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EFFECT OF CHEMICAL AND BIOCHEICAL TREATMENTS FOR SUGAR BEET VIEN SILAGE 0N : I - GROWTH PERFORMANCE OF GROWING LAMBS .

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ABSTRACT

The present study was carried out to estimate the effect of using sugar beet tops as untreated or treated silages which concerning oxalic acid as a natural toxic component, on growing lambs fed on untreated sugar beet tops silage (USBS) or treated as well as chemical sugar beet top treated silage (CSBS) or biochemical sugar beet tops silage (B-CSBS).Twenty four growing Rahmany lambs with an average body weight of 21.99 ± 0.4 kg and aged four months were used in this study . Lambs were divided into four similar groups (6 animals each) and assigned randomly to four experimental rations according to the requirement of NRC (I990) as follows , the first group fed diet received 50% concentrate feed mixture (CFM) as pellets +50% clover hay (CH) as a control , second group fed 50 % CFM (pellets) + 50 % untreated sugar beet top silage (USBS), third group fed 50 % CFM (pellets) +50 % chemical treated sugar beet top silage (CSBS) and forth group fed 50 % CFM (pellets)+50 % biochemical treated sugar beet top silage(B-CABA) .The experiment lasted for 26 weeks at El-Serw Animal Production Station, Animal Production Institute Agriculture Research Center. The data indicated that body weight gain (BWG) was improved with B-CSBS, CSBS and control groups the values were 26.48, 22.41, 25.34 and 27.83 (kg) for control, USBS,CSBS and B-CSBS, respective . thus , the TDN and DCP significantly better with B-CSBS , control and CSBS. the lowest values ($p<0.05$) of TDN (61.28) and DCP (8.16) were recorded with USBS group. Moreover feed conversion based on DM was better with B-CSBS followed by control, CSBS ,lastly USBS and the values were 8.61, 9.97,8.85 and 8.32 for control, USBS,CSBS and B-CSBS respectively .The same trend was observes with daily feed intake and water consumption . Oxalic acid values of experimental rations as well as USBS, CSBS and B-CSBS intake were 9.82, 3.95 and 3.87 mg /100respectively ,whereas total oxalic acid excretion values were 6.88, 2.59 and1.05 mg / 100g / ml for USBS,CSBS and B-CSBS respectively. .The minerals as well as calcium, phosphorus, magnesium, sodium, iron, manganese , Zink and potassium were significantly ($p<0.05$) higher in B-CSBS and CSBS groups compared to USBS and control one ,except for the potassium intake it was lower in B-CSBS than other test groups, Sugar beet tops silage chemical or biochemical treated be used safety, successfully and economically in ration of growing lambs at 50% of nutritional requirements economic efficiency was lower with untreated sugar beet top silage (114 LE) , whereas the economic efficiency was improved with the tow groups received B-CSBS and CSBS by 180 and 208 LE respectively .

Keyword: Growing lambs, chemical, bio-chemical treated silage, oxalic acid residual, growth performance, economic efficiency.

INTRODUCTION

The sugar beet industry produces a wide variety of useful by-products for livestock feeders. The decision to incorporate sugar beet by-products into diets should be based on economics, local availability,

feasibility of storage, handling and feeding. For the wet byproducts, careful attention should be given to transportation costs and storage. In addition, rations containing sugar beet by-products should be balanced properly to achieve targeted livestock performance .The continuous increase in sugar demands lead to increase in sugar beet cultivation , especially in new lands . About 70221 feddans were cultivated with sugar beet at year 1999 in Khafr EL–Sheikh Governorate . This area produced about 877763 tons of fresh sugar beet tops (SBT) contained about 84265 tons DM . Moreover , about 46522 feddans were cultivated with sugar beet in year 2000 at Dakahlia Governorate , it also produced about 581525 tons of fresh SBT contained 60575 tons DM. Oxalic acid also combines with metals such as calcium , iron, sodium , magnesium, and potassium in the body to form crystals of the corresponding oxalates , which irritate the gut and kidneys . Because it binds vital nutrients such as calcium , long - term consumption of feeds high in oxalic acid can lead to nutrient deficiencies .since many years noticed that some fungal species for production large amount of oxalic acid on moist straw , that mean the oxalic acid is one of mycotoxin , its produced by *A . flavus and A . niger* (Gredek ,1974&1983) . Oxalic acid is found in mouldy straw and silage (Clarke and Clarke ,1978; Clarke *et al* .,1981.Yet it is also a phytotoxic organic acid which naturally presented in different plants substances as free acid or calcium oxalate(Nehring ,1972) . Low fecal excretions of calcium, magnesium, phosphorus, and sulfur resulted in positive balances for these minerals. Calcium balance was more positive when subjects received the pinto bean diet, which also supplied more lysine and calcium than the other diets. Abd El-hamid *et al*., (1999 a and b) reported that Zariby goats had being 8.13 – 8.29 mg Ca / dl, 3.45-4.31 mg P /dl, 2.69 – 3.63 mg /dl and 60.8 – 96.2 mg Fe / dl. It is suggested that one aspect of the mechanism of metabolic adjustment to low protein intake involves greater contain oxalic acid , toxic compounds, of which the most prevalent are oxalic acid at high temperatures (over 170°C) partly destroys these. (Edward *and booker*.,1972).

