The Effect of Using Different Proportions of Fat Poultry Slaughterhouses in Diets and their Effect on Some Carcasses Characteristics of Awassi Lambs

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Abstract

This study was conducted to demonstrate the effect of adding fat from poultry at different levels to the diet of Awassi lambs on the quantitative characteristics of the carcass. In this study, 12 lambs of Awassi sheep were used, at the age of 4-4.5 months, with an average weight of 0.85 ± 22.16 kg. The animals were randomly divided equally into four groups, the first group was fed. On a diet devoid of fat from poultry slaughterhouses, the comparison group was considered (T1), while the other three groups were fed on diets containing fat from poultry at a rate of 2, 4, and 6% for the second (T2), third (T3), and fourth (T4) treatments, respectively. Animal weights weekly Throughout the study period (120 days). All lambs were slaughtered, skinned and hollowed out until the end of the study period. The results were as follows:

1-The treatment (T1) was highly significant ($P < 0.01$) in the amount of total and daily intake of concentrated and total alfalfa feed, and the total feed (concentrated and alfalfa) compared with diets containing 2, 4 and 6% of fat from poultry.

2- The third and fourth treatments were highly significant ($P < 0.01$) in the final weight of lambs compared with T1 and T2 from poultry abattoir waste fat, and treatment T4 was highly significant ($P < 0.01$) in the characteristic of daily and total weight gain compared with T1, and it took the form of Feed conversion efficiency improved in all study parameters.

3- The results of the statistical analysis showed that the treatments (T3 and T4) had a highly significant superiority ($P<0.01$) in empty body weight over ((T1), and in the same context the fourth treatment outperformed and constitutes a highly significant ($P<0.01$)) in hot and cold carcass weight over (T1). Treatments T3 and T4 had the highest percentage of purification from hot carcass weight compared to treatment T2 and T1, which did not differ significantly from the rest of the treatments, while the results did not show significant differences in percentage of purification from cold carcass weight between fat treatments, while treatments T3 and T4 had the highest percentage of purification. of empty body weight compared with treatment T2 and T1. As for the percentage of loss in the carcasses of Awassi lambs, treatment T3 recorded a highly significant decrease ($P<0.01$)) in the percentage of loss compared with T1 and T2.

Keywords: *Fat poultry; Lamb performance; Rumen fermentation and Carcass characteristics.*

INTRODUCTION

Nutrition is considered one of the most important environmental factors influencing animal production due to its impact on food metabolism, growth, meat flavor and acceptance (1). of energy and protein, and the high prices of feed in general, especially concentrated ones, in addition to their unavailability, especially in the dry season, which is one of the most important difficulties facing ruminant breeders (2), As breeders use the grazing system without adding nutritional supplements or using them in small proportions, which leads to a lack of production represented by weight gain and reproductive performance, and other reasons include high temperatures and humidity, especially in the summer, which leads to a decrease in feed consumption and stress, which leads to achieving Low growth rate of animals and longer time taken to reach market weight in many countries hinders the growth of this industry to meet the increasing demand for these products and thus there is a need to improve the current production system in order to achieve higher productivity (3) About This includes feeding on concentrated feed to enhance feed intake, increase weight, increase the feed conversion rate, or enhance the feed with suitable dietary fats such as sunflower oils, fish and linseed oils, in addition to increasing the energy density of the diet to improve the growth of animals in which the feed conversion rate is high with the aim of Growth speed increased when eating a similar feed (4), some studies indicate that the addition of oil reduced the digestibility of the feed while others found otherwise. This discrepancy could be due to the oils used in the different studies consisting of different fatty acid compositions. And the right level of fat from additive (especially unsaturated oils) also plays a role in proper nutrition without affecting the digestion of the feed, which is one of the means that is expected to improve sheep production of red meat in quantity and quality is the use of new technologies in nutrition such as the use of herbs, medicinal plants and lipids as food additives, as some indicated Studies and research indicate the importance of these technologies in improving the quantitative and qualitative production of lamb meat (5; 6; 7).

And that this quantitative improvement may be affected by many factors such as the type of basic diet (6) the level of food intake (8) and the amount of feed intake with its dry matter, crude fiber and crude fat content. and the size of the feed particles and the percentage of protein in the diet and the number of feeding times (9 and 10), and the growth of the animal, including the accumulation of the body in different tissues, namely meat, fat and bone (11), which affect the specific characteristics of the meat produced (12) However, the effect of these factors on improving the quality of lamb meat is still not clear and needs future studies.

