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RESPONSE OF CAMEL CALVES FOR FATTENING UNDER INTENSIVE FEEDING REGIMES.

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ABSTRACT

This study was carried out on two experiments. The first experiment was conducted as a pilot experiment lasted 30 day on fifteen Sudanese camel calves (*Camelus dromedaries*) aged 2-3 years and weighted 268.6±42.49 Kg to determine selectively dry matter intake (free consumption) from concentrate feed mixture (CFM) and clover hay. The second one was fattening experiment prolonged 120 day using the same animals, which reached on average of 288.5±41.14 kg to evaluate replacement clover hay (control) with untreated rice straw (URS) or urea treated rice straw (TRS) to decrease feeding costs. The animals were divided into three equal groups in weight and fed CFM at 1.55 % of body weight, which represents 75% of dry matter intake as determined in the first experiment.

The fattening experiment showed no significant differences in DMI among the three groups. There was no significant ($P<0.05$) difference between control and TRS groups in the digestibilities of DM, OM, CP, CF, NFE and the nutritive value as TDN or DCP. While, the previous parameters were significantly ($P<0.05$) lower for URS compared with control or TRS groups. The total water intake as well as the insensible water loss was significantly ($P<0.05$) higher when animals fed TRS ration comparing with the other groups. The nitrogen balance of control and TRS groups was similar and significantly ($P<0.05$) higher than URS group.

The daily body weight gain of URS group was significantly ($P<0.05$) lower than control and TRS groups being 525, 593 and 600 g respectively. The TRS and control groups were more feed conversion efficiently ($P<0.05$) than URS group, being 10.24, 10.36 and 11.76 (DMI/gain), respectively. As a result of reducing feeding costs (LE/head/day) significantly ($P< 0.05$) for the TRS and URS groups vs. the control group, being 3.24, 3.20 and 4.10, respectively, feeding camel calves on TRS ration gave the highest profit followed by URS then control group, being 115.2, 57.6 and 7.20 LE/h/period.

It could be concluded that clover hay could be entirely replaced with rice straw either treated or not treated with urea molasses mixture to reduce feeding costs as well as achieving more profit.

Keywords: *Camels, fattening, intensive feeding and rice straw.*

INTRODUCTION

Camel is the most predominant animal in arid zones and dry lands where other domestic animals can hardly survive. There are about 18.5 million camels in the world, of which 12.6 million are in Arab countries (FAO, 1989). Knoess, 1976, stated that, camel offers considerable scope for meat production in areas that would be too difficult for other species of domestic animals. Several studies concluded that, the maintenance requirements of camels from energy and protein are less than other ruminants under drought conditions which Egypt could be involved and its ability to decrease feed intake and metabolic rate (Wardeh and Farid, 1990, Gihad and El-Bedawy,

1992, Guerouali and Filali, 1992, and Farid, 1995). Yacout and El-Badawi., 2001 reported that camels preferred to eat concentrates as the first choice whenever it was available. Further more, Rutagwanda *et al.*,1990 reported that camels are superior than the other species in selecting a better quality of plants and feeds . However, Holler *et al.*, 1986 and Lechner and Von Engelhardt., 1989 noted that camels are able to consume and utilize poor quality forages if they are forced to be fed exclusively on it. Average daily gain of camels ranges from 185 to 565 g when fed DM at 1.6 - 3.8% of body weight (Kamoun *et al.*,1989, Wilson, 1992 and Fay and El-Komi.,1999). Treatment of straw with urea which subsequently hydrolyzed to ammonia has been investigated by many researches (Haque *et al.*, 1983, Doyle, 1984 and Farghaly *et al.*, 2003) and it has been found that urea serves as a good preservative for treatment of straw besides improving its nutritive value.

The present study aims to determine the actual dry matter intake of (free consumption concentrate and roughage as well as investigate the response of fattening camel calves for entirely replacing of clover hay with rice straw either untreated or treated under intensive feeding regimes.

MATERIALS AND METHODS

The present study was carried out at the Experimental Station of Animal Production Department, Faculty of Agriculture, Cairo University.

