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MILK PRODUCTION, SOME RUMEN PARAMETERS AND FEED UTILIZATION EFFICIENCY OF LACTATING GOATS FED RATIONS CONTAINING BERSEEM SILAGE AND THEIR MIXTURE WITH BARELY OR MILLET X NAPIER GRASS HYBRID.

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ABSTRACT

The effect of using berseem silage and its mixtures with barely or millet x napier grass hybrid in diets of lactating goats on their performance for milk production and feed conversion efficiency was studied. Eighteen Zaraibi does with average body weight of 40.0 kg were divided randomly into three equal groups (6 in each group). All animals were fed concentrate feed mixture (CFM) to cover 40% of requirements recommended by *NRC* (1981). Besides *ad libitum* silage supplement, where berseem silage offered to group 1(G_1), silage made of 50% berseem – 50% barley to group 2 (G_2) and silage made of 50% berseem – 50% millet x Napier grass hybrid to group 3 G_3. The feeding trails lasted 14 weeks. The obtained results showed that the crude protein (CP) and ash of berseem silage were higher (14.61 and 12.31%, respectively) than the other silages. But, the crude fiber (CF), ether extract (EE) and nitrogen free extract (NFE) were lower in berseem silage (28.84, 2.29 and 41.95%, respectively) compared with their mixtures with barely or millet x napier grass hybrid. The daily feed intake as g/h, %BW and g/h $w^{0.75}$ was increased with mixture silage (G_2 and G_3) compared with berseem silage alone (G_1). The effect of the experimental rations on daily water consumption was not noticeable.

As for ruminal parameters, ammonia-N concentration was significantly ($P< 0.05$) higher with berseem silage (G_1) compared with G_2 and G_3. But, ruminal total VFA's concentrations and microbial protein were significantly ($P< 0.05$) lower with G_1 compared with G_2 and G_3 during 2 and 4 hrs post-feeding. The effect of the tested rations on most blood parameters was not significant ($P< 0.05$).

As for milk production, the obtained data showed that milk yield of dairy goats was significantly ($P< 0.05$) decreased with G_1 (1.339 kg/h/d) compared with G_2 (1.601 kg/h/d) and G_3 (1.550 kg/h/d). Milk composition as fat, protein, lactose, total solids, solids non fat and ash for the three treatments were fluctuated without significances. Accordingly, the feed conversion efficiency based on DM and CP, was better with G_2 (0.901 and 0.125, respectively) and G_3 (0.911 and 0.123, respectively) compared with berseem silage alone, G_1(1.01 and 0.145, respectively).

Keywords: Lactating Zaraibi goats- rumen parameters – blood profile – milk yield – feed conversion.

INTRODUCTION

In Egypt, feed and food production is highly associated, since increasing one of them will lead to decrease the other due to competition on limited cultivated area of berseem will lead to decrease the cultivated area of wheat (Eweedah *et al*. 2007).

Therefore, searching for unclassical plants or new sources of green crops to be used in animal feeding is vivible route to overcome this problem and would help in raising more animals and reducing the feed costs (Ahmed *et al*., 2012). Most green forages in summer season are grasses such as sorghum, Sudan grass, millet, napier grass and teosinte which have low protein content. So, it needs protein source as concentrate or legume forages to be complete rations. High yielding and high quality legume- grass mixture play an important part in forage – animal production (Mooso and Wedin, 1990). Attempts were carried out to introduce new legumes as cowpea, Sesbania and *Kochia indica* (Gabra et al., 1991, Soliman et al. 1997 and Ahmed *et al*., 2001) or grasses as millet x napier grasses hybrid (Zeidan and Geweifel, 1997) in animal feeding. On the other side, some practical studies were carried out to utilization some mixtures of legumes and grasses in ruminant feeding such as berseem with triticale (Haggag *et al*. 2000 and Ahmed *et al*., 2013) and cowpea with millet x napier grass hybrid (Ibrahim *et al*. 2008). The aim of the present study was to investigate the effect of feeding berseem silage and its mixtures with barley or millet x napier grass hybrid on milk production and feed conversion efficiency of lactating Zaraibi goats. Some rumen parameters and blood profile were also studied.

