J. Agric. Sci. Mansoura Univ., 30 (1): 173 - 183, 2005

COMPARISON BETWEEN THE EFFECTS OF LEASTURE YEAST AND LOCAL BAKERY YEAST ON NUTRIENTS DIGESTIBILITY, GROWTH PERFORMANCE AND BLOOD PARAMETERS OF BUFFALO CALVES

El-Kholi, Nazley M.[1]; M.A. El-Ashry[2]; K. A. Shahin[2] and H. A. Mazen [1]

1- Animal Production Research Institute, Dokki, Giza, Egypt.

2- Dept. of Animal Production, Faculty of Agriculture, Ain Shams University, Cairo, Egypt.

ABSTRACT

This study was conducted to compare between the effect of leasture yeast and local bakery yeast supplementation as non hormonal growth promoters on growth rate, nutrients digestibility, feed conversion and some blood serum parameters. Twenty buffalo male calves of about 14 months of age with an average initial live body weights of 229.2 kg were divided into four similar groups (5 animals each) and assigned randomly to four experimental groups as follows:

T1: calves were fed according to the El-Ashry (1980**)** allowances for maintenance + 800 g mean daily gain and each animal was daily supplemented with 10 g leasture yeast (Cenzyone Tech. Inc.) with the concentrate feed mixture.

T2: calves were fed as in T1 but each animal was daily received 10 g local bakery yeast (*Saccharomyces cerevisiae*) with the concentrate feed mixture.

T3 (Positive control): as in T1 and T2 without any supplementation.

T4 (negative control): calves were fed according to Animal Production Research Institute (APRI) (1997) allowances.The experiment lasted for six months ,after three months, the digestibility trials were conducted by using acid insoluble ash (AIA) from all animals in each group.

The results showed that nutrients digestibility of buffalo calves were improved by adding yeast culture in comparison with other groups (without additive).Also, local bakery yeast increased digestibility coefficients of DM ,CP and NFE % by 2.68 %,4.19% and 3.45 % ,respectively and decreased EE and CF digestibility by 0.36 % and 2.14% compared to leasture yeast supplementation (imported).The differences were not significant .On the other hand ,leasture yeast supplementation had the best average daily gain (1097gm) but the lowest was that of T4 (negative control or APRI allowances), while, both of T2 (local yeast) and T3 (positive control or El- Ashry allowances) showed intermediate value .Moreover, leasture yeast additive resulted 9.7% higher growth compared with T3 (positive control) and 21.9 % higher growth than of T4 (negative control) but bakery yeast showed 5.3 % higher gain than T4 and -5.2 % lower gain than T3. Feed conversion (Kg DM /Kg gain) was improved by adding both yeast (T1 and T2) followed by T3.The best economic efficiency was recorded with T1 and T3 which fed leasture yeast and El-Ashry allowances without additive . On the other hand, results showed that no significant differences among different groups in the all intervals for blood serum parameters expect in creatinine values. These results support the recommendation of implementing this promoter in the current feeding systems of the Egyptian Buffalo calves with balanced ration or to elevate the nutritional requirements according to El-Ashry (1980) allowances.

Keywords: Yeast, nutrient digestibility, growth performance, feed efficiency, blood serum parameters.

INTRODUCTION

Buffaloes as the main productive animal in Egypt, give the national economy around 40% from the total red meat produced annually (El-Ashry et al., 2004**)** although their small calves at about 60-70 kg as Bettalo meats as a custom spreading in Egyptian country-side due to the shortage in feed -stuffs needed to raise these animals to older age and heavier weights (Nigm, 1996).Regardless that, there are several axes to increase red meat production, one of the alternative solutions is the improvement in environmental circumstances surrounding the animals characterized mainly in improving nutritional supplies which in turn could be characterized by using growth promoters in feeding young ruminants. This solution may cost less, give quick response and take shorter time.