In a preliminary pilot experiment (Exp.1), fifteen Sudanese male camel calves, aged 2-3 years old and weighted 268.6±42.49 Kg, were feed *ad. Lib.* on concentrate feed mixture (CFM) and clover hay (*Trifolium alexandrinum*) separately for 30 day. At the end of the pilot experiment, the same animals, which reached on average of 288.5±41.14 Kg body weight were divided into three similar groups (five of each) in the fattening trial (Exp. 2) All animals were fed individually through the fattening trial, which lasted 120 day .The concentrate feed mixture was offered at 1.55% of body weight (75% of total feed intake) was presented as a part of a total 2.1 % as fed, which it was offered twice a day. The rest of total feed intake (0.55% of body weight) was offered from clover hay for control group, chopped untreated rice straw (URS) for the second group and treated chopped rice straw (TRS) for the third one. Urea and molasses solution, 5% urea and 10% molasses w/w at 50% moisture, was sprayed on a batch of 100 Kg rice straw and incubated for 4 weeks. At the last week, feces and urine were quantitatively collected daily according to El-Badawi *et al.*, 2003. Preservative samples of feeds, feces and urine were taken and prepared for chemical analysis to determine nutrients digestibility, feeding value as well as nitrogen and water balances. Camels were individually weighed monthly to record the body weight gain and the feed intake was adjusted accordingly. Chemical analyses of feeds, feces and urine samples were carried out according to A.O.A.C., 1990. Data were statistically analyzed using the one-way analysis of variance, by MSTAT-C computer programme, 1989. Differences among means were statistically tested using Duncan's Multiple Range Test (Duncan, 1955).

RESULTS AND DISCUSSION

Results of the preliminary pilot experiment indicated that camels can consume 2.1% as fed (1.9% as DM) of their live body weight (1.55 % and 0.55% for concentrate and roughage, respectively). This intake appropriately covered the protein and energy requirements as mentioned before by Wardeh and Farid, 1990. The concentrate to roughage ratio was 74:26 % and the average daily weight gain was 0.663 Kg.

The chemical composition of the feedstuffs and experimental rations are presented in Table 1.

Table 1.Chemical composition of the feedstuffs and experimental rations.

Item	DM%	Chemical composition (DM basis)					
		OM	CP	CF	EE	NFE	Ash
Feedstuffs:							
CFM	90.04	84.00	14.72	09.64	03.20	56.44	16.00
Clover hay	89.92	84.90	15.81	22.30	02.91	43.88	15.10
URS	88.88	79.98	04.50	36.82	01.78	36.88	20.02
TRS	45.00	79.89	11.50	34.85	01.75	31.79	20.11
Experimental rations							
Control ration	90.01	84.22	14.99	12.81	03.13	53.29	15.78
URS ration	89.75	83.00	12.17	16.44	02.85	51.54	17.00
TRS ration	90.03	82.97	13.92	15.94	02.84	50.27	17.03

CFM: Concentrate feed mixture; 20% un-decorticated cottonseed meal, 15% wheat bran, 10% rice bran, 50% yellow corn, 3% limestone, 1% salt and 1% minerals and vitamins mixture.

Control: CFM + clover hay URS: CFM+ rice straw TRS: CFM + urea treated rice straw

The experimental rations are almost comparable in the organic matter and nitrogen free extract contents, however, crude protein and crude fiber slightly bit differed. Data in Table 2, indicated that there was no significant ($P<0.05$) difference in the digestibilities of DM, OM, CP,CF, NFE and nutritive values as TDN and DCP between control ration (68.97, 72.95, 74.36, 54.90, 78.31, 64.31 and 11.15%) and TRS ration (67.13, 71.84, 76.06, 58.26, 73.89, 62.24 and 10.59%), respectively. While, URS significantly ($P<0.05$) decreased the same previous parameter by 15.0, 15.5, 5.6, 10.8, 19.1, 16.4 and 23.4%, in the same order. There was no significant ($P<0.05$) difference among control, URS and TRS rations in the digestibility of EE being 73.54, 72.56 and 74.12%, respectively. Urea treatment of straw improved the digestibilities of DM, OM, CP,CF, NFE and nutritive values as TDN and DCP by 14.4, 16.5, 8.4, 19.0, 16.7, 15.73 and 24.0%, respectively. This improvement in the nutrients digestibility and nutritive values may be due to that the alkali reduces the strength of intermolecular hydrogen bonds that binds cellulose fiber within cell wall matrix which may be physically restrained from swelling. Similar results were obtained by Whistler and Teng, 1970, Letham *et al.*, 1979, Rai and Mudgal ,1987, Oliverose *et al.*, 1993, Sirohi and Rai ,1994 and 1995, Hanafy *et al.*, 1996, Abdul-Aziz *et al.*, 2001, Farghaly *et al.*, 2003 and Granzin and Dryden ,2003.

