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Effect of Feeding Rations Based on the Residues of some Vegetable Crops on Nutrients Digestibility, Rumen Fermentation, some Blood Components and Performance of Growing Sheep's

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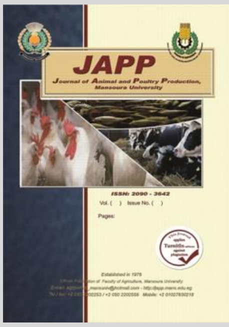

ABSTRACT

Twenty four growing male sheep aged 4-6 months, with an average live body weight of 27 Kg, were grouped into six blocks of 4 sheep each block, to determine the effect of replacing clover hay (CH) by pepper or eggplant vines on their performance, nutrients digestibility, rumen fermentation and blood constitutes.The first experimental ration (R1) as a control, animals was fed concentrate feed mixture(CFM) + CH (50:50),ration 2 (R_2)was fed 50% CFM + 50% pepper vines (PV), ration 3 (R3) was fed 50% CFM + 25% CH + 25% PV, ration 4 (R_4) was fed 50% CFM + 50% eggplant (EV) vines, ration 5 (R5) was fed 50% CFM + 25% CH + 25% EV and ration 6(R6)was fed 50% CFM + 25% PV + 25% EV. The results revealed that both CP and ash contents in CH and the two vines were convergent, but eggplant had more CF content than CH or PV. Insignificant digestibility of CP and CF between control and pepper rations, while it much significant with eggplant. The TDN values were similar for the tested rations,but it decreased for R6. Inclusion of both vines decreased NH3-N and increased TVFA's concentration. There were insignificant differences of feeding rations on blood constitutes;they were in the normal rang. Conclusively,the residues of pepper or eggplant vines could be used as new and economically alternative source of feeds in the growing sheep rations. They can be replacing 50% of clover hay from total balanced ration as they had good feed efficiency.

Keywords: eggplants vines, pepper vines, growing male sheep's, blood constitutes

INTRODUCTION

In Egypt, animal are suffering from shortage of feed-stuffs as they almost depend on grains, concentrate feed mixtures and crop by–products mainly wheat and rice straw and little amounts of berseem hay. The rising costs of concentrate feed (grains and protein supplements in particular had led to significant increase in animal feed cost. The lack of sufficient feeds to meet the nutritional requirements of existing animal population is one of the most critical problems of animal production. Crop residues, which annually producing by huge amounts are considerably a potential supply of manipulated feeds for feeding animals in. The annual productions of vegetables and fruits by-products in Egypt were estimated to be about 4.80 million tons (Agricultural Economics & Statist, 2007).

Utilization of agricultural vines residues into ruminant diets can partly alleviate the gap of animal nutritional requirements and available feed -stuffs as it could reduce the feed cost and in turn increase the economic efficiency of livestock production (Borhami and Yacout, 2001).Vegetables' veins are the cheapest contents of essential amino acids, vitamins and minerals (Funaba, M. *et al*. 1990). The presence of anti-nutritional factors or phytonutrients components in plants is considered one of the major obstacles in harnessing the full benefits of the nutritional value of plant foods and vegetables (Lewis and Fenwick, 1987, Muck *et al*., 1999 and Oluremi *et al*. 2007). Phytonutrients have significant negative effect on livestock production; include reduction in palatability, digestibility and utilization of nutrients, resulting in not only decreased production but also low quality of meat and milk products.

Nightshade Family (*Solanaceae*) and eggplants (*Solananum melongena*) vines contain glycoalkaloids, its concentration in the foliage of the Solanum species was estimated between 110 and 890mg/100g fresh weight (Vaananen, 2007).While, pepper (*Capsicum annum*) is rich in vitamin C and E (Lee *et al*., 2010) and capsaicin (Al-Kassie *et al*., 2011 and Shahverdi *et al*., 2013).

There is a limited literature on using eggplant, and pepper vines in feeding ruminant, therefore methods of physical, chemical, and physicochemical treatments are essential tools for improving the nutritive value of such by-products. On the other hand, some disadvantages of these methods, such as nutritional loss, sensory quality reduction and high cost of equipment, have limited their practical applications (Gowda *et al*., 2007).