MATERIALS AND METHODS

The study was conducted at El-Serw Experimental Station, Animal Production, Research Institute, Agricultural research center, Ministry of Agriculture, Egypt. Eighteen lactating Zaraibi does, averaged 40.0 kg live body weight, were divided into three feeding treatments (6 each). Each group was housed in a semi-roofed barn (4x3x5). The animals were weighed at the beginning then biweekly. Feeding the experimental rations lasted 14 weeks. Zaraibi goats in all groups, were fed restricted amount of concentrate feed mixture (CFM) to cover 40% of the total protein requirements recommended by NRC (1981) for lactating goats. Yet, a combination of different silages was fed *ad libitum*. Accordingly, rations tested were, CFM+ berseem (*trifolium alexandarinum*) (1st cut) silage (G_1), CFM - 50% berseem- 50% barely (*Hordeum vulgare*) silage (G_2) and CFM + 50% berseem- 50% millet (*Pennisetum maximum*) x napier grass (*Pennisetum purpureum*) hybrid silage (G_3). The forages (berseem / or its mixtures with barely or millet x napier grass hybrid) were mechanically chopped then wilted for 24 to 48 hrs before ensiling to diminish the moisture content to about 70%. Ensiling was done using cement pits (1.5x4.0x1.0 m), which were tightly covered by plastic sheets followed by approximately 20 cm soil layer to keep an aerobic condition. The ensiling was lasted for 40 days then samples were taken to test for the physical and fermentative characteristics. Berseem silage was prepared by adding 3% molasses, on fresh basis, while mixture silages in G_2 and G_3 prepared without any additives according to Ahmed *et al*. (2001 and 2013). The chemical analysis of CFM and different types of silages is presented in Table 1.

The rations were offered twice daily at 8 am and 4 pm. Samples of feed were analyzed according to the procedures of A.O.A.C. (1995). Water was available at all times and was measured as average for each group.

The daily milk yield was recorded for each goat. Representative milk samples (about 0.5% of total milk produced) were taken once biweekly from each goat, from the morning and evening milking of the same day. Then the samples were compared and analyzed for total solid (TS), fat, protein, solid non fat (SNF) and ash according to Ling procedures (1963), while milk lactose was calculated by differences.

Rumen fluid samples were taken from 3 animals of each experimental group using stomach tube before feeding (0 time) and at 2, 4, 6 and 8 hrs post-feeding. The samples were filtered through 3 layers of gauze and immediately subjected to the determination of pH value by pH meter. Ammonia nitrogen (NH3-N) concentration was measured according to the method of Conway (1957), total volatile fatty acids was determined according to the technique described by Warner (1964), whereas microbial protein was determined according to Schultz and Schultz (1970).

` Blood samples were collected from the jugular vein once before feeding (3 animals from each treatment) at the end of feeding trials. Blood samples were centrifuged at 4000 rpm for 20 minutes. Part of the separated serum was directed to enzymes activity determination, while the other part was stored frozen at -20c^0 till the biochemical analysis. Commercial kits were used for colorimetric biochemical determinations.

Data was statistically analyzed using SAS (2003). The significant differences among means were assigned according to Duncan (1955).

RESULTS AND DISCUSSION

Chemical composition :

The chemical analysis of different types of silage as shown in Table 1 explained that dry matter (DM) of 50% berseem – 50% barely silage was lower than in berseem silage or 50% berseem 50% millet x napier grass hybrid. Crude protein (CP) in berseem silage was higher (14.61%) than in the other silages. On the contrary, the percentages of crude fiber (CF), ether extract (EE) and nitrogen free extract (NFE) of berseem silage were lower than their mixture with barely or millet x napier grass hybrid. But, organic matter (OM) of three silages were nearly similar (ranged from 87.69 to 88.70 %). The chemical composition of the tested silages was nearly similar with data obtained by Ahmed *et al* (2013) with berseem silage, Ibrahim *et al* (2008 and 2012) with millet x napier grass hybrid –cowpea mixture and McCartney and Vaage (1994) with barely silage.