Table 2. Nutrients digestibility and feeding values of the experimental rations.

Item	Experimental rations			±SE
	Control	URS	TRS	
Dry matter intake, Kg/h/d	3.600	3.590	3.601	0.020
Nutrients digestibilities, %				
DM	68.97[a]	58.66[b]	67.13[a]	3.157
OM	72.95[a]	61.68[b]	71.84[a]	3.254
CP	74.36[a]	70.17[b]	76.06a	2.957
CF	54.90[a]	48.98[b]	58.26[a]	3.550
EE	73.54	72.56	74.12	0.455
NFE	78.31[a]	63.34[b]	73.89[a]	4.491
Nutritive values, %				
TDN	64.31[a]	53.78[b]	62.24[a]	3.240
DCP	11.15[a]	8.54[b]	10.59[a]	0.373

a,b,c means with different superscript in the same row are significantly different at (P<0.05)

Control: CFM + clover hay URS: CFM + rice straw TRS: CFM + urea treated rice straw

Data in Table, 3, showed that the daily intake of concentrate feed mixture and roughage as well as the total DM intake (% of body weight or g/ Kg metabolic body size) were insignificantly differ among all the experimental rations. In contrary, the intake of total digestible nutrients and digestible crud protein were similar in both control and TRS rations, being (51.80 and 8.98) and (50.06 and 8.51). Dry matter intake as Kg/h/d and g/Kg $w^{0.75}$ agreed with the findings of Yacout and El- Badawi, 2001 and Abd El- Rahman *et al.*,2003. While, it was disagreed with the findings of El- Badawi and Yacout, 1999. These differences might be due to the variation in total DMI (as % of body weight) and the percent of concentrate in the ration, being (1.9 and 75%) in the present study and (1.75 and 90%) in the study of El – Badawi and Yacout, 1999.

There was insignificant difference in growth performance between control and the TRS groups (Table 4). Average daily gain of the URS group was significantly lower than the control and TRS groups, being 0.525, 0.593 and 0.600 Kg/h/d, respectively. Kamoun *et al.*, 1989 reported that the daily gain ranged from 326 to 565 g in camel calves fed on ration consisted of 80% concentrate and 20% oat straw. However, Yacout and El- Badawi, 2001 recorded a higher average daily gain (810 and 812 g/d) with camel calves fed on a concentrate mixture (14% CP) at 1.6% of BW (80% of total dry matter). Feed conversion (Kg DMI/Kg weight gain) was significantly better in control and TRS groups comparing to the URS group, being 10.36, 10.24 and 11.67, respectively (Table 4). These findings is comparable to that reported by El-Badawi and Yacout, 1999 (10.01 Kg TDMI/Kg gain) when camel calves fed concentrate m ixture (14% C P) a t 1 .8% o f b ody w eight .The feeding costs (LE/h/d) were significantly (P<0.05) higher in the control group comparing to the TRS or URS groups . The gain prices (LE/h/d) were insignificantly differed between control and TRS groups, which by turn were significantly higher than URS group (Table 4). In the control group, the highest gain, gain price and profit over feeding costs LE/h/d or (LE/h/period), were significantly among all groups (Table 4).

Table 3. Feed and nutrients intake of the experimental rations.