The purpose of this study was to estimate the nutritive value of feeding rations based on the residues of vegetable crops, such as vines of eggplant or pepper and investigated the effect of replacing them of clover hay at a rate of 50 or 100 % on the nutrients digestibility, rumen fermentation, some blood constitute and performance of growing sheep's.

MATERIALS AND METHODS

The present study was conducted at Sades Experimental Research Station, Animal production Research Institute, Agricultural Research Center, Egypt.

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Experimental animals and feeds

Twenty four growing male sheep, at 4 to 6 month old with 27 Kg LBW in average. They were divided into six similar groups (4 in each). Vegetable crops wastes from eggplant and pepper vines were collected, chopped into slices of 3-5 cm length and wilted under sun for 6-8 hours (depending on the weather).

Experimental Procedure:

Animals were fed concentrate feed mixtures (CFM) and clover hay (CH)at the rate of 1:1 to cover their requirements according to NRC (2007), the experimental rations as follows:

1.First group as control (R1) fed 50% CFM + 50% CH (1:1);
2.Second group (R2) fed 50% CFM + 50% PV;
3.Third group (R3) fed 50% CFM+ 25% CH+ 25% PV;
4.Fourth group (R4) fed 50% CFM + 50% EV;
5.Fifth group (R5) fed 50% CFM + 25% CH+ 25% EV and;
6.Sixth group (R6) fed 50% CFM + 25% PV+ 25% EV.

The CFM composed of 37.4% wheat bran, 27% yellow corn, 12.5% soybean meal (44% CP), 10% decorticated cottonseed cake, 5% rice bran, 4% sugarcane molasses, 3% limestone, 1% sodium chloride and 0.1% vitamin and minerals premix. Chemical analysis of ingredients and experimental rations are presented in (Table 1).

Growing trials:-

Animals were offered CH ad libitum twice a day at 8.0 and 16.0 plus restricted amount of CFM to cover 50% of protein requirements according to NRC (2007). The actual feed intake was determined. The growth rate was recorded biweekly and feed conversion ratio was calculated accordingly as Kg of feed against Kg of gain. Water was offered freely.

The experimental period lasted for 42 days. At the end of the growth trial digestibility trials were conducted using 18 mature ram (3 in each) in complete randomized design to evaluate the feeding values of the six experimental rations. The mature rams weaning 50 Kg approximately and was individually kept in metabolic cages.

Ruminal Liquor parameters:

Samples of rumen liquor (100 ml each) were taken at 0, 3 and 6 hrs. of the morning meal on two successive days from three fistulated sheep females. The pH of rumen fluid was immediately determined using a portable pH meter (Hanna Instrument HI 8424 Microcomputer, San Francisco, CA, USA). Rumen fluid samples were filtered through four layers of cheese cloth.

The rumen fluid samples were preserved for ammonia nitrogen (NH_3-N) determination by adding concentrated H_2SO_4 (3drop per 5ml). The concentration of NH_3-N was determined by using magnesium oxide (MgO) as described by Al-Rabbat *et al.* (1971). Concentration of total volatile fatty acids (TVFA's) was estimated using steam methods (Warner, 1964).

Blood Samples:

Blood Samples were collected biweekly with thermoregulatory parameters from the jugular vein of each sheep into glass tubes contained heparin as anticoagulant. Blood samples were centrifuged at 3,000 rpm for 15 minutes to obtain plasma and stored at -20°C until analyses. Concentration of total protein and albumin in plasma were estimated using biuret reaction and bromocresol green reagent kites, respectively, manufactured by Diamond Diagnostic Company (Egypt). However, globulin concentration was calculated by subtraction of albumin values from their corresponding total protein values.

Activities of transaiminases (AST and ALT) were determined according to Reitman and Frankel, (1957).

The experimental sheep's were healthy and free from external and internal parasites. Economic evaluation for tested rations was calculated according to the prevailing prices of ingredients during the time of the experiment.

Statistical analysis:

The experimental data were analyzed using general linear model using ANOVA procedures of S.A.S (1999). Multiple range tests when the main effect was significant using the following model.

$$Y_{IJ} = \mu + T_I + e_{IJ}$$

Where

μ = Overall mean of Y_{IJ}; T_I = Effect of treatment groups, I = (1. 6); E_{IJ} = Random error.