This experiment aimed to evaluate the effect of feeding deferent kinds of sugar beet top in form of silage either untreated and chemical or biochemical to overcome natural harmful oxalic acid in sugar beet top and measure that on body weight gain of growing lamb .

MATERALS AND METHODS

This study was carried out at El-Serw Animal Production Research Station, Animal Production Research Institute, Agricultural Research Center ,Giza, Egypt .during June 2009 **.**

Silage making

Untreated sugar beet top silage

Whole wilted and chopped green sugar beet tops and chopped rice straw were mixed with (4:1), then 5% molasses added during the silage making, then it. was ensiled in plastic bags for 2 month before feeding .

Chemical treated sugar beet top silage

Untreated sugar beet top silage was supplemented with3% calcium carbonate

Biochemical treated sugar beet top silage

The chemical treated sugar beet tops was mixed with1% pro biotic .

Experimental rations and management

Twenty four growing rahmany lambs having average live body weight of 21.99 ± 0.4kg and four months of age were used in this study. The lambs were divided randomly into four similar groups (six lambs in each) according to body weight . Lambs were housed in experimental bens kept under shade .first group received 50% concentration feed mixture (pellets)+ 50% clover hay as control ,second group fed 50% CFM (pellets)+ 50 % untreated sugar beet tops silage (USBS), third group fed 50% (CFM) pellets +50 % chemical treated sugar beet top silage (CSBS) , either forth group fed 50% (CFM) pellets+50% biochemical treated silage(B-CSBS) . Feed was offered two times / day at 8 am and 3 pm. The formula of concentrate feed mixture pellets following :corticated cotton seed 17.0% , yellow corn 44 % , wheat bran 25 % , soy been meal (44% CP),7% common salt 1.5% and 5% molasses .Feed intake and feces weight were recorded daily, experimental was lasted for 26 weeks and experimental rations presented in Table (1) .

oxalic acid and mycotoxins

Oxalic acid was determined in fresh sugar beet tops and in different types of silage untreated sugar beet top silage(USBS), chemical treated silage(CSBS) , Bio-chemical treated silage (B-CSBS) , rations, feces, urine, blood and rumen liquor. Oxalic acid determined according to (Fengwu *et al.,* 1999) .The method was successfully applied to determination of oxalic acid in sugar beet tops and spinach . either aflatoxin$_{B1}$ (AF_{B1}) and ochratoxin $_A$ (ON_A) were determined in ration before feeding and during experimental in control ration and different types of silages .

Minerals determining

Minerals were determined in both rations , feed intake and feces, as well as Calcium(C) was determined according to Elvebach (1970), inorganic Phosphorus (P) according to Freidman *et al*.,1980), Potassium (K) according to Henry(1974),Sodium (Na) according to Maruna (1977),magnesium (Mg) according to warner (1964) and micro elements, zink (Z) according to ,Iron (Fe) according to Meites (1977) and .

Hematological picture

Throughout the feeding period of lambs blood samples were collected by weekly from each animal at early morning before feeding from the jugular vein at 8 am into vacationer tubes Table (5). Hematological parameters of white blood cells (WBC's) packed cells volume (PCV %) as well as Neutrophile , Lymphocyte , Monocyte and Eiosinophile on blood film stained with wrights stain according to Coles (1986).