Generally, the chemical composition of legume and grass (Gabra *et al*., 1991, Khinizy *et al*., 1997 and Soliman and Haggag, 2002., showed that cowpea had a high content of CP and low content of CF and NFE than grasses (Sudan grass, sorghum, napier grass and millet). However, there are many factors affecting chemical composition as species and varieties of

forages, soil, fertilization, subsequent cuts, age, cuts and environmental condition (Gabra *et al*., 1991 Van Soest, 1996 and Haggag *et al*., 2000).

Feed intake and water consumption :

The daily DM intake of dairy goats are presented in Table 2. The total DM intake as % BW or g/kg $w^{0.75}$ decreased with G_1 (3.39 and 85.15, respectively) compared with G_2 (3.59 and 90.36, respectively) and G_3 (3.52 and 88.58, respectively). This increase in DM intake with mixture silage (G_2 and G_3) was observed also by El-Kholany (2004) and Ibrahim *et al*. (2012) using mixture of silages in Zaraibi goats and Rahmani sheep, respectively. In the sametime, the ratio of roughage to concentrate tended to increase with both of silage mixture compared with berseem silage alone (60 :40). Generally, the increased roughages intake (silage) gave positive evidence that silage was of good quality as reported by Ahmed *et al* (2001 and 2013) with lactating goats.

The average daily water consumption of lactating Zaraibi goats fed the tested experimental rations is summarized in Table 2. The differences among the three groups in water consumption (L/h and ml/ $kgw^{0.82}$) were not noticeable. However, the highest value of daily water consumption (ml/g DM intake) was recorded with G_1 (2.94) while G_2 had recorded the lowest value (2.76). Generally, the quantity of daily water consumption in present study is nearly similar to those obtained by Soliman *et al*. (2010) on growing Zaraibi goats (ranged from 2.22 to 3.30 ml/g DM intake) and Ahmed *et al*. (2013) on lactating Zaraibi goats (ranged from 2.82 to 3.06 ml/g DM intake).

Rumen parameters :

Rumen parameters are presented in Tables 3 and 4. The maximum pH values were noticed pre-feeding (0 time) while the minimum values were observed at 4 hrs post-feeding then it tended to increase again at 8 hrs post-feeding for all dietary treatments. In the sametime, the effect of the tested rations on pH values was not significant. Similar results were observed by Ahmed *et al*. (2013).

Ruminal ammonia-N concentration was greatly higher post-feeding than before feeding. The same trend was observed by Ahmed *et al* (2001) and Ibrahim *et al*. (2012). The highest values of ruminal ammonia-N were recorded with G_1 (berseem silage) and the lowest values were detected with G_3 (berseem- millet x napier grass hybrid silage) and the differences were significant at 2 and 4 hrs post-feeding only. This increase in ruminal ammonia-N concentration in G_1 may be due to the high content of CP in berseem silage as reported earlier in Table1. The same results were observed by Ahmed et al.(2013) with using berseem silage and its mixtures with some grasses in goats rations.

The average concentrations of total VFA's post-feeding (4 and 8 hrs) in the rumen were significantly decreased with G_1 (12.0 and 10.77 m Eq / 100ml, respectively) compared with G_2 (13.33 and 11.90 m Eq / 100ml, respectively) and G_3 (13.07 and 11.50 mEq / 100ml, respectively). Similar findings were shown by Haggag *et al*. (2002) and El-Kholany (2004) using mixture forage and silage in Rahmani sheep and Zaraibi goats, respectively.

Table 4 illustrates the data collected for microbial protein of goats under investigation. Ruminal microbial protein was not significantly different among three treatments at zero time and was significantly ($P<0.05$) higher with G_2 than of berseem silage (G_1) at 4 and 8 hrs post-feeding. But, G_3 recorded the medium values. This positive effect of mixture silage on ruminal microbial protein was observed also by Shehata *et al*. (2001), Ibrahim *et al*.(2012) and Ahmed *et al*. (2013) in the rumen of bucks, lambs and lactating does, respectively.