Differences among treatment means were estimated by Duncan's multiple range test (Duncan, 1955).

RESULTS AND DISCUTION

Chemical composition of CFM, CH, PV and EV:

The chemical composition of ingredient and rations presented in (Table, 1).The CP and EE contents for vines of pepper and eggplant were similar to CH contents, but they have high content of crude fiber (CF). However, all rations had quit similar chemical content; meantime both CF and CP contents for vines of pepper and eggplant were in the range as reported by Ndemanisho *et al.* (1998).

Table 1. Chemical analysis of the ingredients and the experiential rations (%on DM basis).

Item	Chemical analysis (%)						
	DM	OM	CP	EE	CF	NFE	Ash
CFM	91.38	87.67	13.22	3.24	14.05	57.16	12.23
CH	89.87	86.18	11.40	1.80	29.16	43.82	13.82
PV	96.20	89.44	9.96	1.95	39.40	38.13	10.59
EV	88.70	86.75	10.86	1.68	32.13	42.08	13.25
Control (R_1)	90.63	86.93	12.31	2.52	21.61	50.49	13.03
R_2	91.42	87.33	12.13	2.54	22.89	49.78	12.62
R_3	92.21	87.74	11.95	2.56	24.17	49.07	12.22
R_4	90.33	87.07	12.18	2.49	22.35	50.06	12.88
R_5	90.48	87.00	12.24	2.51	21.98	50.27	12.95
R_6	91.27	87.40	12.06	2.52	23.26	49.56	12.55

Concentrate feed mixture (CFM); Clover hay (CH); Pepper vines (PV); Eggplant vines (EV); R_1 (50%CFM+ 50% Clover hay); R_2(50% CFM+ 50% pepper vines);R_3(50% CFM+ 25 % Clover hay +25% pepper vines); R_4(50% CFM+ 50% Eggplant vines); R_5(50% CFM + 25% Cloverhay+25% Eggplant vines); R_6 (50% CFM + 25% pepper vines +25% Eggplant vines).

Apparent digestibility:-

The apparent digestibility of nutrients and feeding values are presented in (Table, 2a and 2b). No significant differences (P> 0.05) were found for DM and OM digestibility among the experimental rations. Higher (P< 0.05) CP digestibility was observed for rations (R1, R2 and R3) compared with the rest of rations (R4, R5 and R6), whereas they recorded lower digestibility, but they were not significantly differ (P> 0.05) among them. These could be related to the low CP content of pepper and eggplant as well. These results are in agreements with Mc-Nabb *et al.* (1996) and El-Waziry and Kamel (2001) who found that lower CP digestibility may be related to the lower protein degradability as it be affected by the higher condensed tannins contents in eggplant vines which lead to precipitate certain proteins and formation of tannins-protein complex, while, in the case of pepper vines it may be due to the higher levels of neutral phenolic or flavonoids and photochemical compounds.However, these compounds have been consider as a great antioxidants in food and human health and proved to be more effective than vitamin C, E and carotenoids (Dai and Mump, 2010). The same trend was found for CF digestibility which could be as a result of the high content of CF in both pepper and eggplants. However, anti-nutritional compound could interfere with metabolic processes and combine with digestive enzymes thereby making them unavailable for digestion (Benita and Khetarpeu, 1997) and Abara (2003), whilst, Akindahunsi and Salawn (2005); and Oboh *et al*. (2005) have reported that anti-nutritional factors particularly, tannins in eggplant vines would decreased protein degradability and its digestibility as well.

According to NFE digestibility no significantly differences (P> 0.05) between animals in the control group (R1) and other groups from R3 to R5, while animals in group 2 (R2) and R6 were showed lower (P<0.05) NFE digestibility. The control ration had the higher value of feeding values expressed as TDN or DCP, without significant differences (P> 0.05) with rationsR2 to R5, while they were significantly difference (P< 0.05) than those fed ration 6, which recorded the lower TDN value. Meantime, it was also recorded lower (P< 0.05) DCP and DE values compared to other rations. These is in agreement with those obtained by Hassan (2006) who illustrated that improved feed conversion ratio could be due to the improved of feed digestibility, metabolism and consequently, TDN and DCP values. However, the replacement of PV at the rate of 50% was much better than 25% of PV for improving digestibility of CP, CF, and NFE as well TDN, SV and DCP values, meantime; it was so close to the results of the control one. One the other hand, the replacement of EV was less effectiveness on those of CP, CF, and NFE digestibility as well on TD, SV and DCP values, the replacement of 25% PV+25% EV showed the least impact.