Item	Experimental rations			±SE
	Control	URS	TRS	
DM intake, Kg/h/d				
Feed mixture	4.610	4.610	4.610	0.000
Roughage	1.535	1.517	1.536	0.006
Total	6.145	6.127	6.146	0.006
DM intake, % Body weight				
Feed mixture	1.42	1.44	1.42	0.007
Roughage	0.47	0.47	0.47	0.000
Total	1.89	1.91	1.89	0.007
DM intake, g/ Kg $W^{0.75}$				
Feed mixture	60.40	60.90	60.30	0.190
Roughage	20.10	20.00	20.10	0.030
Total	80.50	80.90	80.40	0.150
TDN Intake, Kg/ Kg $W^{0.75}$	51.80^{a}	43.40^{b}	50.06^{a}	1.950
DCP Intake, G/Kg $W^{0.75}$	8.98^{a}	6.91^{b}	8.51^{a}	0.617

a,b,c means with different superscript in the same row are significantly different at (P<0.05)

Control: CFM+ clover hay URS: CFM + rice straw TRS:CFM + urea treated rice straw

Table 4: Growth performance feed conversion and economical evaluation of the experimental rations.

Item	Experimental rations			±SE
	Control	URS	TRS	
Growth performance				
Initial BW, Kg	288	289	288.6	0.291
Final BW, Kg	359.2	352	360.6	2.664
Av. BW, Kg	323.6	320.5	324.6	1.234
BW gain, Kg/h/d	0.593^{a}	0.525^{b}	0.600^{a}	0.024
Feed conversion				
Kg DMI/ Kg gain	10.36	11.67	10.24	0.458
Kg TDNI/ Kg gain	6.66	6.28	6.38	0.113
Gram DCPI/ g gain	1.16	1.00	1.09	0.061
Economical evaluation				
Feeding cost (FC), LE/h/d	4.10^{a}	3.20^{b}	3.24^{b}	0.294
Gain price, LE/h/d	4.15^{a}	3.68^{b}	4.20^{a}	0.166
Profit : FC, LE/h/d	0.06^{c}	0.48^{b}	0.96^{a}	0.260
Profit : FC, LE/h/period.	7.20^{c}	57.60^{b}	115.2^{a}	31.20

The real prices of the feedstuffs and experimental rations are as follows: 600LE for 1 ton of CFM and clover hay; 70 LE for 1 ton of rice straw; 100 LE for 1 ton of treated rice straw.

Drinking water was insignificantly differed among the experimental groups, it was tended to be higher in animals fed TRS ration (Table 5). Moreover, dietary water was significantly higher in the TRS group, as a result of the high moisture content of the treated straw. Urinary water in the TRS was significantly lower than that of the control as well as the URS group. Payne, 1965 detected that, urea recycling is always complained with urinary water re-absorption.

Table 5: Water and nitrogen balances of the experimental rations.

Item	Experimental rations			±SE
	Control	URS	TRS	
Water balance				
Drinking water intake, L/h/d	5.260	4.830	5.850	0.296
Dietary water intake, L/h/d	0.400^{b}	0.410^{b}	1.399^{a}	0.331
Total water intake, L/h/d	5.660^{b}	5.240^{b}	7.249^{a}	0.612
Urinary water secretion, L/h/d	3.130	2.980	2.880	0.073
Fecal water secretion, L/h/d	1.700	1.880	2.060	0.104
Total water loss, L/h/d	4.830	4.860	4.940	0.033
Insensible water loss, L/h/d	0 .830^{b}	0.380^{c}	2.309^{a}	0.289
Urinary water, % water intake	55.30^{a}	56.87^{a}	49.23^{b}	2.330
Nitrogen balance				
Dietary nitrogen intake, g/h/d	86.34^{a}	69.90^{c}	80.20^{b}	5.290
Urinary nitrogen loss, g/h/d	32.64^{a}	24.63^{b}	30.73^{a}	2.415
Fecal nitrogen loss, g/h/d	23.51^{a}	23.23^{a}	19.19^{b}	1.992
Nitrogen balance, g/h/d	30.19^{a}	22.04^{b}	30.28^{a}	3.447
Nitrogen balance, % intake	34.97^{a}	31.53^{b}	37.76^{a}	2.930
Urinary N concentration, g/d L	0.96^{a}	0.74^{b}	1.05^{a}	0.102

a,b,c means with different superscript in the same row are significantly different at (P<0.05)

Control: CFM+ clover hay URS: CFM + rice straw TRS: CFM + urea treated rice straw