Samples collection

At the last week of the experiment, feces samples were collected daily for seven successive days from three animals for every tested group for acid insoluble ash (AIA) determining .Representatively samples of fresh feces

were dried and ground then mixed and kept for chemical analysis and estimation of nutrient digestibility was done using the method of Van Keulen and Young (1977) . Blood samples were collected from each animal at early morning before feeding from the jugular vein into vacationer tubes. Hematological parameters including white blood cells (WBC′s) packed cells volume (PCV%) and hematology concentration. Doumas *et al*., (1971) .

Analytical methods

Chemical analysis of feed ingredients and feces was carried out according to A.O.A.C. (2000). acid insoluble ash (AIA) of Van Keulen and Young (1977) . Mycotoxins was determined according to modified model of (Abdelhamid and Saleh,1996).Ca was determined according to Elvebach (1970) , P according to Freidman *et al* .,1980),Mg according to Oranye and Rhein (1951) and Iron according to Meites (1977) .

Statistical analysis

All numerical data obtained were statistical analyzed by SAS (1996) procedures for personal computer . When F-test was positive , least significant differences Duncan (1955) within program SPSS was done to determine the degree of significance between means .

RESULTS AND DISCUSSION

Chemical composition of experimental rations

Table (1). presented the chemical analysis of experimental rations and feed ingredients .Crude protein (CP) was lower in untreated sugar beet tops(USBS),whereas crude fiber(CF) was higher in berseem hay and concentrate feed mixture (pellets) On the other hand nitrogen free extract (NFE) was lower in berseem hay while biochemical treated silage (B-VSBS) was higher in both CP, and NFE than other tested groups , these results are in agreement with (Abdelhamid *et al* ,1992) who reported that there variations in the chemical composition of different agriculture wastes .These variation were found too in their digestibility and mineral content .

oxalic acid and mycotoxins

Oxalic acid is very harmless for human and animals because it causing kidney and liver damage. Abdehamid and Saleh (2000) People with recurrent kidney stones have a tendency to absorb higher levels of dietary oxalates compared to those not prone to kidney stones. A low -oxalate diet is eating foods containing less than 50 mg of oxalic acid per day **.**

Table (1). Chemical composition of ingredients, different types of silage and experimental rations .

items	pallets	BH	RS	Experimental rations on (DM bases)			
				COTROL	UTSBS	CSBS	B-CSBS
Chemical composition (%)							
DM	89.82	88.11	89.56	88.68	62.54	65.41	68.04
OM	90.17	89.23	81.15	89.92	84.75	81.55	87.47
CP	13.92	14.16	3.42	13.97	12.58	12.66	14. 89
CF	11.78	24.79	33.74	18.29	14.30	14.00	7.61
EE	3.29	3.05	1.63	3.24	3.36	3.09	3.36
Ash	9.83	10.77	18.85	10.08	15.25	18.45	12.53
NFE	61.18	47.23	44.13	56.09	54.51	50.82	57.62
AIA	-	-	-	3.93b	4.4a	3.8b	3.2b

Cell wall constituents (%)				
	COTROL	**UTSBS**	**CSBS**	**B-CSBS**
NDF	42.90a	38.11b	34.65b	31.14c
ADF	32.50a	29.66b	28.16b	24.52c
ADL	9.35a	7.72b	6.76b	6.54b
H. celluloses	10.40a	8.45b	6.49c	6.62c
Cellulose	23.15a	20.94b	22.40a	17.98c
NFC	28.99	26.64	27.45	23.88
NFC/ NDF	0.68	0.72	0.77	0.77
NFC/ ADF	0.89	0.93	0.94	0.97
NFC/ hemi	0.54	0.56	0.63	0.58
Cell, / NDF	0.71	0.73	0.77	0.73
Cell, / ADF	2.79	3.15	4.23	3.61

BH = berseem hay , USBS = Untreated sugar beet silage, CSBW = Chemical treated sugar beet tops silage B-CSBS = biochemical treated sugar beet tops silage.