Growth promoters are non nutritional compounds given to animals to increase average daily gain and improved feed conversion. Dawson and Hopkins (1990) who reported that the addition of yeast cells to in vitro ruminal cultures increased cellulose degradation. Also, Olson et al .(1994) found that Diamond V (XP) yeast culture inclusion in the rations increased in situ NDF and CP degradation and consistently increased in vitro organic matter digestibility and dietary soluble N. On the other hand, El-Basiony et al. (1998) found that yeast culture supplementation increased average daily gain ,digestibility of CF and CP , while, carcass parameters were improved only during the second stage of fattening (more than 400 Kg live body weight).

Leasture yeast (Cenzone Tech. Inc) and Local Bakery yeast, (*Saccharomyces cerevisiae*) will be used in this study, as growth promoters for growing buffaloes in Egypt. The main objectives of the present investigation are to compare the role of Leasture yeast (Cenzyone Tech. Inc.) and Local Bakery yeast on live daily gain, nutrients digestibility, feed conversion ,economic efficiency and some blood serum parameters of buffalo male calves .

MATERIALS AND METHODS

Experimental animals and feeding system:

This study was carried out at Mehalet Mousa, Kafr El-Sheikh Governorate. Twenty buffalo male calves of about 14 months of age with an average initial live body weight of 229.5 Kg (ranged between 195 to 275kg) were distributed into four similar groups (five heads each) and assigned randomly to four experimental treatments. Animals were kept individually in open sheds and each animal was tied. Calves were fed individually and received the natural feed additives at two level 0, 10 g/head/day with their concentrate diet as follows:

T1: Calves were fed according to El-Ashry (1980) allowances (Table 1) to support mean daily gain of 800 g with 10 g/head of leasture yeast (Cenzyone Tech. Inc) containing $5x10^9$ organism/g as growth promoter (imported yeast).

T2: Animals were fed the same allowances of T1 but 10 g of local bakery yeast (*Saccharoomyces cerevisiae*) containing $5x10^9$ organism/g was offered per animal/day instead of leasture yeast.

T3 (positive control)**:** Calves were fed the same allowances to support maintenance and mean daily gain of 800 g without any supplementation.

T4 (negative control)**:** Calves were fed according to Animal Production Research Institute allowances (Table 2) to support maintenance and mean daily gain 750 g (APRI 1997).

Table 1. El-Ashry (1980) allowances for average gain of 800 g/head/day.

Weight range (kg)	TDN (kg)	DCP (g)
217 – 269	3.6	660
270 – 324	4.0	750
325 – 374	4.4	780
375 – 424	5.1	820
425 – 449	5.5	880
450 – 474	6.0	700
475 – 500	6.7	750

Table 2. Animal Production Research Institute allowances for 750 g/head/day (APRI, 1997)

Live body weight (kg)	TDN (kg)	DCP (g)
200	3.6	610
300	5.4	810
400	6.8	870

Feedstuffs:

Daily ration was offered at 8 a.m. hr. according to live body weight of buffalo calves from berseem hay ,rice straw and concentrate feed mixture . Roughage : concentrate ratio was ranged from 53% to 57% for T1 ,T2 and T3, while, the corresponding range for T4 ranged from 33% to 62.5 % . The ingredients of the concentrate feed mixture were 35% wheat bran, 30% yellow corn ,15% sunflower meal ,15% cotton seed meal , 3% molasses , 1.5% limestone and 0.5% salt.animalshad access to fresh water three times daily i.e. 7.00 a.m., 1.00 p.m. and 5.00 p.m.

Table (3) shows the chemical composition of the dietary ingredients used in the experiment rations which consisted of concentrate feed mixture, rice straw and berseem hay, while Table (4) shows the chemical and biological composition of the two sources of yeast.

Table 3. The chemical composition of the feedstuffs used in the experimental rations.

Item	% on DM basis						
	DM	OM	CP	CF	EE	NFE	Ash
Concentrate feed mixture	91.60	91.96	17.67	15.28	2.61	56.04	8.40
Berseem hay	88.30	88.60	11.41	33.82	0.76	42.61	11.40
Rice straw	84.40	84.40	3.70	36.23	0.85	43.62	15.60

Table (4): Chemical and biological composition of the two sources of yeast.

