malang.

Uhi, H.T., Rukmiasih dan A. Parakkasi. 2004. Pemberian pakan berserat tinggi dan suplementasi vitamin E terhadap penampilan itik mandalung. Media Peternakan 6 (2):44-49.

Widodo, E. (2018). Ilmu Nutrisi Unggas. UB Press. Malang.

Wulandari, D. (2010). Pengaruh Penggunaan Campuran Kunyit (*Curcuma domestika*) dan Jahe (*Zingeber officinale*) dalam Bentuk Daun dan Enkapsulasi sebagai Additive Pakan Terhadap Penampilan Produksi Ayam Pedaging. Skripsi Jurusan Nutrisi Makanan ternak. Fakultas Peternakan. Universitas Brawijaya.

Wulandari, D., Sunarno dan T. R. Saraswati. (2015). Perbedaan Somatometri Itik Tegal , Itik Magelang Abstrct. *BIOMA*, *17*(2), 94–101.

Yadav, S., & Jha, R. (2019). Strategies to modulate the intestinal microbiota and their effects on nutrient utilization, performance, and health of poultry. *Journal of animal science and biotechnology*, *10*, 1-11.

Yuanita, I., S. Murtini dan I. Rahayu. 2009. Performa dan kualitas ayam pedaging yang diberi pakan tambahan ampas buah merah (*Pandaus conoideus*). Seminar Nasional Teknologi Peternakan Dan Veteriner, Bogor.

Zaikina, A. S., Buryakov, N. P., Buryakova, M. A., Zagarin, A. Y., Razhev, A. A., & Aleshin, D. E. (2022). Impact of supplementing phytobiotics as a substitute for antibiotics in broiler chicken feed on growth performance, nutrient digestibility, and biochemical parameters. *Veterinary Sciences*, *9*(12), 672.