Therefore, the aim of this study is to know the effect of adding fats from poultry slaughterhouses in different proportions 0, 2, 4, and 6%, and their effect on the diets of Awassi lambs in the field of growth and improving the characteristics of meat production, quantity and quality.

Materials and Methods

1-Experimental plan

This experiment was conducted in the sheep field of the Department of Animal Production / College of Agriculture - University of Tikrit for the period from 5/2/2022 to 20/6/2022, including a preliminary period that lasted for 51 days, in order to study the effect of adding different levels of fat from poultry slaughterhouses by 0%. , 2, 4 and 6% to concentrated feed in productive performance and some carcasses characteristics of Awassi lamb.

2-Experimental animals

In this experiment, 12 male lambs of Awassi sheep were used, with an average weight of 22.16 ± 0.85 kg. They were purchased from local markets, their ages ranged between 4-4.5 months, and then numbered and then transferred to the fields of the Department of Animal Production in the College of Agriculture at the University of Tikrit. They were accustomed to eating The experimental ration for a period of two weeks (preliminary period) in order to get rid of the remnants of the previous ration, and the quantities of concentrated feed provided are adjusted on the basis of the new weight of each lamb weekly, with the provision of (alfalfa hay) freely to the lambs throughout the experiment period.

3-Experimental design

The lambs were weighed for three consecutive days in the early morning before feeding them for the purpose of fixing the initial weight at the beginning of the experiment. These weights taken were considered initial weights. The lambs were weighed weekly throughout the experiment period using a digital balance for small animals (sheep and goats), then the animals were divided according to weight. Homogenous to four treatments, with three lambs for each treatment.

4-Preparation of feed materials experimental rations, and feed system

Raw materials for experimental diets were purchased from local markets and crushed in the feed factory of the Department of Animal Production / College of Agriculture - University of Tikrit. Fat from poultry was added at a rate of 2, 4 and 6% for the second, third and fourth treatments (T2, T3 and T4). As for the first treatment (control) was without addition, as shown in Table 1. The mixing of fat from poultry with concentrated feed is done daily by dissolving these fats on a heat source and converting them into a liquid state, then mixing them with concentrated feed. , with alfalfa hay being freely provided to the lambs (13). Tables 2 and 3 show the chemical composition of the components of the rations and experimental rations used in the experiment.

Table 1. Percentages of experimental diet components from raw materials (%)

Diets / Item	T1 %	T2 %	T3 %	T4 %
Black barley	48	48	48	48
Wheat bran	30	32	34	36
Yellow corn	12	8	4	-
Soybean meal	8	8	8	8
Fat poultry	0	2	4	6
Vitamins and salts	2	2	2	2
Total	100	100	100	100

T1:Control diet without addition , T2: Diet with 2% addition fat poultry, T3: Diet with 4% addition fat poultry and T4: Diet with 6% addition fat poultry .

Table 2. The chemical composition of the components of the experimental ration and the alfalfa hay

Ingredients / Item	DM %	OM %	Ash %	CP %	CF %	EE %	NFE %	metabolizing energy Mg/kg.DM*
Black barley	90.52	81.16	9.36	12.38	6.68	3.35	58.75	11.08
Wheat bran	91.22	82.93	8.29	10.97	3.58	5.79	62.59	12.05
Yellow corn	90.47	84.02	6.45	43.74	5.11	3.66	31.51	11.05
Soybean meal	90.34	83.48	6.86	15.08	7.45	2.85	58.10	11.19
Concentrated feed	92.44	81.87	10.57	13.67	10.52	6.53	51.15	11.35
alfalfa hay	91 75	84.86	6.89	17.34	19.46	1.62	46.44	10.05

*Energy metabolizing (Mg/kg.DM)=0.012×CP+0.031×EE+0.005×CF+0.014×NFE.(14).

Table 3. Chemical composition of the four experimental diets (%).

Diets / Item	T1 %	T2 %	T3 %	T4 %
DM %	88.45	90.67	89.78	90.91
OM %	83.35	85.76	84.65	85.79
Ash %	5.10	4.91	5.13	5.12
CP %	13.80	13.68	13.56	13.56
CF %	7.27	7.25	7.22	7.16
EE %	3.82	5.58	7.30	9.80
NFE %	58.46	59.25	56.57	55.27
metabolizing* energy Mg/kg.DM	11.38	12.02	12.10	12.76

T1:Control diet without addition , T2: Diet with 2% addition fat poultry, T3: Diet with 4% addition fat poultry and T4: Diet with 6% addition fat poultry .