Blood profile :

Values of some blood parameters (Table 5) explained that there were no significant differences among three rations for red blood cells (RBC's), cholesterol, total protein, creatinine and calcium, while serum urea-N of G_1 was significantly higher than G_2 and G_3. The higher value of serum urea-N of G_1 (berseem silage) may be due to higher level of ammonia-N in the rumen as reported also by Ibrahim *et al*. (2008). Serum AST activities showed some fluctuation among groups, ranging from 73.33 to 75.67u/l. Both ALT and ALP activities were higher with G_1 (22.0 and 112.0 u/l, respectively) compared with the other groups and the differences were not significant. The effect of the experimental rations on serum glucose was significant. In the sametime, serum phosphorus (inorganic) was significantly higher with mixture of silages (G_2 and G_3) compared with berseem silage alone (G_1). This is in line with the findings of Ahmed *et al* (2001). Generally, the obtained values are within the normal physiological ranges reported by Jain (1986) and Keneko (1989) for healthy goats and in the line with findings of Gabr *et al*. (1999), El-Kholany (2004) and Ibrahim *et al* . (2008 and 2012) who used mixture of silage (or forage) in small ruminant rations.

Milk yield and its composition :

Data presented in Table 6 and Figure 1 showed average milk yield and its composition for the three treatments. The differences in milk yield were significantly ($P<0.05$) among the tested experimental rations. The daily milk yield had the highest values with G_2 (1.601 kg/d) followed by G_3 (1.550 kg/d) and the lowest value was recorded with G_1. The same positive results of silages mixture (legume- grass) on daily milk yield by dairy goats were reported by El-Kholany (2004) and Ahmed *et al* (2013).

As regard to milk composition (Table 6), the data indicated that the effect of experimental treatments on milk composition as fat, protein, total solids, SNF and ash was fluctuated between them. However, the differences of milk composition among three groups were not significant. The values of milk chemical composition were nearly similar with values obtained by Ahmed *et al*. (2001) and Ibrahim *et al*. (2008) on Zaraibi goats with little differences due to the individual differences among goats and feeding system.

Generally, yields of fat and protein were significantly higher with mixture of silages (G_2 and G_3) compared with berseem silage alone (G_1) as shown in Table 6. These results were related to the average milk yield as reported earlier in the present study and by Ahmed *et al*.(2001).

Feed utilization :

Data of average feed intake and average milk yield during experimental period as well as feed conversion efficiency of the dairy Zaraibi goats are summarized in Table 7. The data indicated that the average milk yield recorded the highest value (1.601 kg/h/d) with G_2 followed by G_3(1.550kg/h/d) and lastly, G_1 which recorded the lowest value (1.339 kg/h/d) and the differences were significant. Thus, the feed conversion calculated as DM and CP (intake / milk yield) was better in G_2 (0.901 and 0.125, respectively) and G_3 (0.911 and 0.123, respectively) compared with G_1 (1.01 and 0.145, respectively). Similar results were observed by El-Kholany (2004) and Ahmed *et al*. (2013) using mixture of silages for dairy Zaraibi goats. In recent study, Ibrahim *et al*. (2012) observed that feed conversion efficiency based on DM and TDN was better with Rahmani sheep fed mixed silage (legume- grass) than those fed cowpea or millet x napier grass hybrid alone. Generally, the obtained values of feed conversion are within the normal range given by Ahmed *et al*. (2001 and 2008) and Ibrahim *et al*. (2008).

Table 1.Chemical composition (% on dry matter basis) of tested ingredients.

Items	Silages			
	100% berseem	50% berseem 50% barely	50% berseem 50% millet x napier grass hybrid	Concentrate feed mixture*
DM	29.50	28.63	30.15	91.00
Chemical analysis (% on DM basis)				
OM	87.69	88.70	88.0	93.95
CF	28.84	29.35	30.01	15.50
CP	14.61	13.75	13.27	14.0
EE	2.29	2.57	2.41	3.15
NFE	41.95	43.03	42.31	61.30
Ash	12.31	11.30	12.00	6.05

***Concentrate feed mixture (CFM) consists of 36% yellow corn, 30% undecortecated cotton seed, 27% wheat bran, 3.0% molasses, 2.5 % limestone, 1% common salt and 0.5% minerals mixture**.