Table 2a. Digestion Coefficients of the experimental rations (Mean ± SD).

Experimental rations	Item					
	Digestibility coefficients %					
	DM	OM	CP	EE	CF	NFE
R_1	73.31±1.38	67.20±2.70	71.19±1.48^a	52.88±2.86^c	56.32±1.95^a	71.60±3.69^a
R_2	75.13±1.34	61.57±3.27	68.08±1.77^{ab}	73.38±3.18^a	58.17±2.79^a	60.96±4.00^{ab}
R_3	73.64±0.81	64.38±2.01	68.82±1.16^{ab}	56.25±3.61^c	55.31±1.52^a	67.86±2.82^a
R_4	72.57±1.461	58.44±0.12	64.34±0.32^c	59.24±4.52^{bc}	46.61±0.66^b	62.19±0.40^{ab}
R_5	73.28±0.61	59.41±2.66	61.73±2.83^c	58.80±3.93^{bc}	45.49±3.52^b	64.92±3.15^{ab}
R_6	71.45±1.23	56.28±3.17	59.97±3.01^c	69.86±3.09^{ab}	45.24±1.61^b	59.87±4.23^b

a, b, c means in the same column for each parameters with different superscripts are significantly different (P< 0.05).
SE= Standard error NDF% =28.92 +0.657*CF%' See foot note Table (1).
DE calculated according to Cheek, (1987). DE= 4.36 – 0.0491 x NDF %.

Table 2b. Nutritive values of the experimental rations (Mean ± SD).

Experimental rations	Item			
	Nutritive values %			
	TDN	SV	DCP	*DE
R_1	60.08±2.43^a	57.40±2.44^a	8.76±0.18^a	2.58±0.10^a
R_2	56,33±2.91^{ab}	52.84±3.04^{ab}	8.13±0.21^{bc}	2.43±0.12^{ab}
R_3	58.00±1.87^{ab}	55.25±1.96^{ab}	8.35±0.14^{ab}	2.50±0.08^{ab}
R_4	52.70±0.24^{ab}	49.82±0.20^{ab}	7.83±0.04^{bcd}	2.27±0.01^{ab}
R_5	53.51±2.41^{ab}	50.64±2.12^{ab}	7.56±0.35^{cd}	2.30±0.10^{ab}
R_6	51.39±2.87^b	48.11±2.48^b	7.23±0.36^d	2.21±0.12^a

a, b, c means in the same column for each parameters with different superscripts are significantly different (P< 0.05).
SE= Standard error NDF% =28.92 +0.657*CF%' See foot note Table (1).
DE calculated according to Cheek, (1987). DE = 4.36 – 0.0491 x NDF %.

Rumen fermentation parameters:

Ruminal pH values, NH_3-N, and TVFA's concentration are presented in Table, (3). Higher (P< 0.05) pH value was obtained for R6, followed by the rest of rations without significant differences. Values of NH_3.N concentration were insignificant (P> 0.05) differ among the experimental rations, it ranged from 22.67 to 25.33 (mg/dl). Values of the rumen pH seemed to be in the range with the obtained results by El-Masooudi (1998) for berseem hay (6.95) and by Hassan (2006) for acacia (6.90).

Values of TVFA's were ranged from 2.72 to 3.72 (m.eq/dl), the lower (P<0.05) was obtained for R4 which contained 50% EV, while other rations had quiet similar TVFA's concentrations without significantly differences (P>0.0.5).

These results are in agreement with the findings obtained by El-Waziry and Kamel (2001); Hassan (2006) and Abo-Donia (2008) who reported that feeding eggplant hay may be resulted in lower NH_3-N concentration compared with fresh materials.

Table 3. Rumen parameters of sheep fed the experimental rations (Mean ± SD).