Ingredients	Leasture	Local
Crude protein (%)	26.5	37.66
Ether Extract (%)	5.5	5.5
Crude fiber (%)	15.5	1.7
S. cerevisiae (CFU/ g)	$5x10^9$	$5x10^9$
Lactobacillus acidophilus (CUF/g)	$77x10^5$	
Streptococcus faecium (CUF/g)	$44x10^9$	
Bacillus stals (CUF/g)	$2.2x10^9$/kg	
Amylase	$2x10^6$ units/kg	
Cellulase	$48x10^4$ units/kg	
Protease	10^5 units/kg	
Lipase	$3x10^5$ units/kg	

Digestibility trials:

After three months from the start of the experiment, digestibility trails were conducted using all animals in each group. Grab feacal samples were collected handily at 8 a.m. hrs for seven successive days from each animal for chemical analysis and estimation of nutrient digestibilities.The acid insoluble ash (AIA), an internal marker, was applied to estimate the nutrients digestibility (Van Keulen and Young, 1977).

Body weight and feed intake:

Animals were shrunk weighed every 2 weeks to the nearest kilogram. Changes in live body weight and daily gains were calculated throughout the different experimental periods. Feed intake was recorded biweekly for each animal in different treatment groups by measuring the residue of feed introduced.

Blood sampling:

Blood samples were collected from four representive animals after 1, 3 and 6 months of the experimental start for each group. Blood samples were withdrawn from the jugular vein at 7.00 am before morning feeding. Blood samples were left at room temperature, to coagulate for one hour then were shiphted to refrigerator and left overnight to separate clot and serum. Thereafter, samples were centrifuged for 20 min at 5000 rpm, serum was collected then stored at –20^{o}C till assay. Serum samples were used for total proteins, albumin, globulin, creatinine and urea determinations.

Chemical analysis :

Feedstuff, residue and faeces samples were analyzed for moisture, crude protein, crude fiber, ether extract, and ash according to A. O. A. C. (1990). While, NFE values were calculated by differences. Serum total protein, albumin, urea and creatinine were determined according to commercial kits (from Biomereux, Farance), while globulin was calculated by subtracting the values of albumin from total protein .

Statistical Analysis:

The data were analyzed by one-way analysis of variance (SAS 1995).Significant differences were subjected to Duncan's multiple range F-test (Duncan,1955).

RESULTS AND DISCUSSION

Digestibility trials:

Results of nutrients digestibility of buffalo calves fed the experimental rations with or without yeast supplementation are presented in Table (5) which indicates that the highest digestion coefficient values for dry matter digestibility (DM) and crude fiber (CF) were recorded for both T1 and T2 groups supplemented with yeast culture, while , the lowest value was that of T4. However, differences in DM and CF digestibilities for different treatments did not significant. Similar trend was reported by Khattab et al., (1997[a&b]) on buffalo calves and Gomaa et al., (1998) on lambs. The insignificant increase in CF digestibility may be due to that yeast supplementation increased cellulase and amylase activities in calf rumen (Kmet et al., 1992**)**. On the other hand, Mansour (1995) found that animals treated with Lasalocid alone or plus Rovimix had higher crude fiber digestibility because Rovimix contains trace element. Similarly, the highest organic matter (OM), crud protein (CP) and nitrogen free extract (NFE) digestibilities were recorded for T2 followed by T1 then T3. Improving digestibility of nitrogen free extract in T1,T2 and T3 may be due to higher allowances than offered to the T4 (farm –negative control). No significant differences were recorded between both yeast cultures or between T3 and T4 groups (without additives). The present results agree with those of El Basiony et al., (1998) who reported significant improvement in CP digestibility when Lasalocid was supplemented to buffalo calf at a rate of 3 kg/ton feed mixture.

Digestibility of ether extract was significantly ($p<0.05$) increased by both yeast culture supplementation compared to the T3 (positive control ration) and non significant increased with T4 (negative control ration). Similar results were obtained by Fayed (1995). She found that acid-pack supplement had significantly higher digestibility values for crude fiber, ether extract and organic matter in the treated growing buffalo calves compared to the control.