*Energy metabolizing (Mg/kg.DM)=0.012×CP+0.031×EE+0.005×CF+0.014×NFE.(24),

5-Preparing animals pens and supplies

The experimental animals were distributed in 4 group misleading cages with dimensions of 4.5 x 4.5 m, in which the feeding system was used according to each of the experimental treatments. throughout the experiment period.

6-The duration of the experiment, the procedure of slaughtering and taking measurement

The experiment period lasted 120 days, then the animals were slaughtered after fasting them for 12 hours, as mentioned previously, and their final weights were recorded just before slaughter, and after the carcasses were skinned (removing the skin), hollowed out, and cleaned, they were cooled in a cool room at a temperature of 4 m for a period of 24 hours. After the slaughter and cooling process, a Some qualitative measurements (chemical analysis) and quantity of carcasses.

7- The first experiment (growth trial).

This experiment included studying the following characteristics:

7-1: The intake of concentrated feed and hay, and the intake of different nutrients on the basis of dry matter.

7-2: Average daily weight gain (g/day) (total weight gain/number of days of the experiment).

7-3: Total weight gain rate of lambs (kg) (final weight - initial weight).

7-4: Feed conversion efficiency (the amount of feed consumed daily /daily weight gain).

8-The Second experiment (Slaughter trial).

All experimental animals were slaughtered after the end of the experimental period, and their feed was cut off for a period of (12) hours, while water was available in front of them. Record the weight of the live animal before slaughtering, and after the completion of the slaughtering process. Record the weight of: head weight, limbs weight, skin, spleen, testicles, liver, heart, lungs and bronchi, digestive system full, digestive system empty, kidneys, kidneys fat, fat Intestines, heart fat, rumen fat. The following measurements were also taken:

8-1: Carcass measurements.

Some carcass measurements are taken after slaughter and they include:

8-1-1:Hot carcass weight

The weight of the carcass was recorded half an hour after the slaughter process, and this hot weight of the carcass was counted using a disc scale of the type (NOBEFL) with a capacity of (50 kg X 200 grams).

8-1-2:Chilled carcass weight

The carcass was weighed after (24) hours of slaughter and kept at a cooling temperature of

4 °C using a disc balance of the type (NOBEFL) with a capacity of 50 kg X 200 grams.

8-1-3: Empty body weight

The empty body weight was calculated by subtracting the contents of the digestive and urinary systems from the weight of the animal before slaughter.

8-1-4: Dressing percentage

The percentage of cleaning was calculated in two ways, the first in relation to the weight of the animal before slaughter and calculated according to the following equation

$$\textbf{Dressing percentage (\%)} = \frac{\text{Cold carcass weight}}{\text{Animal weight before slaughter}} \text{ X } 100$$

The second for the empty body weight was calculated by the following equation

$$\textbf{Dressing percentage (\%)} = \frac{\text{Cold carcass weight}}{\text{Empty body weight}} \text{ X } 100$$

9-Statistical analysis

The data was analyzed statistically by adopting a factorial experiment in a completely randomized design (CRD) in order to find out the effect of fat from poultry slaughterhouses and its effect on weights and quantitative and qualitative characteristics (chemical analysis) of carcasses based on the following mathematical model:

$$\mathbf{Yij=\mu+Ti+Eij}$$

Where:

Yij =The value of observation (j) in the diet (i).

μ =The overall average value for all observations.

Ti =Effect of treatments This represents the effect of adding fat poultry .

Eij =The value of the random experimental error of the experimental unit, which is normally and independently distributed with an average year equal to zero and variance equal to 2δ e

The general linear model (GLM) was used within the statistical analysis system (15) in analyzing the data, and the Multiple Range Test Duncan (16) was used to determine the significant differences between the means of the studied characteristics at the probability level of 0.01.