Items	Rumen fermentation parameters		
	pH	NH_3-N (mg/dl)	TVFA's (m. eq./dl)
R_1	6.31 ± 0.03	25.33± 0.70	3.44 ±0.51^a
R_2	6.46 ± 0.21	24.00± 0.33	3.22 ±0.17^{ab}
R_3	6.46 ± 0.26	23.45± 0.53	3.72 ±0.54^a
R_4	6.27 ± 0.20	22.67± 0.53	2.72±0.22^c
R_5	6.50 ± 0.15	24.08± 0.33	3.50 ±0.22^a

a, b, c means in the same column with different superscripts are significantly different (P< 0.05).
[*] See foot note Table (1).

Also, Mehrez (1992) observed that the optimal ruminal NH_3 concentration for maximal rate of rumen fermentation is associated with dietary source and level of energy to be fermented in the rumen. On the other hand, values of TVFA's were obtained with both eggplant and pepper vines are in agreement with those obtained by El-Waziry and Kamel (2001) who decided that TVFA's concentration probably would increase with feeding eggplant. However, generally, end products of ruminal fermentation and digest kinetics (i.e., rates of digestion and passage) affect production rate from a given diet (Singh *et al*. 1993).

Growth performance

Growth performance of growing sheep fed the experimental rations is presented in (Table, 4). The control group (R1) showed the higher total and daily gain followed by animals fed the rest of experimental rations but without significant difference (P> 0.05). However, less daily gain was obtained by group (R4) which contained 50% Eggplant. The mixture of 25% pepper and 25% Eggplant was not showing an improvement in the growth rate of sheep.

On the other hand, inclusion of 50% pepper in the ration was much better than that of 50% Eggplant, while 25% Eggplant was showed somehow better than that of 25% pepper in the growth performance of sheep. These results could be due to the less digestibility of CP and CF for groups R4, R5 and R6 whereas rations of these groups were mainly contained Eggplant regardless of its inclusion percent. These values are in the line of Fassler and Lascano (1995) and Mc-Donald *et al*. (2002) who observed higher palatability of eggplant vines due to the lower of anti-nutritional factors contents compensated for the relatively low protein content as a result for presence of tannins, and made it possible for the sheep to consume more feed. On the meantime, Mc-Donald *et al*. (2002) found that the growth rate was proportional to the differences in total CP intakes that mean the difference could be mainly attributed to N intake.

Table 4. Growth performance of sheep fed the experimental rations (Mean ± SD).

Experimental rations	Item					
	Growth performance					
	Initial	Final	T/gain(kg)	D/gain(g)	TDMI	FCR
R_1	18.00±1.40.	31.0±1.03	13.00±1.87	173.33±24.95	900.00^c±17.68	5.644±0.78
R_2	18.20±0.97	31.0±1.30	12.80±1.43	170±19.04	950.00^b±8.52	5.87±0.68
R_3	18.60±1.03	30.30±1.16	12.20±0.37	162.67±4.99	950.00^b±8.52	5.87±0.22
R_4	18.60±1.63	29.60±1.72	11.20±1.77	149.33±23.63	950.00^b±8.52	6.89±0.86
R_5	18.20±0.97	30.60±1.21	12.40±1.12	165.33±14.97	950.00^b±8.52	5.93±0.53
R_6	18.40±1.69	29.80±0.58	11.40±1.12	152.00±14.97	1018.00^a±25.96	6.95±0.65

A, b, c means in the same raw for each parameters with different superscripts are significantly different (P< 0.05). SE═ Standard error
See foot note Table (1). T: total protein; TDMI: total dry matter intake; FCR: feed conversion rate; D: daily gain

The calculation of DMI was showed that, higher (P<0.05) one was obtained for the inclusion of 25% PV + 25% EV (R6), followed by rations from R2 to R5, while lowest (P> 0.05) TDMI obtained for the control ration (R1). However, the more TDMI for such rations could be explained by the more palatable followed the inclusion of EV and PV. These means that the mixture of PV and EV had more acceptability than if one of them was inclusion. These could be due to the less anti-nutritional factors intake in the mixture than those in PV or EV alone. These will reflect on body weight gain. According to Tolera and Sundstol (2000) and Shem *et al*. (2003) the best feed conversion of sheep is affected by many factors, such as feed intake, dietary components, fiber content, digestion coefficiency of feed nutrients and roughage to concentrate ratio.