Table (5): Nutrients digestibility (%) for different buffalo calf groups.

Item	Treatment				±SE	Sig.
	1	2	3	4		
Dry matter	61.0	61.2	59.5	58.8	2.0	NS
Organic matter	67.3^{ab}	69.1^{a}	64.7^{b}	63.3^{b}	1.8	*
Crude protein	69.2^{ab}	72.1^{a}	64.3^{b}	64.7^{b}	3.1	*
Ether extract	84.1^{a}	83.8^{a}	71.1^{b}	76.2^{ab}	5.9	*
Crude fiber	52.4	51.3	48.2	47.2	4.2	NS
Nitrogen free extract	72.5^{ab}	75.0^{a}	72.6^{ab}	68.7^{b}	2.6	*

a,b Means in the same row with different superscripts differ significantly (P<0.05).

blood serum analysis :

Values of serum total proteins of treated and control groups are shown in Table (6). The data indicate insignificant higher values of serum total proteins of T1, T2 and T3 than that of the negative control T4. These results are in a good agreement with the findings of Fayed (1995) , Khatab et al., (1997[a&b]) and Salama (1999) who worked with growing buffalos. They reported that growth promoters did not affect serum total proteins. While, the current finding are match with this obtained by Hussein (1986) reported that serum total protein means ranged between 6.2 g/100 ml and 7.4 gm/100 ml for male growing buffalo.

Table (6) indicates no significant differences between yeast groups (T1 and T2) and control groups (T3 and T4) in blood serum albumin, globulin and A/G ratio . Moreover, all blood serum protein and its fractionations (albumin, globulin and A/G ratio) were within the normal levels .The present results show that serum creatinine levels are significantly higher in T4 (negative control) than those of both treated groups (T1 and T2) during the whole experimental period .It may due to that yeast supplement caused increased in body muscle mass and its verses highly main daily gain significant decreased of T1.This agreement with Fayed (1995) who reported that acid pack -4 way supplement caused significant lower serum creatinine. While, Khattab et al., (1997) indicated that Lacto sacc had no effect on serum creatinine .Also, the results in Table (6) show slightly higher mean values in serum creatinine for untreated groups than those of both treated groups (T1 and T2),particularly the second and third intervals.

Data in Table (6) show gradual slight increase in values of serum urea with advancing intervals as well as from T1 and go on till T4.The 1[st] intervals recorded the lowest values ,while ,the highest values were those of the last . Results indicated also, insignificant decrease in serum urea levels in treated groups (T1 and T2) than in the control groups (T3 and T4) through the different intervals ,it may be due to that yeast cased more protein retention. Fayed (1995) reported that treated buffalo calves with Flavomycin or acid pack - 4 did not alter blood serum urea concentration significantly, which ranged between (38.3-59.3mg %). These results are in a good agreement with those of Hussein (1986) Badawy (1992) and Khattab et al (1997[a &b]).

Growth performance and economic evaluation:

Changes in body weight are presented in Table (7).Total gains were 197.5, 170.0 , 180.0 and 162.0 kg for T1, T3, T2 and T4,respectively.The differences among groups were not significant. Considering the mean daily gains, it is obvious that highest value was that recorded for T1(leasture yeast), while the lowest was that of T4 (negative control ,APRI allowances) while both T2 (local yeast) and T3(positive control ,El-Ashry allowances) showed intermediate values the same trend as in total gain . The improvement in daily gain for T1 could be attributed to the change of the rumen fermentation by increasing bacterial activity especially cellulitic bacteria reflecting better digestion of crude fiber (Table 5) and utilization of forage (Table 7) and increased flow of the microbial protein from rumen (Abou Ammou and El-Hosseiny, 1999).

Table (6): Effect of different experimental treatments on blood serum parameters.