Results and Discussion

1-The growth experience

1-1-Feed intake for dry matter

Table 4 shows the effect of adding different percentages (0, 2, 4 and 6%) of fat poultry to the diets on the amount of dry matter ingested from concentrated feed, coarse feed and total dry matter, as the fat-free treatment excelled in a highly significant way(P< 0.01) in the amount of total and daily intake of dry matter for concentrated feed (104.800 kg and 0.874 kg, respectively) compared with treatments containing 2, 4 and 6% of fat from poultry slaughterhouses, which averaged 98.760 kg, 0.823 kg, 100.920 kg and 0.01 kg. .841 kg, 102 kg and 8500 . kg, respectively, and between which there was no significant difference, Table 4 also showed that there were significant differences between the treatments in the amount of total intake of dry matter for concentrated feed for treatments 0, 2, 4 and 6% of fat poultry, as the first treatment (control) free of additives excelled in a highly significant manner (P<0.01) in the amount of total intake of dry matter for feed The center, which averaged 39.240 kg and 39.960 kg for the treatment containing 2% of the fat poultry, and the treatments containing 2, 4 and 6% of the fat poultry recorded a highly significant decrease (P<0.01) in the amount of dry matter intake. Total and daily (for concentrated and hay feed) as the rates reached 138,720 and 1,156 kg, 139,800 and 1,165 kg, 140,400 and 1,170 kg, respectively, compared with the treatment to which no fat

was adding, which averaged 143,160 and 1,201 kg. The decrease in the intake of The dry matter was consistent with the findings of (17) that there was a highly significant decrease (P<0.01)) of the amounts of feed intake by adding 4% fat poultry, while (18) confirmed that there were no significant differences in the intake of feed. hay and concentrated by adding fat at a rate of 3.5 and 6% to the diets of Assafiya ewes. The reason for the low dry matter intake observed in this current study may be the damage to the fermentation mechanism in the rumen as a result of adding lipids to the diet (19). (20) showed that the harmful effect of fatty acids on the rumen microbiota It depends on the type of sinter and the composition of the diet (29), there are fixed chemical mechanisms that are responsible for controlling the intake of dry matter, which was not affected by the addition of animal fats or oils added, in this study as an energy source because the experimental diets are basically balanced with energy, and the addition of Fats provide the diet with energy, essential fatty acids and fat-soluble vitamins (21).

Table 4. Effect of adding different percentages (0, 2, 4 and 6%) of fat poultry on the amount of feed intake (kg) (mean ± standard error).

Studied trait / Treatment	Concentrated feed		Hay feed		Total feed	
	Total intake	Daily intake	Total intake	Daily intake	Total intake	Daily intake
T_1	104.880±0.69 A	0.874±0.58 A	39.240±0.07 A	0.327±0.58 A	143.160±0.91 A	1.201±1.15 A
T_2	98.760±0.07 D	0.823±0.57 D	39.960±0.07 A	0.333±0.58 A	138.720±0.12 C	1.156±0.001 D
T_3	100.920±0.07 C	0.841±0.58 C	38.880±0.07 AB	0.324±0.58 A	139.800±0.14 BC	1.165±1.15 C
T_4	102.00±0.14 B	0.850±1.15 B	38.400±0.07 B	0.320±0.58 A	140.400±0.21 B	1.170±1.73 B
significant	**	**	**	N.S	**	**

T1:Control diet without addition , T2: Diet with 2% addition fat poultry, T3: Diet with 4% addition fat poultry and T4: Diet with 6% addition fat poultry .

N.S: It means that there are no highly significant differences at the probability level (P < 0.01).

** The different letters within the same column indicate that there are significant differences between the averages at a significant level (P < 0.01).

1-2- Initial and Final Weight

The results of the study, which are shown in Table 5, showed that there were no significant differences between the treatments in the initial weight of the Awassi lambs when adding fat from poultry at rates of 0, 2, 4 and 6%, while it had a significant effect on the final weight of the lambs, as the treatment containing fat was recorded. Poultry residues had a significant superiority (P<0.01), the highest final weight was for the lambs, which averaged 39,598 kg for the treatment containing 6% poultry fat and 38,416 kg for the treatment containing 4% poultry fat, while the treatment containing 2% fat was recorded. Poultry (highly significant decrease (P<0.01), with an average of 37.519 kg, compared to the treatment without addition (control), which averaged 36.704 kg, respectively. This results not agree with the of (22) of adding different proportions of poultry fat, 3 and 15%, to the diets of male Saanen goats, as no significant differences appeared in the final weight of male goats. The reason for this may be the processing of all treatments with fat or oil, that

is, by diversifying energy sources in the diets, which led to an improvement in the activity of rumen microorganisms, which was positively reflected on the concentrations of volatile fatty acids and their hydrogenation in the rumen, (23).