Data in Table (2).clearly that USBS group was higher significant difference($p<0.05$) than CSBS and B-CSBS groups , whereas B-CSBS recorded lower value of oxalic acid, this may be due to bicarbonate and pro biotic supplemented to silage among silage making .This results agree with that obtained by Abelhamid and El-emam (2001). Oxalic acid also combines with metals such as calcium , iron, sodium , magnesium, and potassium in the body to form crystals of the corresponding oxalates , which irritate the gut and kidneys. Because it binds vital nutrients such as calcium, long-term consumption of feeds high in oxalic acid can lead to nutrient deficiencies. Oxalic acid is one of mycotoxins, its produced by *A. flavus and A. niger*. (Abdehamid and Saleh, 2000) . Whereas the values of mycotoxins as ochratoxin$_A$ with Untreated sugar beet silage were 13.72 ppm and Aflatoxin$_{B1}$ was 76.8 ppm for aflatoxin $_{B1}$ and ochratoxin $_A$ respectively .this may be bach to calcium bicharbonat and probiotic supplemented to silage.subsequent the aflatoxin$_{B1}$ and ochratoxin$_A$ impair liver and kidney function, delay blood clotting, increase susceptible to bruising,and interfere with cellular humoral immune system (Diekman and Green ,1992) .

Table (2).Oxalic acid contain in diets, feces and urine µg/100(gm/or ml)and mycotoxins aflatoxin$_{B1}$ and ochratoxin$_{A}$ ppm.

Items	Control	Oxalic acid mg / 100 gm or ml		
		USBS	CSBS	B-CSBS
Oxalic acid :				
Rations	-	9.82a	3.95b	3.87b
Feces	-	2.67a	0.86b	0.74b
Urine	-	4.21a	1.73b	1.51b
rumen liquor	-	7.21a	1.58b	1.19b
Blood	-	2.48a	0.70b	0.28b
Total excretion	-	6.88a	2.59b	1.05b
Mycotoxins aflatoxinB1 and ochratoxinA ppm				
Aflatoxin B1 ppb / kg	81.7a	13.72b	-	-
Ochratoxin A ppb/ kg	126.3a	76.8b	-	-

Means having different superscripts within the same row are significantly different at P<0.05 .

Digestion coefficients and nutritive values

Results of TDN and DCP are presented in Table (3) . All nutrient digestibility and nutritive values were significantly (P<0.05) affected by the tested diets. Generally, the USBS showed significantly the lowest digestibility coefficient values of OM ,CP, CF,EE and NFE than those of CSBS , B-CSBS and control groups whereas there is no significant differences between CSBS and B-CSBS or control groups in these trend .The results are in agreement with Schmeider and Flatt (1975) and Azim *et al* . (1983).The values of DCP were 9.67, 7.49, 8.27and 10.50 % for the control , USBS, and B-CSBSrespectively.But TDN were recorded 67.84,61.28,64.37and 68.18 for same groups respectively.These are in agreement with Parfitt *et a*.,(1982).

Table (3). Digestion coefficients and nutritive values of sugar beet tops silage fed by growing lambs.

Items	Control	USBS	CSBS	B-CSBS
Digestion coefficients , %				
OM	68.45a	62.37b	66.87a	68.76a
CP	69.2a	58.7b	65.3a	70.5a
CF	55.1b	61.8b	66.4a	69.2a
EE	62.7a	53.3b	60.0a	65.5a
NFE	66.9a	58.3b	64.8a	68.4a
Nutritive value , %				
TDN	67.84	61.28	64.37	68.18
DCP	9.67	7.49	8.27	10.50

Means having different superscripts within the same row are significantly different at P<0.05 .

Fermentation characteristics of silage

At the end of the period (8 weeks) and as show in Table (4) .The present result showed that pH values were 4.89 USBS , 4.41CSBS and 4.58 B-CSBS. Ammonia –N(%) of total N was 5.23,4.12 4.79 for USBS , CSNS and B-CSNS respectively. Whereas total volatile fatty acid (% of DM) was 1.92 USBS ,1.46 CSBS and 1.77 B-CSBS these results agree with Mahmoud (2005).who found that at the end of the fermentation period(8

weeks) pH values reached 4.1 and total VFA concentration reached 2.15 (m /100 ml) .Whereas total count of microorganisms were significantly higher ($p<0.05$) and the values were 5.9×10^5, $6.8\times10^7$and 7.5×10^8 for USBS ,CSBS and B-CSBS respectively .

Table (4). Fermentation of characteristics of different kinds of silages

Items	USBS	CSBS	B-CSBS
pH value	4.89	4.41	4.58
Ammonia –N %of total N	5.23	4.12	4.79
Total volatile fatty acid % of DM	1.92	1.46	1.77
Lactic acid (mg/100g)	4.28b	4.92a	5.23a
Total count of microorganisms ,CFU / g	5.9×105b	6.8×107a	7.5×108a

Means having different superscripts within the same row are significantly different at P<0.05 .