	Time of sampling month	Treatment				± SE	Sig.
		1	2	3	4		
Total Proteins (g/dl)	1	6.40	6.42	6.45	6.32	0.42	NS
	3	6.72	6.65	6.57	6.60	0.21	NS
	6	7.35	7.42	6.87	6.80	0.49	NS
Albumin. (g/dl)	1	3.42	3.47	3.20	3.40	0.25	NS
	3	3.45	3.52	3.42	3.42	0.22	NS
	6	3.55	3.52	3.45	3.47	0.25	NS
Globulin (g/dl)	1	2.98	2.95	3.26	2.92	0.31	NS
	3	3.22	3.13	3.16	3.18	0.41	NS
	6	3.80	3.90	3.42	3.33	0.21	NS
Albumin / Globulin ratio	1	1.14	1.13	1.23	1.14	0.10	NS
	3	1.11	1.01	1.06	1.10	0.06	NS
	6	1.02	1.01	1.04	1.03	0.06	NS
Creatinine (mg/dl)	1	0.86	0.65	0.66	0.93	0.16	NS
	3	0.94	0.98	1.10	1.30	0.26	NS
	6	0.93^{b}	1.10^{b}	1.30^{a} ^{b}	1.50^{a}	0.31	*
Urea (mg/dl)	1	36.4	38.4	39.4	42.7	6.2	NS
	3	38.9	39.6	41.6	43.3	7.5	NS
	6	41.0	41.9	42.0	45.0	4.4	NS

a ,b Means in the same row with different superscripts differ significantly (P<0.05).

Daily gains presented in Table (7) indicate that using El Ashry allowances (T3) without any yeast supplementation resulted mean daily gain through the experiment being 1.000 (kg), which formed 111.1% of that recorded for APRI (1997) allowances group (T4).However, differences between T1 & T3 and T2 and T3 were found to be 8.8 and –5.4% although the three groups had the same plane of feeding with or without yeast supplements.Using El Ashry(1980) allowances with imported leasture yeast supplement resulted 9.7% higher growth compared to its positive control (T3) and 21.9% higher growth than the negative control (T4).While, local bakery yeast groups showed 5.3% higher mean daily gain than T4 and -5.2 % lower daily gain than of T3.

It worth mentioning that T1 always surpassed T3 and T4 in daily gain, this improvement in daily gain may be due to different components of leasture yeast which effect on ruminal microbial efficiency which is reflected on organic matter and crude protein digestibility. Olson et al., (1992**)** indicated that yeast culture supplementation can increase true rumen organic matter digestibility and resulted in greater microbial efficiency. Results obtained for average daily gain were higher for the different treatments than those reported for buffalo's calves by El-Feel et al., (1999**)**. However,Results of the present study were in agreement with those obtained by Ragheb et al., (1989) , Drennan and Moloney (1993) and Khattab et al., (1997$^{a\ \&b}$) who reported that yeast culture supplementation increased average daily gain.

Results of present experiment Table (7) indicated that feed conversion (Kg DM/ Kg gain) was improved by adding yeast (particularly the imported one) in feeding system .The best feed conversion ratio was obtained with T1 followed by T 2 and T3 ,respectively . However, the highest ($p<0.05$) feed consumed to produce one Kg of body weight was recorded for negative control,APRI allowances (T4). This could be explained by the positive effects of the promoter on the digestion of different nutrients and consequently metabolism leading to a significant improvement in the efficiency of feed utilization. Also, the high allowances of El-Ashry led to better feed conversion for its better effect on the feed intake ,digestibility and gain comparing with T4 .These results are in harmony with those of Delfino et al., (1988) , Flachowsky et al., (1990) and Fiems et al., (1995) on the effect of growth promoter's supplement for cattle.

The economical efficiency values which were calculated as a ratio between price of the weight gain and the cost of feed consumed are presented in Table (7). The Results indicated that T1 and T3 had insignificantly higher values than T2 and T4. Moreover, for untreated groups T3 (El-Ashry allowances, 1980) showed a high value of the economical efficiency when compared with T4 (APRI allowances, 1997).However, these results are in harmony with those of Khattab et al., (1997[a&b]) concerning the effect of yeast of buffalo male calves.