2-Total and daily weight gain &Efficiency fed Conversion

The results of the same table (5) also showed the effect of adding fat from poultry at a rate of 0, 2, 4 and 6% to the diets on the daily and total weight gain of Awassi lambs and the efficiency of feed conversion. Residues of fat poultry, in a highly significant manner ($P<0.01$) in the daily and total weight gain, which reached rates of 143 g and 17,160 kg, respectively, while the treatments containing 4 and 2% fat from poultry recorded a highly significant decrease ($P<0.01$) in the total and weight gain. Their rates were 134 g and 16,080 kg, 129 g and 15,480 kg, respectively, compared to the fat-free treatment (control), which recorded the lowest daily and total increase for Awassi lambs, with an average of 122 g and 14,640 kg, respectively. These results were not similar to what was obtained by (24) in the absence of significant differences in the daily and total weight gains when adding fat from poultry by 0, 14 and 17% to the diets of rams, while these results agreed with what the researcher (17) the existence of significant differences in the daily and total weight gains in him in addition to the addition of fat from poultry to the diet of Angus calves by 4%.These results are similar to the extent indicated by (25) that weight gain was not affected by the level of lipids in the diet. Perhaps the variation in the characteristic of improvement in the daily and total weight gain is due to the variation in the diet containing lipids, which reflects its content of fatty acids in the diet when it is eaten and digested in the rumen as a result of the high rate of consumption of various nutrients, especially in the concentrated feed, which has a positive role in increasing the activity of the organisms different microspheres in the rumen and thus increasing the efficiency of microbial protein formation and providing the rest of the digestive system with sufficient quantity from the animal and converting the surplus from perpetuation to the growth of various bodily tissues, which cause daily and total weight gain, which as a result will cause an increase in the weight of the living body (26).

As for the characteristic of food conversion efficiency, the results of the statistical analysis shown in Table 5 showed that the treatment without additives led to a highly significant decrease ($P<0.01$) in the efficiency of food conversion, which averaged 9.845 compared with treatments 2, 4 and 6% of poultry waste fat. The averages were 8.262, 8.699 and 8.185, respectively. These results were not similar to what happened with (27) and (28), as the results showed that there were significant differences in favor of the treatment in which 2% lipids were added in the characteristic of food conversion efficiency, At the same time, (29) indicated that the addition of fats to the diet at high levels affects the effectiveness of microorganisms in the rumen, and then reduces the coefficient of digestion of different nutrients Lids added to the diet or the different type of animal and different environmental conditions, in addition to that the addition of Lids in moderate proportions to ruminant diets improves digestion coefficient and nutritional value, It may be due to the effect of the high energy of the bidat, which is converted into energy Clear with a source of nitrogen in the diet, which leads to reducing the negative effect of fat on rumen bacteria, which was reflected positively in increasing the process of absorption and metabolism of the various elements present in the diet (30 and 31) from the cells of the body and thus leads to improving the efficiency of food conversion for lambs .

Table 5. Effect of adding different percentages (0, 2, 4 and 6%) of fat poultry on daily weight gain (g/day), total (kg/day) and feed conversion efficiency (average ± standard error).

Studied trait / Treatment	Initial weight (IW) Kg	Final weight (FW) Kg	Daily weight Gain (DWG) g/day	Total weight Gain (TWG) Kg	Feed conversion efficiency (FCE)
T_1	22.021±0.30 A	36.704±0.18 C	122±0.76 C	14.640±0.09 C	9.845±0.67 A
T_2	21.780±0.48 A	37.519±0.51 B	129±1.55 B	15.480±0.14 B	8.262±0.08 B
T_3	22.242±0.27 A	38.416±0.57 A	134±0.50 B	16.080±0.30 B	8.699±0.15 B
T_4	21.751±0.63 A	39.568±0.37 A	143±2.19 A	17.160±0.26 A	8.185±0.14 C
significant	N.S	**	**	**	**

T1:Control diet without addition , T2: Diet with 2% addition fat poultry, T3: Diet with 4% addition fat poultry and T4: Diet with 6% addition fat poultry .

N.S: It means that there are no highly significant differences at the probability level ($P < 0.01$).

** The different letters within the same column indicate that there are significant differences between the averages at a significant level ($P < 0.01$).