Table 2. Average feed intake* and water consumption by lactating Zaraibi goats fed the tested experimental rations.

Items	Groups*		
	G_1	G_2	G_3
Daily DM intake during experimental period			
From CFM	535	549	545
From silage	813	894	867
Total DM intake	1348	1443	1412
DM intake, % BW	3.39	3.59	3.52
DM intake, g/kg$W^{0.75}$	85.15	90.36	88.58
Roughage :concentrate (R/C) ratio	60:40	62:38	61:39
Daily water consumption			
L/h/d	3.96	3.98	4.09
Ml/kg BW	100	99	102
Ml/ kg $W^{0.82}$	250	249	257
Ml/g DM intake	2.94	2.76	2.90

***Group feeding**

Table3.Effect of the experimental rations on rumen pH values and ammonia-N concentrations of dairy goats.

Items	Hours	Groups		
		G_1	G_2	G_3
pH values	0	7.07±0.09	7.00±0.10	7.10**±0.06**
	2	6.63±0.03	6.60±0.06	6.57±0.03
	4	6.50±0.06	6.40±0.06	6.43±0.03
	6	6.60±0.06	6.53±0.03	6.57±0.03
	8	6.67±0.07	6.57±0.03	6.63±0.03
Ammonia-N (mg/100 ml)	0	17.13±0.18	17.00±0.23	16.87±0.35
	2	22.40**±0.12**^{a}	21.73±0.13^{ab}	21.00**±0.12**^{b}
	4	23.60±0.12^{a}	22.80±0.20^{b}	22.13±0.18^{b}
	6	22.20±0.12	21.67±0.27	21.33**±040**
	8	21.40**±0.31**	21.00**±0.46**	20.**80±0.40**

Means in the same row with different superscripts differ significantly at P < 0.05 .

Table 4. Effect of the experimental rations on ruminal total volatile fatty acids (TVF's) and microbial protein content of dairy goats.

Items	Hours	Groups		
		G_1	G_2	G_3
Total VFA's (mEq / 100ml)	0	8.87±0.19	9.10±0.20	8.93±0.22
	4	12.00±0.17^{b}	13.33±0.22^{a}	13.07±0.13^{a}
	8	10.77±0.15^{b}	11.90±0.10^{a}	11.50±0.12^{a}
Microbial protein (g/100ml)	0	0.353±0.02	0.347±0.01	0.340±0.02
	4	0.560±0.016^{b}	0.593±0.01^{a}	0.583±0.01^{a}
	8	0.463±0.016^{b}	0.500±0.01^{a}	0.493±0.01^{a}

Means in the same row with different superscripts differ significantly at P < 0.05.

Table 5 . Blood profile of dairy Zaraibi goats as affected by different experimental rations.

Item	Groups		
	G1	G2	G3
Hemoglobin (Hb), g/dl	10.80±0.10^{b}	11.43±0.07^{a}	11.20±0.21^{a}
Red blood cell (RBC's), 10^6/µl	12.07±0.28	12.40±0.25	12.23±0.27
Glucose, mg/dl	68.67±0.88^{b}	72.00±1.15^{ab}	73.33±1.45^{a}
Cholesterol, mg/dl	70.33±1.76	68.00±2.08	67.67±2.91
Total protein (TP), g/dl	6.62±0.04	6.57±0.04	6.50±0.08
Urea-N, mg/dl	17.87±0.41^{a}	16.43±0.30^{b}	16.27±0.15^{b}
Creatinine, mg/dl	0.93±0.06	0.90±0.06	0.87±0.08
Calcium, mg/dl	10.80±0.25	10.97±0.12	10.93±0.15
Phosphorus (inorganic), mg/dl	5.40±0.10^{b}	5.60±0.12^{a}	5.63±0.12^{a}
AST, u/l	75.67±2.40	72.33±2.33	75.00±3.21
ALT, u/l	22.00±1.04	20.33±0.73	21.00±1.04
ALP, u/l	112±4.67	108±3.71	105±4.91

Means in the same row with different superscripts differ significantly at P < 0.05.