Minerals intake and excretion :

Data in Table(5) indicated that minerals intake had variation values and significant differences among treatments, particularly with chemical and bio-chemical sugar beet tops silage.

Table (5). Minerals intake and excretion in feces (mg /h /d) of growing of growing lambs fed deferent type of sugar beet tops silage

Items	Control	USBS	CSBS	B-CSBS
Rations minerals				
Ca	55.97	34.97	1.40	1.63
P	40.25	23.50	32.54	54.43
K	24.53	22.95	19.27	17.72
Na	38.36	14.75	9.47	7.59
Mg	32.70	20.22	15.39	23.48
Z	32.18	25. 75	37.31	44.19
Mn	43.40	22.40	15.38	18.99
Fe	36.49	26.78	33.73	55.70
Cu	2.52	1.64	2.96	4.43
Minerals intake				
Ca	0.89b	0.64b	2.36a	2.57a
P	0.64a	0.43b	0.55b	0.86a
K	0.39a	0.42a	0.33b	0.28b
Na	0.61a	0.27b	0.16b	0.12b
Mg	0.52a	0.37b	0.26b	0.45b
Z	41b	33b	58a	61a
Mn	69a	41b	26b	30b
Fe	58b	49b	57b	88a
Cu	4b	3b	5b	7a
Feces minerals				
Ca	0.19	0.13	0.47	0.51
P	0.17	0.9	0.12	0.13
K	0.7	0.8	0.7	0.6
Na	0.13	0.5	0.4	0.3
Mg	0.11	0.7	0.6	0.9
Z	8	7	10	12
Mn	13	8	5	7
Fe	12	10	12	16
Cu	0.8	0.6	0.11	0.15

Means having different superscripts within the same row are significantly different at P<0.0

It had significantly ($p<0.05$) higher intake than those of control (CB) and USBS, except of potassium was significantly ($p< 0.05$) lower when compared to other tested groups. These results may be due to pro biotic supplemented silage through the silage making and low level oxalic acid in CSBS and B-CSBS diets. These results agreed with Hoek *et al* .,(1988) who reported that calcium concentration,as same time the results show that the feces minerals excretion of B-CSBS significantly ($p< 0.5$) lower compared with those obtained from USBS and control group except of total potassium excretion in USBS was more higher than other tested groups .These results agreed with Hoek *et al*.,(1988). Who reported that calcium concentration ,calcium: phosphorus ratio must be no more 2:1 .

Hematological picture

The hematological picture of Rahmany lambs fed on deferent types of sugar beet silage Table (6), showed significant ($p<0.05$) decrease in erythrocyte and leucocytes for USBS compared with CSBS, B-CSBS and control groups .On the other hand the two fraction of white blood cells (neutrophile and lymphocyte%) and eiosinophile were significantly increased($p< 0.05$) with USBS group, whereas the monocyte significantly decrease to same group. This increases of lymphocyte and neutrophile for USBS group may be due to the increases of oxalic acid level and the decreases of protein compared with CSBS , B-CSBS and control groups Addition to that, oxalic acid have an enhancement effect to the humoral immune response and increase white blood cells as reported by Pollman *et al* , (1980) .and Saleh *et al* .(2007).

Table (6). Of growing lambs fed different types of sugar beet top silage

Items	Control	USBS	CSBS	B-CSBS
WBC's (10^3 ul)	6.08b ±0.17	6.19b±0.08	6.88a ±0.28	7.43a ±0.11
Lymphocyte (%)	55.8b ±2.6	57.3b±3.8	60.45a±0.76	63.7a±2.3
Neutrophile (%)	42.5b±2.13	41.8b± 1.6	52.17a ±0.59	57.9a ±1.8
Eiosinophile (%)	5.20b±0.3	4.7b ±0.3	5.80a±0.09	6.9a±0.10
Monocyte (%)	17.50b ±0.8	21.9a± 1.4	18.34c±0.6	14.7c±0.6

Means having different superscripts within the same row are significantly different at P<0.05 .

Feed Intake and water consumption

The feed intake values were 1590 , 1830, 1650 and 1580 g / h / d (on dry matter basis) with no significant differences between control ,CSBS and B-CSBS groups .Whereas water consumption showed significantly higher ($P<0.05$) values with CSBS group than other treatments and the values were 2680 , 2590, 2515 and 2470 ml/h/d for control, USBS, CSBS and B-CSBS, respectively(Table 7).Water consumption positively correlated with DM intake and CF content (Table1). And oxalic acid content (Table 2) .The results are in agreement with the results obtained in other study (Sultan ,1995) .