2- Slaughter experiment: Slaughter was done after the end of the experiment, and the following measurements were taken:

2-1- Entail and empty body weight

Table 6 indicates that the effect of adding fat from poultry at rates of 0, 2, 4 and 6% on the average final body weight and the rate of empty body weight, as it is noted that there are significant differences between the treatments, where the treatment containing 6% fat from poultry was superior in a highly significant manner.($P <0.01$) in the average final body weight of Awassi lambs, as it averaged 39,210 kg, compared with the treatment containing 2% fat from poultry and the control treatment, as their rates amounted to 37,316 and 36,980 kg, respectively. Perhaps the reason behind the increase in the final body weight of the lambs is the improvement of the internal environment of the rumen by regulating the pH values and making it within the normal range. In addition to the action of the lipids, it is to provide the diets with energy by improving the intake of the fodder material, in addition to reducing the negative impact of these lipids on the numbers of microorganisms in the rumen, and thus increasing the coefficient of dry matter digestion and increasing the feed consumption by the animal.

In the same context, the results confirmed the existence of a significant($P<0.01$) effect of fat poultry treatments on the average empty body weight, which was clear in Table 6, as it is noted that there are significant differences between the treatments, as the treatment containing 6% poultry fat achieved the highest Empty body weight was highly significant ($P<0.01$), which averaged 35.288 kg and 34.621 for the treatment containing 4% fat from poultry, and the difference was also highly significant ($P<0.01$), while the treatment containing 2% fat from poultry was medium. Between them, compared to the first treatment (control) 32.675 kg, and these results agreed with what was stated by (32), but the results of this study did not agree with what was found by Hutchison et al. 4% did not

lead to an improvement in empty body weight, The reason for the improvement in the empty body weight may be that the fat contains a high percentage of unsaturated fatty acids, which may contribute to the effect on many metabolic activities, which may be an appetite stimulator and encourage digestion, and thus increase the metabolites entering the body, such as acids. Amino, glucose and volatile fatty acids, where amino acids are among the stimulating factors for the secretion of growth hormone from the anterior lobe of the pituitary gland .

2-2-Carcass Weight

Table 6 shows the effect of adding poultry fat by 0, 2, 4 and 6% on the average carcass characteristics (hot and cold) of Awassi lambs, as it is noted that there are significant differences in the average carcass weight (hot and cold) between the treatments, as the treatment containing 6% exceeded of poultry slaughterhouse fat, and in a highly significant manner ($P<0.01$) over the rest of the poultry fat treatments, in the average hot and cold carcass weight, where its stomach amounted to 19.963 kg and the cold 19.522 kg, compared to the treatment containing 2% of the fat from poultry and with the control treatment That rates for hot and cold carcasses were 18.242 kg, 17.800 kg, 17.989 kg and 17.549 kg, respectively, while the treatment containing 4% of fat poultry was not significant for the rest of the treatments of poultry fat. The results of this study were inconsistent with what (17) found when poultry fat was added to diets. angus calves by 4% did not lead to an improvement in the carcass weight of battered angus calves. Perhaps the reason for this is that the effects of adding fat in ruminant diets depend not only on the type of fat (33), but also on the added amount of fat that provides the diet with energy, as this affects the digestive processes in the small intestine. Which works to complete the digestion of fats Which is not fully digested in the rumen, which affects the complete digestion of the alimentary canal (34). As a result, the high rate of consumption of concentrated feed with added fat, which has a positive role in increasing the activity of different microorganisms in the rumen and thus increasing the efficiency of microbial protein formation, which leads to an increase in supplying the rest of the animal tissues with sufficient amount of amino acids that are absorbed by the body. The animal that results in an increase in the weights of carcass hot and cold.

2-3-Dressing and Shrinkage Percentage

The results of the statistical analysis shown in Table 6 show the effect of adding fat from poultry at rates of 0, 2, 4 and 6% on the percentage of cleaning on the basis of carcass weight (hot and cold) and on the basis of empty body weight and the percentage of loss in the carcasses of Awassi lambs, where it is noted that there are significant differences In the percentage of Dressing calculated on the basis of carcass weight (hot and cold) between the treatments, as the treatments containing 4 and 6% fat from poultry recorded the highest percentage of Dressing based on the weight of the carcass (hot and cold) and in a highly significant manner ($P < 0.01$), as their rates reached 50.483 and 49. 221, 50,913 and 49.788 respectively, As for the lowest rate of this percentage, it was in the first treatment (control), which amounted to 48.645 and 47.455, and there were no significant differences in the treatment containing 2% fat from poultry in that percentage, and these results did not agree with what was found by (35). When it was found that the addition of animal fat in calves diets by 0 and 2% with the addition of two levels of vitamin E (300 and / IU 500 kg dry matter), did not lead to an improvement in the percentage of dressings and carcass characteristics after the fat treatments added to the diets. The reason may be the significant improvement in the

percentage of dressings calculated on the basis of the carcass weight (hot and cold). As for the effect of sintered pellets mixed with concentrated feed and provided to Awassi lambs, the improvement was significant in the percentage of dressings calculated by the two methods, as the nutritional addition affected the increase in the weight of the lambs, and then the percentage of These results agreed with the results of (36 and 26).