Dietary nitrogen intake as shown in Table 5 was significantly differed between the experimental groups, being (86.34, 69.90 and 80.20 g/h/d) in control, URS and TRS, groups, respectively. This difference may be due to the difference of protein content. The urinary nitrogen loss of the URS group was significantly lower than control or TRS groups, however, fecal nitrogen was significantly lower in TRS group compared with the control or URS groups. The high ability of camel for urea recycling could gave it the advantage to utilize the marginal and poor quality feeds more efficient than the good quality feeds. In this connection, Emmanuel *et al*, 1976 showed that camels feed on a low protein ration trapped more urea in their rumens. Nitrogen balance (g/h/d) was significantly higher in the control and TRS groups, being 30.19 and 30.28 vs.22.04 in URS group. Results indicated that there was a positive correlation among dietary protein content and urinary nitrogen concentration (g/d) as that reported by Yacout and El-Badawi, 2001. Increasing the water consumption in TRS group compared to the control and URS groups was in agreement with the findings by Yagil, 1985 and Yacout and El-Badawi, 2001 who reported that, the decline in urine volume is directly correlated with urea and accompanying water re-absorption .

From the present study, it could be concluded that camel calves under intensive fattening regimes could properly utilize the low quality roughage such as rice straw either treated with urea and molasses (mixture) or not. Further investigations should be carried out to study camel response for reducing the concentrate ratio instead of roughages to enhance profitability.

REFERENCES

Abdul-Aziz; G.M., Y.I.El-Talty and M.A. Ali (2001).Calcium hydroxide treatment of some organic wastes, 1. Effect on chemical composition and *in vitro* digestibility.Proceedings 8th Scientific Conference on Animal Nutrition. Egyptian J. Nut. And Feeds.,Vol. 4 (special Issue)., 415.

Abd-El-Rahman, K.M;S.El-Kaschab and I.M.Ibrahim (2003). Comparative study on some nutritional aspects of camels, bulls, sheep and goats. Egyptian J.Nutrition and Feeds, 6: 69-79 .

A.O.A.C.(1990). Association of Official Analytical Chemists. Official Methods of Analysis.15th Ed,Washington, DC,U.S.A.

Doyle, P. T. (1984). The utilization of fibrous agricultural residues as animal feeds. Proceedings of the 4th Annual Workshop of the Australian-Asian Residues Research Network. School of Agriculture and Forestry, The University of Melbourne, Parkville.

Duncan (1955). Multiple range and multiple F test. Biometric, 11:1-42.

El-Badawi,A.Y and M.H.Ycout (1999).Comparative study on growth performance of camles (*Camelus dromedaries*) calves and cattle steers in the feed-lot system. Egypt. J.Nutr and Feeds,2 (Special Issue), 319-330.

El-Badawi., A.Y; M.H.M. Yacout and A.A. Hassan (2003).Experimental determination of maintenance requirements of nitrogen for camels applying balance and fasting trials. Egyptian J. Nutrition and Feeds (Special Issue) 769.

Emmanuel, B.; B.R. Howard and M. Emady.(1976). Urea degradation in the camel .Can. J. Anim. Sci., 56 :595-601.

FAO (1989). Production Yearbook. Vol. 34,Rome.

Farghaly, M.S.; M. Awadalla and M.A. Ali (2003) Effect of urea and lime treatments on feeding value of some roughages used in growing lamb rations. J.Agric. Sci. Mansoura Univ., 18:6645- 6654.

Farid, M.F.A.(1995). Nutrient requirements of dromedary camels: Protein and energy requirements for maintenance. J. of Arid Environments,30:2, 207

Fay,B. and M. El-Komi (1999). Guide for Camel Rearing . First Edition. Sanofi, Leborn. France.

Gihad, E.A. and T.M. El-Bedawy (1992). Protein requirements for maintenance by camels. Proc.1st Int.Camel Conf., Dubai,UAE,Publ.R&W Pubication LTD., 412 (Abst.)

Granzin, B. C. and G. M. Dryden (2003). Effects of alkalis, oxidants and urea on the nutritive value of rhodes grass (*Chloris gayana* cv. Acllide). Anim. Feed Sci . and Techn.., 103, Issues 1-4, 113.

Guerouali, A. and R . Z. Filali (1992) . Maintenance energy requirements of the dromedary camel. Porc. 1st Int. Camel Conf., Dubai, UAE, Publ. R&W Pubications LTD., 251 (Abst.)