Table 6. Effect of experimental rations on milk composition and its quality by dairy Zaraibi goats.

Item	Groups		
	G1	G2	G3
Total milk yield ,kg/h	131±5.21[b]	163±8.54[a]	151±2.90[a]
Average milk yield ,kg/h/d	1.339±0.05[b]	1.601±0.09[a]	1.550±0.03[a]
Milk composition:			
Fat,%	3.60±0.08	3.48±0.04	3.53±0.04
Protein,%	2.94±0.03	2.92±0.03	2.90±0.04
Lactose,%	4.53±0.02	4.57±0.03	4.55±0.03
Total solids,%	11.78±0.09	11.69±0.02	11.70±0.03
Solids non fat (SNF),%	8.18±0.04	8.21±0.04	8.16±0.06
Ash,%	0.71±0.003	0.72±0.005	0.71±0.007
Average fat yield, g/h/d	470±12.21[b]	568±25.16[a]	534±7.31[a]
Average protein yield, g/h/d	384±14.18[b]	478±28.06[a]	440±13.84[a]

Means in the same row with different superscripts differ significantly at P < 0.05.

Table 7. Feed conversion of lactating Zaraibi does fed experimental rations.

Item	Groups		
	G1	G2	G3
No . of Zaraibi goats	6	6	6
Average body weight, kg	39.75	40.21	40.13
Metabolic body size, $w^{0.75}$	15.83	15.97	15.94
Average feed intake during the experimental periods :			
CFM, g/h/d	535	549	545
Silage, g/h/d	813	894	867
Total DM intake, g/h/d	1348	1443	1412
CP intake, g/h/d	194.0	200.0	191.0
Average milk yield, g/h/d	1339	1601	1550
Feed conversion :			
Kg DM / kg milk	1.01	0.901	0.911
Kg CP / kg milk	0.145	0.125	0.123

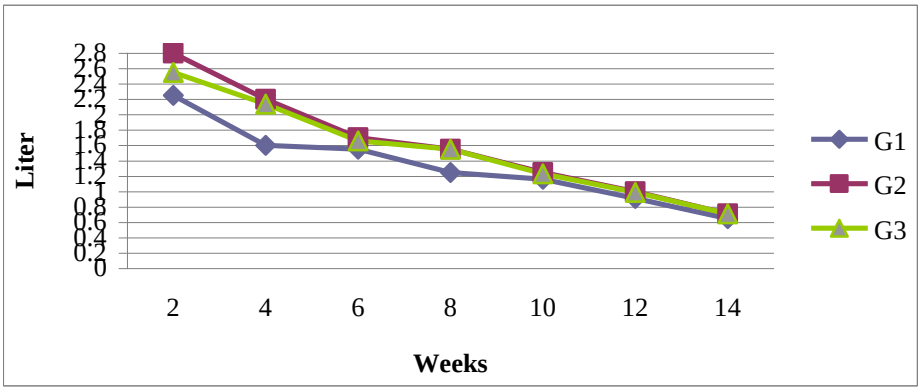

Fig. 1: Average daily milk yield, measured biweekly, for different tested diets.

Conclusion

It could be concluded that using silage mixtures (berseem- barely and berseem- millet x napier grass hybrid) in feeding lactating Zaraibi goats had positive effect not only on improving feed intake and ruminal parameters, but also on improving the milk production reflected on better efficiency of feed utilization and performance generally.

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إنتاج اللبن وبعض قياسات سائل الكرش وكفاءة التحويل الغذائي للماعز الزرايبي الحلاب المغذاة علي علائق تحتوي علي سيلاج البرسيم ومخاليطه مع الشعير أو الدخنابير.

جمال إبراهيم الإمام ، مصطفي راشد محمد صالح، محمد التابعي محمد الخولاني ، هدي محمد الحسيني و سمير بشري مهني.