Table 7. Growth performance and economical efficiency of buffalo calves fed on different dietary treatments.

	Treatment				±SE	Sig.
	1	2	3	4		
Initial weight (kg)	236.5	233.3	223.0	223.0	31.0	NS
Final weight (kg)	434.0	404.0	403.0	385.0	46.7	NS
Total gain (kg)	197.5	170.0	180.0	162.0	22.3	NS
Mean daily gain (g)	1097	948	1000	900	123	NS
Daily dry matter intake (Kg)	8.0[b]	8.1[b]	8.5[b]	9.0[a]	0.41	S
Feed conversion (DMI/ gain)	7.38[b]	8.54[b]	8.56[b]	10.00[a]	1.0	S
Economical efficiency	2.01	1.96	2.01	1.96	0.35	NS

a ,b Means in the same row with different superscripts differ significantly (P<0.05).

These results support the recommendation of implementing these promoters in the current feeding systems of the Egyptian buffalo calves with balanced feed.

REFERENCES

A. O. A. C. (1990). Official Methods of Analysis, 15th Ed. Association of Official Analytical Chemists,Washington,D.C.,USA.

Abou Ammou, F. M. and H. M. El-Hosseiny (1999). Performance and carcass characteristic of lambs fed Bio-Tonic and Bosporo as feed additives in summer and winter seasons. Egypt J. Nutrition and Feeds, 2 (special issue) : 57.

APRI (1997) . Animal Production Research Institute, Ministry of Agriculture Animal and Poultry Nutrition(in Arabic), Dokki, Egypt.

Badawy, E. S. (1992). Some biological effects of rumen fermentation modifier (monensin) on buffalo-heifers with special reference to sexual puberty ph. D. Thesis Cairo Univ. Fac. of Vet. Med.

Dawson, K.A. and D.M.Hopkins (1991) . Differential effects of live yeast on the cellulolytic activities of anaerobic ruminal bacteria. J.Anim.Sci.,69(suppl.1:531 (abstract).

Delfino, J., G. W. Mathison and M. W. Simith (1988). Effect of lasolocid on feedlot performance and energy partitioning in cattle. J. Anim. Sci. 66:136.

Drennan, M. I. and A.P. Moloney (1993). Effect of yeast culture on growth of beef cattle fed on grass silage plus barely based concentrates. Irish J. Agric. Food. Res. 32:125

Duncan, D.B.(1955). Multiple Range and Multiple F-test Biometrics, 11:1.

El-Ashry, M. A. (1980). Final report for milk replaces research Project. Egyptian Academy of Sci. and Technology / Ain Sham. Univ.

El-Ashry, M. A., H. M. El-Sayed, H. M. El-Koussy, M. M. Khorshed, H. M. Saleh and A. K. Ammar (2004). Effect of lacto-sacc on feed efficiency, some blood constituents and reproductive performance of growing Egyptian buffalo heifers. Egyptian J. nutrition and feeds 7 (1) : 97.

El-Basiony, A. Z., E. E. Ragheb and H. M. Metwally (1998). Effect of Lasalocld and Yea-sac supplementation on performance, Digestibility and carcass characteristics of buffalo calves. Arb. Univ. J. Agric. Sci. 6:99.

El-Feel, F. M. R., A. A. Abd El-Ghani, M. A. A. El-Barody and S. T. M. Fahmy (1999). Effect of feeding onion wastes and virginamycin on growth performance, rumen activity, blood and immunology parameters in growing friesian and buffalo calves. Alex. J. Agric. Res. 44:1.

Fayed, A. M. M. (1995). Factors affecting productive performance of buffalo male calves till Slaughter. Ph. D. Thesis, Fac. of Agric., Ain. Shams. Univ. Cairo.

Fiems, L. O., Ch. V. Boucque, B. G. Cottyn and F. X. Buysse (1995). Effect of antibiotics on the performance of beef bulls.Nutr.Abs. and Rev.55:653.