Haque, M.,; C. H. Davis; M. Saadullah and F. Dolberg (1983). A note on the performance of cattle fed treated paddy straw with animal urine as a source of ammonia. *Trop. Anim. Prod.*, 8,276.

Hanafy, M.A.; A.M.Abd El - Gawad and K .M .M . Mussa (1996). Economical fattening of buffalo calves using different sources of non - protein nitrogen .Egyptian J.Anim. Prod.,33, Suppl. Issue,113-122 .

Holler, R.; M. Lecner; H. Weyreter and W. Von Engelhardt (1986). Forestomach fluid volume and retention time of fluid and particulars in the gastrointestinal tract of the camel. J.Vet. Med.A.,33: 396 .

Kamoun, M.;P. Girard and R. Bergaoui (1989). Feeding and growth of the dromedary camel. Effect of concentrate feeding on dry matter intake and growth of camel in Tunisia. Revue- d' Elevage, et, de Medicine Veterinare, des, Pays Tropicaux, 42:1, 89.

Knoess, K .H . (1976) .Assignment report on animal production in the Middle Awash Valley. Rome, FAO .

Lechner, M. and W. Von Engelhardt (1989). Particle size and passage from the forestomach in camels compared to cattle and sheep fed a similar diet J. Anim. Physiol.& Anim. Nutr., 61 :120 .

Letham, M. J.; D. G. Hobbs and P. J. Harrius (1979). Adhesion of rumen bacteria to alkali treated plant cells. *Annals de Rech. Vet.,* 10:244.

MSTAT-C (1989) . Nissen. O. Statistical Package Department of Crop and Soil Sciences, E. Lansing, Michigan 48824,U.S.A.

Oliveros, B. A.; R. A. Britton and T. J. Klopfenstein (1993). Ammonia and/or calcium hydroxide treatment of maize stover : intake , digestibility and digestion kinetics. *Anim.* Feed Sci. and Tech., 44: 59.

Payne, W.J.A. (1965) . Specific problems of semi-arid environments. Qual.Plant. Mat. Veg. 12:269-294.

Rai, S. N. and V. D. Mudgal (1987). Effect of calcium hydroxide and steam pressure on the utilization of wheat straw by rumen microorganisms. Biological Wastes 21:203.

Rutagwanda T .; M . Lechner; H.J. Schulika and W . Von Engelhardt (1990). Dietary preference and degradability of forage on a semi-arid thornbuch savannah by indigenous ruminants , camels and donkeys . Anim. Feed. Sci. Technol. 31: 179.

Sirohi, S. K. and S. N. Rai (1994).Chemical composition and *in sacco* degradability of wheat straw as influenced by urea and/or lime treatment under different ruminal environments.International J. of Anim. Sci., 9: 59.

Sirohi, S. K. and S. N. Rai (1995). Associative effect of lime plus urea treatment of paddy straw on chemical composition and *in vitro* digestibility. Indian J of Anim. *Sci.,* 65: 775.

Wardeh, M.F and M. Farid (1990). Nutrient requirements (energy and protein) of dromadry camels. Symp.Anim.Sci. Divisions in the Arab Universities and Workshop Arab Emirates. ACSAD/ AS/ P103 .

Wilson, R.T (1992). Factors affecting weight and growth in one-humped camels. Proc. 1st Int. Camel Conv., Dubai. UAE, Publ. R & W Publications LTD.,309 (Abst.)

Whistler, R. L. and J. Teng (1970). Handbook of Pulp and Paper Technology.2nd ed.,pp 13. New York.

Yacout, M.H.M. and A. Y. El-Badawi (2001) . Effect of dietary protein level on fattening performance of camel calves . Proceedings of the 8th Scientific Conference o n A nimal Nutrition , Egyptian, J. Nutrition and Feeds, 4 (Special Issue) 545 .

Yagil R. (1985).The Desert Camel 'comparative physiological Adaptation' P.38. S.Karger AG, P.O.Box,CH-4009 Basel, Switzerland.ISBN 3-3055-1065-5.