Economical efficiency

This study in Table (8) .cleared that using sugar beet tops silages treated chemically or biologically in ruminant feeding up to 50% of their requirements decreased the feed costs 23 % , 24.4 % and 28.5 % for UTS , CSBS and BCSBS respectively compared with control group .These decreases in cost may be due to that sugar beet tops silage are cheap by products . These data are in agreement with Murdoch (1962).

Table (7). Feed intake, water consumption , and average daily gain of lamb feed Different tested experimented rations .

Item	Control	USBS	CSBS	B-CBS
Initial weight (kg)	22.35±0.24	21.95±0.21	22.05±0.18	21.60±0.36
Final weight (kg)	48.83±0.7a	44.36±0.5b	47.39±0.7b	49.43±0.3a
Total gain (kg)	26.48	22.41	25.34	27.83
Average daily gain (kg)	0.147a	0.125b	0.141a	0.155a
Feed intake and nutritive values (on DM bases)				
Concentrate (gm /h/d)	770.59	865.18	780.23	745.69
Clover hay (kg / day)	0.813	-	-	-
Silage (kg / day)	-	0.965	0.867	0.829
Total feed intake(kg / day)	1.59b	1.83a	1.65b	1.58b
Price ofconcentrate intake	1.70	1.90.	1.72	1.64
Price of clover hay intake (LE)	0.813	-	-	-
Price of silage intake (LE)	-	0.0483	0.0477	0.0497
Total price of feed intake(LE)	2.51	1.94	1.72	1.64
Price of daily BWG (LE)	3.54	3.08	3.52	3.72
Feed conversion ratio				
Feed/gain(kg DMI/kg gain)	8.61b	9.97a	8.85b	8.32b
DM (kg)	6.69	7.94	6.87	6.24
TDN (kg)	4.89	5.66	4.85	4.78
DCP (kg)	764	891	713	697
water consumption ml /h/d	2680a	2590ba	2515b	2470b

Means having different superscripts within the same row are significantly different at P<0.05 .

Price of concentrate ton = 2200 LE, Price of roughages ton = 1000 , Price of USBS (Ton) = 50 LE Price of CSBS (Ton) =55 LE , Price of B-CSBS (Ton) =60 LE . ,Price of kg meat 22 LE.

Table (8). Economical efficiency (LE)of experimental rations fed to growing lambs

ITEMS	Control	USBS	CSBS	B-CSBS
Price roughage(LE / kg)	147.97	8.79	8.68	9.05
Feed roughage cost / animal (LE)*	0.813	0.0483	0.0477	0.0497
Price concentrate (LE / kg)	309.4	345.8	314.0	298.5
Feed concentrate cost/ animal (LE)*	1.70	1.90	1.72	1.64
Total feed cost / animal (LE)1	251	194	172	164
Average daily gain (kg)	0.157	0.140	0.150	0.166
Total revenue / animal (LE) 2	254	308	352	372
Net revenue / animal (LE) 3	103	114	180	208
Gain of pound 4	0.41	0.59	0.1.05	1.27
Economical efficiency %	141	159	205	227

*** During experimental period**

(1) Total feed cost = Price roughages (LE / kg) + Price concentrate (LE / kg).

(2)Total revenue/ animal (LE)= Average gain x price of live weight (22LE / kg LBW).

(3) Net revenue /animal (LE) = (2) – (1). (4)Gain of pound = (3) - (1).

(5) Economical efficiency (EE) % = (2) / (1) X100 .

CONCLUSION

From this study it could be concluded that 50% of sugar beet tops can be used in ruminant feeding , particularly in form of chemical and biochemical silages.

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تأثير المعاملات الكيماوية والكيموحيوية لسيلاج عروش بنجرالسكر على I– أداء النمو للحملان الرحمانى النامية.