Flachowsky, G., G. H. Richter; W. I. Ochrimenko and M. Mattey (1990). Studies on the influence of avoparcin on apparent digestibility, rumen fermentation, fattening and slaughtering performance of growing cattle. Archives of Anim. Nut. 40:991.

Gomaa, A. H., Mohamed, T. A. Drazz, Abd. El-Basit and A. M. Abdou, (1998). Effect of yeast culture (Saccharomyces) supplementation on intake, Digestibility and Lambs performance. Egyptian. J. Anim. Prod. 35 suppl.

Hussein, H. H. M. (1986). Effect of different feeding treatment on some blood parameters in male buffalo calves. Ph. D. Thesis Fac. agric. Ain Shams. Univ.

Khattab. H. M., A. M. Fayed and A. A. Ragheb (1997[a]). Effect of using non hormonal growth promoters on the Productive performance of buffalo calves. Egyptian. J. Nutrition and Feeds 1 (special 1 issue): 81.

Khattab. H. M., M.H. Salwa and A. M . Mansour (1997[b]).Effect of avaparcin and Lasalocid plus rovimix on productive efficiency of buffalo calves . J.Agric. Sci. Mansoura Univ.22:1845.

Kmet, V., Z. onecova and M. Stachova (1992). The effect of pectinolytic yeasts on rumen microflora. J. Anim. Feed Sci. 1:165.

Mansour, A. M. (1995). The effect of some growth promoters on productive efficiency of buffalo calves. Ph. D. Thesis. Face. Of Agric. Ain. Sham. Univ.

Nigm, A. A. (1996). Characterization of the Egyptian buffalo. International symposium on buffalo resources and production systems. Oct. 14-17.

Olson, K. C., J. S. Caton and D. R. Kirby (1992). Influences of yeast culture (YC) supplementation on in situ forage degradability, dietary chemical composition and ruminal pH is steers grazing native range in the northern great plain. Proc. Westem Section, Amer. Soc. Anim. Sci. 43-531.

Olson, K. C., J. S. Caton ; D. R. Kirby and P.L.Norton (1994). Influences of yeast culture (YC) supplementation and advancing season on steer grazing mixed- grass disappearance.J.Anim.Sci.,72:2149.

Regheb, E. E., A. Z. Basiony and A. Y. El-Badawi (1989). Fattening performance of buffalo calves fed tow rations of different energy ratio. Proceedings of the third Egyptian British Conference on Animal, Fish and poultry Production , 7-10 October.Vol.2: 563. Alxand. Egypt.

Salama, A. M. A. (1995). Fattening Friesian calves on non-conventional rations containing non-hormonal growth promoters. Ph. D. Thesis, Fac. Of Agric. Ain Shams Univ. Cairo.

SAS (1995). SAS. User's Guide. Statistics (version 5 ED), SAS Institute, Inc., Cary. NC,USA..

Van Keulen, J. and B. A. Young (1977). Evaluation of Acid insoluble ash as a natural marker in ruminant digestibility studies. J. Anim. Sci., 44:282.

المقارنة بين تأثير الخميرة المستوردة والخميرة المحلية على معاملات الهضم وأداء العجول الجاموس وعلى مكونات سيرم الدم

نازلي محمود مدحت[١] – محمد عبد المنعم العشرى[٢] – كريمة عبد العزيز شاهين[٢] – هدى عطية خليفة[١]

١- معهد بحوث الإنتاج الحيواني – الدقي – الجيزة.

٢- قسم الإنتاج الحيوانى – كلية الزراعة – جامعة عين شمس – القاهرة.

نفذ هذا البحث بغرض مقارنة بين تأثير الخميرة المستوردة والخميرة المحلية كمنشطات نمو غير الهرمونية على معاملات هضم المركبات الغذائية المختلفة ومعدل النمو وكفاءة الاستفادة من الغذاء و على بعض مكونات سيرم الدم .