إستجابة عجول الجمال للتسمين تحت نظم التغذية المكثفة

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أجريت هذة الدراسة على تجربتين ، الاولى منها تجربة استكشافية لمدة ٣٠ يوم على خمسه عشرمن عجول الجمال السودانى وحيدة السنام عمر ٢-٣ سنوات ومتوسط ٢٦٨,٦ ± ٤٢,٤٩كجم ، لتحديد كمية المادة الجافة المأكولة اختياريا من العلف المركز (١٤% بروتين خام) ودريس البرسيم . والثانية منها تجربة تسمين لمدة ١٢٠ يوم على نفس الحيوانات بمتوسط وزن ٢٨٨,٥±٤١,١٤ كجم لتقييم احلال قش الارز غير المعامل او المعامل بمحلول اليوريا (٥%) والمولاس (١٠ %) بنسبة رطوبة ٥٠ % والتحضين لمدة ٤ أسابيع ، محل الدريس لخفض تكاليف التغذية. حيث قسمت الحيوانات الى ثلاثه مجموعات متساوية من حيث الوزن والتى غذيت على العلف المركز بمعدل ١,٥٥ % من وزن الجسم والذى يمثل ٧٥ % من المأكول الكلى والذى تم تحديده فى التجربة الاولى . حيث اعطيت المجموعة الاولى (مجموعة المقارنه) دريس البرسيم والثانية قش الارز غير المعامل والثالثة قش الارز المعامل باليوريا والمولاس والذى يمثل ال٢٥ % الباقية من المأكول الكلى لكل مجموعة .

أظهرت نتائج التجربة الاولى ان كمية المادة الجافة الكلية المأكولة اختياريا تمثل ١,٩.% من وزن الجسم بنسبة حوالى ٧٥ :٢٥ لكل من العلف المركز والدريس على التوالى .

أظهرت التجربة الثانية النتائج التالية :

١ – عدم وجود فروق معنوية للمجموعات الثلاثة بالنسبة للمأكول اليومى من المادة الجافة.

٢- لم يكن هناك اختلاف معنوى فى هضم المادة الجافة والمادة العضوية والبروتين الخام والالياف الخام والكربوهيدرات الذائبة وكذا القيمة الغذائية فى صورة مركبات غذائية مهضومة كلية أو بروتين خام مهضوم بين مجموعتى المقارنه و القش المعامل ، فى حين كان هناك انخفاض معنوى فى القياسات السابقة ، لمجموعة القش الغير معامل مقارنه بالمجموعتين السابقتين .

٣ – كان استهلاك الماء الكلى اعلى معنويا عند التغذية على عليقة القش المعامل بالمقارنه بالمجموعتين الاخرتين. ونفس الاتجاه لوحظ مع فقد ماء البخر.

٤- كان ميزان الأزوت متشابه فى مجموعتى المقارنه والقش المعامل ، وكانتا اعلى معنويا من مجموعه القش الغير معامل .

٥- كان معدل النمو اليومى لمجموعة القش الغير معامل أقل معنوياً من المجموعتين الأخرتين، حيث كانت القيم ٥٢٥ ، ٥٩٣ ، ٦٠٠ جم ، على التوالى.

٦- كانت كفاءة التحويل الغذائى (وحدة مادة جافة مأكوله/ وحدة نمو) لمجموعتى المقارنة والقش المعامل أفضل معنوياً بالمقارنه بمجموعة القش الغير معامل، حيث كانت القيم ١٠,٣٦ ، ١٠,٢٤ ، ١١,٦٧ كجم ، على الترتيب.

٧- كانت تكاليف التغذية (جنيه/رأس/يوم) أقل معنوياً لمجموعتى القش المعامل والغير معامل مقارنة بمجموعة المقارنه، حيث كانت ٣,٢٤ ، ٣,٢٠ ، ٤,١٠ جنيه، على الترتيب. مما أدى إلى زيادة عائد التسمين (جنيه/رأس/الفتره) ، حيث كانت القيم ١١٥,٢ ، ٥٧,٦٠ ، ٧,٢٠ على الترتيب.

ويستخلص من هذه الدراسه إمكانية إحلال قش الأرز الغير معامل أو المعامل بالمولاس واليوريا إحلالاً كاملاً محل دريس البرسيم فى تسمين عجول الجمال السودانى لخفض تكاليف التغذيه وزيادة عائد التسمين. ونوصى بإجراء بعض الدراسات بهدف خفض معدل التغذية على العلف المركز .