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أجريت هذه الدراسة بمحطة بحوث الانتاج الحيوانى بالسرو – مركز البحوث الزراعية - إستهدفت الدراسة تقييم أثر استخدام المخلفات الحقلية من عروش بنجر السكر المرتفعة فى محتواها من حمض الاوكساليك على صورة سيلاج سواء غير المعامل او المعامل كيماويا اوكيموحيويا المرتفعة وأثر ذلك على معدلات النمو والناحية الاقتصادية للحملان النامية . استخدم فى هذه الدراسة عدد 24 ذكر من الحملان الرحمانى التامية عمر 4شهور- تزن فى المتوسط و21.99 كجم واستمرت التجربة لمدة 26 اسبوعا , قسمت الحيوانات عشوائيا إلى أربعة مجاميع متساوية (6حيوانات بكل معاملة).غذيت الحملان النامية حسب الاحتياج وفقا لمقررات NRC (1990) كالتالى : المجموعة الأولى غذيت على عليقة 50% مركزة على صورة مصبعات + 50% دريس برسيم (مقارنة) , الثانية غذيت على عليقة50% مركزة على صورة مصبعات + 50% سيلاج عروش بنجر السكر غير المعامل ,المجموعة الثالثة غذيت على عليقة50% مركزة على صورة مصبعات + 50% سيلاج عروش بنجر السكر المعامل كيماويا , الرابعة غذيت على عليقة50% مركزة على صورة مصبعات + 50%سيلاج عروش بنجر السكر المعامل كيموحيويا .

وقد أظهرت النتائج ان الزيادة فى وزن الجسم للمجاميع المختبرة كانت منخفضة معنويا مع السيلاج غير المعامل مقارنة بالمعامل على مستوى (0.05) وقد سجلت العلائق المختبرة القيم الأتية 27.83, 25.34, 22.41, 26.48كجم لكل من عليقة المقارنة , السيلاج غير المعامل والسيلاج المعامل كيماوبا وكيموحيبويا على التوالى .بينما سجل الغذاء المأكول إنخاضا معنويا على مستوى (0.05) لنفس المعاملة وكانت القيم 1590, 1650,1830 و 1580 جم /للرأس / اليوم . اما المركبات الكلية المهضومة والبروتين المهضوم فقد سجلوا فرقا معنويا لكلا من (مجاميع المقارنة والسيلاج غير المعامل)من ناحية وبينها وبين السيلاج المعامل كيماويا وكيموحيويا من ناحيةاخرى على مستوى (0.05) وبقيم للمركبات الكلية المهضومة 67.84, 61.28, 64.37, 68.18 كجم , بينما سجل البروتين المهضوم القيم الأنية 9.67, 7.49, 8.27, 10.50 كجم لكلا من المقارنة والسيلاج غير المعامل والمعامل كيماويا وكيموحيويا على التوالى . وقد سجل الماء المشروب نفس الاتجاة للعذاء , بينما سجل حمض اوكساليك القيم آلاتية :9.82, 3.87,3.95 ميكو جرام لكل 100جرام فى حين سجلت قيم الاوكساليك فى المفرز من الجسم القيم الاتية : 6.88, 2.59, 1.45 ميكو جرام لكل 100 جم او مل . فى حين وجدت السموم الفطرية فى كلا من مجموعة المقارنة والسيلاج غير المعامل بالقيم 81.7 , 13.7للأفلاتوكسين , 126.3, 76.8 جزء فى المليون للأوكراتوكسين على التوالى كما اثبتت العاملات الكيموحيوية ان محتوى العليقة من الاملاح المعدنية كالكاسيوم والفسفور والمنجنيز والماغنسيوم والحديد والزنك والصوديوم والحديد والنحاس كان مرتفعا بشكل جيد عن سائر المجاميع الاخرى

الجدوى الاقتصاديه : أوضحت هذه الدراسة أن إستخدام المعاملة الكيماوية والكيموحوية لسيلاج عروش بنجر السكر قد قللت من حمض الاوكساليك الضار الطبيعى بها ورفع قيمته الغذائية مما يشجع على إضافته بنسبه 50 % من الإحتياجات الغذائية حيث أنه قلل تكاليف التغذية مقارنة بالتغذيه على عليقة الكنترول . من هذه الدراسة يوصى باستخدام هذه المخلفات خاصة على صورة سيلاج معامل كيماويا اوكيموحويا للمساهمة فى التغلب على مشكلة نقص الأعلاف المستخدمة فى تغذية الحيوانات المجترة والإقلال من مخاطر إصابة كلى الحيوانات نتيجة التغذية على عروش خضراء بها نسبة عالية من هذا الحامض الطبيعى الضار .

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