Blood chemistry

Blood chemistry of sheep fed the experimental rations is presented in (Table, 5).The data revealed that sheep fed R2 and R6 recorded higher values of total protein (TP), albumin (A) and globulin (G), while lower A/G ratio was obtained for R_3, R_2 and R_4 compared with the control ration (R1). These values were insignificant differences (P> 0.05) of total protein, albumin and ALT among the experimental groups. While lower (p<0.05) globulin was obtained for the control group. Other groups had insignificant differences (p> 0.05) for globulin concentration. The increase in plasma TP and G could be partly due to the role of enzymes in improving digestibility of protein, fiber and organic matter. Meanwhile, the decrease in plasma total protein (TP) and globulin in R1 could be due to oxidative damage in protein ranges from specific amino acid modifications and peptide breakage to loss of enzyme activity. Stadtman and Levine (2003) reported that the synthesis of plasma protein is markedly impaired when the supply of amino acids from the digestive process is not adequate, whereas, the values were insignificant differences (P> 0.05) in plasma albumin (A) in all treatments. However, it is a very strong predictor of sheep health..

Table 5. Blood chemistry of sheep feed experimental rations (Mean ± SD).

Experimental rations	Item					
	Blood chemistry					
	Total protein(g/dl)	Albumin (g/dl)	Globulin(g/dl)	A/G ratio	AST(u/l)	ALT(u/l)
R_1	6.59±0.46	3.98±0.24	2.61±0.13^b	1.54±0.06^a	82.76±8.91^a	67.49±6.53
R_2	6.82±0.32	4.00±0.18	2.82±0.15^a	1.42±0.04^{ab}	79.82±6.26^{ab}	66.58±4.59
R_3	7.04±0.20	4.09±0.17	2.95±0.04^a	1.39±0.05^b	75.22±4.89^{ab}	62.65±4.08
R_4	7.10±0.26	4.17±0.20	2.94±0.07^a	1.42±0.05^{ab}	71.77±4.45^{ab}	60.92±4.56
R_5	7.20±0.18	4.27±0.13	2.93±0.05^a	1.46±0.03^{ab}	69.71±2.91^{ab}	57.39±3.30
R_6	7.34±0.11	4.40±0.10	2.94±0.03^a	1.49±0.03^{ab}	65.87±2.46^b	54.08±2.84

a, b ,S c means in the same raw for each parameters with different superscripts are significantly different (P< 0.05). SE ═ Standard error.

On the other hand, plasma globulin (G) is an indicator of immune response and source of antibodies, as all groups contained sources vines were recorded higher G, consequently, improvement the immunity of sheep (Hooda and Upadhyay 2004). Concerning, transaiminases enzymes, the activity of ALT and AST were decreased in all treatment groups without significant difference (P> 0.05), while the control group had higher (P< 0.05) AST and ALT concentration. This reduction in ALT and AST may be attributed to the decrease of cellular metabolic rate and the destructive changes of liver and skeletal muscle cells. These results are in agreement with those obtained by Singh *et al*. (2011) who revealed that the decreased responsible of enzymes for protein - carbohydrate metabolism (aspartate and alanine transaiminases) in tested groups than control group due to its involvement in transforming proteins to glycogen. Also, Ghorbe *et al*. (2001) showed that decreasing in protein values could be a result of damage of liver responsible for protein- biosynthesis in the body as well as renal tissue damage

Economic efficiency:-

According to the prices of ingredients composed for the experimental rations at the time of conducted of this study, rations, DMI costs, price of daily LBW and end revenue are presented in Table (6). It's clear that higher daily revenue was observed for R2, followed by R5 and R6. These means that inclusion of PV or EV in the rations of sheep at the rate of 50% to replace CH could be economically visible. The mixture (25% PV and 25% EV) can be taken in consideration as they gave good revenue as well, especially with the shortage of CH.