استخدم فى هذه الدراسة عشرون عجل جاموس عمر ١٨ شهر ومتوسط وزن ٢٢٩,٢كجم تم تقسيمهم لأربع مجاميع (خمسة عجول بكل مجموعة) تم تحديد كل منهما لأحد المعاملات التجريبية عشوائياً كالتالى:

المعاملة الأولى: غذيت العجول على عليقة تغطى مقررات العليقة الحافظة + ٨٠٠ جم متوسط نمو يومى (العشرى ١٩٨٠) مع إضافة ١٠جم خميرة مستوردة للرأس يومياً.

المعاملة الثانية: غذيت العجول على نفس مقررات العشرى (١٩٨٠) ولكن مع إضافة ١٠جم خميرة عادية للرأس يومياً بدلا من الخميرة المستوردة .

المعاملة الثالثة: الضابطة الموجبة او مجموعة المقارنة (مقررات العشرى) ولكن بدون إضافات.

المعاملة الرابعة: الضابطة السالبة او مجموعة المقارنة (مقررات معهد بحوث الإنتاج الحيوانى لسنة١٩٩٧) غذيت العجول على عليقة تغطى مقررات العليقة الحافظة + ٧٥٠ جم متوسط نمو يومى ولكن بدون إضافات.

وأوضحت نتائج الدراسة بأن إضافة الخمائر(المعاملة الاولى والثانية) لعلائق عجول الجاموس أدت إلى تحسين معاملات الهضم مقارنة بمثيلاتها بدون إضافة (المعاملة الثالثة والرابعة).كما أن التغذية على العليقة المحتوية على خميرة الخباز (المعاملة الثانية) أدت الى ارتفاع معامل هضم كلا من المادة الجافة والبروتين الخام ومعامل هضم المركبات المستخلصة الخالية من الازوت بنسبة ٢,٦٨%و ٤,١٩% و٣,٤٥% على التوالى بينما انخفض معامل هضم الأثير ومعامل هضم الألياف بنسبة ٠,٣٦% و٢,١٤%على التوالى بمقارنتها بالعليقة المحتوية على الخميرة المستوردة (المعاملة الاولى) وكانت الاختلافات بينيهما غير معنوية وكان متوسط معدل النمو اليومى للعجول الجاموس مرتفع بإضافة الخميرة المستوردة (١٠٩٧جم للرأس) بينما كان اقل معدل نمو فى العجول المغذاة على عليقة الضابط السالب (عليقة المقارنة-مقررات المعهد بدون إضافات) بينما كان معدل نمو فى العجول المغذاة على كل من المعاملة الثانية (المحتوية على خميرة الخباز) والمعاملة الثالثة (مقررات العشرى) متوسطة (٩٤٨جرام و١٠٠٠ جرام على التوالى)٠ ويتراوح معدل الزيادة بالتغذية على المعاملة الاولى(خميرة مستوردة) بمقدار ٩,٧% عن المعاملة الثالثة (مقررات العشرى) وارتفعت الى ٢١,٩% زيادة فى معدل النمو عن التغذية على المعاملة الرابعة

(مقررات المعهد) بينما المعاملة الثانية(خميرة محلية) رفعت معدل النمو بمقدار ٥,٣% عن المعاملة الرابعة (مقررات المعهد) وانخفض معدل النمو بمقدار ٥,٢عن المعاملة الثالثة (مقررات العشرى).

- تحسنت كفاءة تحويل الغذاء (كجم مادة جافة / كجم نمو) بإضافة الخمائر (المستوردة او المحلية) ثم المجموعة المغذاة على مقررات العشرى بدون إضافات (المعاملة الثالث).
- وكان معدل الكفاءة الاقتصادية مرتفع مع االمعاملتين الاولى (خميرة مستوردة) والثالثة (مقررات العشرى بدون إضافة).

-وإضافة الخميرة سواء المستوردة والمحلية لم يكن لهما تأثير معنوى على مكونات سيرم الدم .

لذا فإننا ننصح بإضافة الخمائر (١٠ جم رأس /يوم) إلى علائق عجول الجاموس على أن تكون العليقة المعطاة كافية لتغطية احتياجات الحيوان ومتزنة غذائيا او استخدام مقررات العشرى ١٩٨٠.