As for the percentage of dressings, calculated on the basis of empty body weight, the results of the statistical analysis, represented in Table 6, indicated that there were significant differences between all treatments of fat leftover from poultry, compared to the control treatment, as these percentages reached 53.145, 54.302, 55.321 and 53.707%, respectively, while they were The treatment containing 2% fat from poultry was intermediate between them, as the average for that percentage was (53.145). The reason for the presence of significant differences in the percentage of filtration calculated on the basis of live body weight and on the basis of empty body weight (with the addition of fat from poultry 0,2, 4 and 6%), which is due to differences in the content of the digestive tract of animals, which leads to a variation in the percentage of Reconciliation of dressings (37).

The results of the statistical analysis (Table 6) also show the presence of significant ($P<0.01$) differences between the treatments containing the effect of adding fat from poultry at rates of 0, 2, 4 and 6% on the loss percentage of Awassi lamb carcasses, as the treatment free of additives (control) and the treatment containing 2 % of poultry slaughterhouse fat had a highly significant ($P<0.01$) loss percentage for Awassi lamb carcasses, where their rates were 2.443 and 2.422%, respectively, compared to the treatment containing 6% poultry fat, which showed a highly significant decrease ($P<0.01$) in the percentage of The loss of Awassi lamb carcasses, which averaged 2.236, while the arithmetic differences did not reach significant in the treatment containing 2% fat from poultry in the percentage of loss of Awassi lamb carcasses, with an average of 2.310.

Table 6. Effect of adding different percentages (0, 2, 4 and 6%) of poultry fat on final weight (kg), empty body weight (kg), hot and cold carcass weight (kg), percentage of dressings (%) and loss (%) (average ± Standard Error).

Studied trait / Treatments	Entail Weight (EW) Kg	Empty body weight (EBW) Kg	Carcass weight live based on Kg		Dressings percentage based on %			percentage of loss %
			Hot weight	Chilled weight	Hot weight	Chilled weight	Empty body weight	
T_1	36.704±0.18 B	32.675±0.08 B	17.989±0.09 C	17.549±0.15 B	49.012±0.15 AB	47.824±0.14 A	53.707±0.08 B	2.443±0.004 A
T_2	37.519±0.51 B	33.495±0.57 AB	18.242±0.38 B	17.801±0.38 B	48.634±0.14 B	47.338±1.23 A	53.145±1.28 AB	2.422±0.05 A
T_3	38.416±0.56 AB	34.621±0.65 A	19.282±0.30 AB	18.800±0.31 AB	50.193±0.34 A	49.040±0.28 A	54.302±0.31 A	2.3100±04 AB
T_4	39.598±0.57 A	35.288±0.66 A	19.963±0.58 A	19.522±0.58 A	50.411±1.04 A	49.284±1.07 A	55.321±0.42 A	2.236±0.06 B

significant	**	**	**	**	**	**N.S**	**	**

T1:Control diet without addition , T2: Diet with 2% addition fat poultry, T3: Diet with 4% addition fat poultry and T4: Diet with 6% addition fat poultry .

CONCLUSIONS

The results of the current study indicated that poultry fat slaughterhouse supplementation could reduce the intake of hay and concentrated feed and had no negative effect on performance, digestion and rumen fermentation. While the best result of FW DWG, TWG, and FCE is from the addition of poultry fat slaughterhouse by 6% to the diet, as their rates reached 39.568 Kg, 17.160, 143, 8.185 Kg g/day. While the best result for EBW DP, on the basis of hot and empty weight, was the addition of fat from poultry slaughterhouses by 4 and 6% to the diet, as their rates were 34.621, 35.288Kg 50.193, 50.411, 54.302%. Therefore, supplementation of fat from poultry slaughterhouses can improve performance through a positive effect on rumen fermentation in male Awassi lambs.

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