Table 6. Economic evaluation of experimental ration for growth performance:

Item	Control R_1	R_2	R_3	R_4	R_5	R_6
DMI/d (g)	900	950	950	950	950	1018
Daily feed cost, (LE)	2.77	1.42	2.10	1.37	2.01	1.40
Total daily gain (g)	173.33	170.00	162.67	149.33	165.33	152.00
Daily gain cost, (LE)	9.53	9.35	8.91	8.21	9.08	8.36
Profit above feeding cost, (LE)	6.76	7.93	6.81	6.84	7.07	6.96
Economic feed efficiency (%)*	100	117	100.7	101.2	104.6	103

Economic feed efficiency (%)*= [Profit above feeding cost ÷ Profit above feed cost (control)] x 100,
Assuming that the economic feed efficiency of control diet equal 100

CONCLUSION

It could be conclusion, that the residues of pepper or eggplant vines could be used as new alternative source of feeds in the growing sheep rations. They can be replacing 50% of clover hay of total balanced ration as it had good feed efficiency.

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تأثير التغذيه على علائق بها مخلفات بعض محاصيل الخضر على معاملات الهضم وتخمرات الكرش وبعض مكونات الدم والانتاج فى الاغنام الناميه.

محمود عبدالعزيز يوسف المنياوى ، عبدالمنعم على سيد محجوب ، حسن محمد فؤاد جلال ، ياسمين محمود محمد محمود ، أحمد محمد عبدالمجيد حسين ، طارق عبدالوهاب دراز ، محمد حلمى ياقوت و أمل مجاهد محمد النمر

معهد بحوث الإنتاج الحيوانى – مركز البحوث الزراعية – مصر .

تم إستخدام 24 من ذكور الاغنام الناميه على عمر 4-6 شهور بمتوسط وزن 27 كجم حيث قسمت الى سته مجاميع متماثله (4 اغنام / المجموعه) وفى نهاية فترة النموتم اجراء تجربة هضم. وكانت العلائق التجريبية على النحو التالى :-R_1 عليقة مقارنة عبارة عن 50%علف مركز+50% دريس برسيم .R_2 50% علف مركز +50% عروش الفلفل.R_3 50% علف مركز + 25% دريس برسيم + 25% عروش الفلفل R_4 50% علف مركز +50% عروش الباذنجان.R_5 50% علف مركز + 25% دريس برسيم + 25% عروش الباذنجان.R_6 50% علف مركز + 25% عروش الفلفل + 25% عروش الباذنجان. أظهرت النتائج أن محتوى البروتين والرماد فى كل من عروش الفلفل والباذنجان يقارب نظيرهما فى دريس البريسم وان كان عروش الباذنجان تحتوى على نسبة أكبر من الألياف عن عروش الفلفل ودريس البرسيم . لاتوجد فروق معنوية فى كل من معامل هضم البروتين والالياف فى كلا من علائق الدريس وعروش الفلفل ، ولكنه إنخفض معنويا عند التغذيه على علائق عروش الباذنجان. إنخفاض معامل هضم الكربوهيدرات (المستخلص الخالى من الدهن) عند التغذيه على العليقه R_6 (خليط عروش الفلفل والباذنجان) لم تظهر فروق معنويه عند التغذبه على العلائق التجريبيه.الاخرى كما اظهرت النتائج ان أعلى قيم للمركبات الغذائيه المهضومه والبروتين المهضوم إرتفاعهما فى العلائق الثلاث الاولى (R_1 ' R_2 ' R_3) مقارنه بالعلائق الثلاث الأخيرة (R_4 ' R_5 ' R_6) . وكان أعلى معدل نمو ومعامل تحويل غذائى عند التغذيه على عليقه المقارنه(R_1) وتبعها العلائق المحتويه على عروش الفلفل مقارنه بعروش الباذنجان وأقل معامل تحويل غذائى لوحظ مع الاحلال الكلى للدريس بعروش الباذنجان . وان أدماج عروش الفلفل والباذنجان قد قلل من نركيز الأمونيا بالكرش وزيادة نركيز الأحماض الدهنية الطيارة , ولاتوجد فروق معنوية فى مكونات الدم حيث كانت فى معدلاتها الطبيعيه .ويمكن إستخلاص أنة من الممكن أحلال 50% من دريس البرسيم فى علائق الاغنام الناميه بعروش الفلفل أو الباذنجان حيث يؤدى الى نتائج جيدة خاصه عند التغذيه على عروش الفلفل.