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أجري هذا البحث لدراسة تأثير استخدام سيلاج البرسيم ومخاليطها مع الشعير أو الدخنابير في علائق الماعز الزرايبي علي أدائها الإنتاجي من حيث إنتاج اللبن وكفاءة التحويل الغذائي. وقد استخدمت ١٨ عنزة زرايبي حلابة (بمتوسط وزن ٤٠ كجم) حيث وزعت عشوائيا في ٣ مجموعات متساوية في العدد (٦ حيوانات بكل مجموعة)، كل الحيوانات غذيت علي العلف المركز ليغطي ٤٠% من الاحتياجات البروتينية طبقا ل NRC لسنة ١٩٨١، بالإضافة إلي أن السيلاج كان يضاف حتى الشبع ، حيث كان يقدم سيلاج البرسيم للمجموعة الأولي (مج١) ، ومخلوط سيلاج البرسيم مع الشعير (بنسبة ١:١) للمجموعة الثانية (مج٢) وسيلاج البرسيم مع الدخنابير (١:١) للمجموعة الثالثة (مج٣).

وقد استمرت التجربة لمدة ١٤ أسبوعا وأوضحت النتائج المتحصل عليها :

- ارتفاع محتوي البروتين الخام والرماد في سيلاج البرسيم (مج١) (١٤,٦١ ، ١٢,٣١ %علي التوالي) مقارنة بالمجموعات الاخري في حين انخفضت نسبة الألياف الخام، والكربوهيدرات الذائبة ، المستخلص الخالي من الازوت في سيلاج البرسيم (٢٨,٨٤ ، ٢,٢٩ ، ٤١,٩٥ % علي التوالي) مقارنة بالمجاميع الأخري (مج٢، مج٣).
- ارتفع المأكول اليومي في المجموعة الثانية (مج٢)، الثالثة (مج٣) مقارنة بمجموعة سيلاج البرسيم (مج١).
- فيما يتعلق بتأثير العلائق المختبرة علي الاستهلاك اليومي للماء لم يكن هناك تأثير ملحوظ.
- أظهرت نتائج قياسات الكرش ارتفاع أمونيا سائل الكرش معنويا مع سيلاج البرسيم (مج١) بالمقارنة بالمجموعتين مج٢، مج٣. ولكن انخفضت معنويا الأحماض الدهنية الطيارة الكلية والبروتين الميكروبي مع سيلاج البرسيم بالمقارنة بالمجموعة مج٢، مج٣ وذلك عند الساعة ٢، ٤ بعد الأكل.
- بالنسبة لقياسات صورة الدم فقد أظهرت النتائج أن تأثير العلائق المختبرة علي معظم قياسات الدم لم تظهر تأثيرا معنويا.
- وفيما يتعلق بإنتاج اللبن فقد أظهرت النتائج أن محصول اللبن قد ارتفع معنويا مع مج٢ (١,٦٠١ كجم / راس / يوم) ، مج٣ (١,٥٥٠ كجم / رأس / يوم) مقارنة بمج١ (١,٣٣٩ كجم / رأس / يوم).
- تركيب اللبن كدهن، بروتين، لاكتوز، مركبات كلية دهنية، مركبات صلبة لا دهنية في الثلاث معاملات تذبذبت قليلا ولكن بدون فروق معنوية .
- أظهرت قياسات كفاءة التحويل الغذائي المقدر علي أساس المادة الجافة و البروتين الخام أن أفضلية التحويل كانت لصالح مج٢ (٠,٩٥١، ٠,١٢٥ علي التوالي) ، مج٣ (٠,٩١١، ٠,١٢٣ علي التوالي)، مقارنة بسيلاج البرسيم (مج١) (١,٠١، ٠,١٤٥ علي التوالي).

وعلية يتضح من هذه الدراسة أن تغذية الماعز الزرايبي الحلاب علي سيلاج مخلوط البرسيم مع الشعير او الدخنابير (بنسبة ١:١) قد حسنت بيئة الكرش، إنتاج اللبن، وكفاءة تحويل الغذاء إلي لبن.

قام بتحكيم البحث

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