Online Journal of Animal and Feed Research

Volume 2, Issue 4: 388-393 (2012) *ISSN 2228-7701*

COMPARISON OF SLAUGHTER, CARCASS VALUES OF SUDAN GOAT ECOTYPES FED DIFFERENT LEVELS OF ENERGY/PROTEIN

A.A. TAMEEM ELDAR[1], K.M. ELAMIN[2], A.E. AMIN[3], H.E. HASSAN[4]

[1]Department of Animal Nutrition, Faculty of Animal Production, University of Gezira, Sudan
[2]Department of Animal Breeding, Faculty of Animal Production, University of Gezira, Sudan
[3]Department of Veterinary Medicine, Pharmacology and Toxicology, Faculty of Veterinary Medicine, University of Khartoum, Sudan
[4]Department Meat production and Technology, Faculty of Animal Production, University of Gezira, Sudan

*Email: khalid1130@yahoo.com

ABSTRACT: *This experiment aimed to assess the slaughter and carcass values of different Sudan goat ecotypes (Nubian, Desert and Swiss Nubian) fed different levels of energy/protein. Nine male goat kids (2-3 months and average weight 9.23 kg) of either ecotypes were used in a 3x3x3 arrangement, fed three experimental diets A (control), B and C, with varying energy: protein 1:0.14, 1:0.16 and 1:0.18 respectively. The study showed that Nubian goats possessed heavier slaughter weight; empty body weight, warm and cold carcass weight than the Desert and Swiss Nubian goats in the ration B and C. Dressing percentage on both basis (slaughter weight and empty body weight) of Nubian were higher for ration B and C. Warm carcass weights of all goat ecotypes increased directly with energy: protein ratio. Highest weight of leg, loin, rack and neck and shoulder were recorded by Nubian goats for ration B and C. It was concluded that, all ecotype kids respond well to increasing energy protein levels. According to the results obtained local goat ecotypes, mainly Nubian goats, responded well to improved nutrition, therefore results obtained can be applied for the local goat ecotypes studied to encourage goat meat consumption and exportation.*

ORIGINAL ARTICLE

Key words: *Leg, Loin, Nubian, Neck, Rack, Shoulder*

INTRODUCTION

Goats are of economical and social importance, especially in developing and poor countries and are therefore called the poor man cow (Elhag, 1976). Besides being an important meat animal in Africa, Asia and the far East, the goats are now emerging as an alternative and attractive source of meat in other parts of the world (Devendra, 1990). Although goats have been the common source of meat in many tropical and developing countries (Shelton, 1990)

The goat meat production system around the world is extremely diverse and received little scientific attention compared with sheep and cattle. This may be due to the traditionally low economic significance of goats in the developing countries. Goats in the Sudan are primarily raised for milk production as its meat was not preferred in urban areas, since it was considered by far inferior to that of sheep or cattle. Owing to the recent rapid increase in the prices of mutton and beef, goats' meat gained some popularity and all indications assure the continuity of this trend for more goats' meat consumption in the future.

FAO (1995) reported that goat meat ranked third in international meat production and there is an increase in its production in the developing countries. Goat meat shares about 15% of the total meat production in the Sudan (FAO, 1992). In addition, Hadjipanayiotou et al. (1991) confirmed that a good quality goat's meat is similar to that of sheep and cattle i.e. characterized by low fat content, when the efficiency of production is achieved by improved nutrition and management systems (Timon and Hanrahan, 1986). Goat meat evaluations have received little attention and as a result, knowledge of yield and quality of goat meat is limited when compared to sheep and cattle (Warmington and Kirton 1990; Anous and Mourad, 1993).

In general, the goat meat industry is not well defined as it has grown recently (Oman et al., 1999; Cameron et al., 2001). Few official statistics about goat meat are kept on either a national or state basis (Lillywhite, 2002). It is providing many new opportunities for additional income on diversified farming operations.

The objective of this study was to evaluate the effects of different levels of energy/protein on slaughter and carcass values of different Sudan ecotypes goat.

To cite this paper: Tameem Eldar A.A., Elamin K.M., Amin A.E., Hassan H.E. 2012. Comparison of slaughter, carcass values of Sudan ecotypes goats fed different levels of energy/protein. *Online J. Anim. Feed Res.*, 2(4): 388-393.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

MATERIALS AND METHODS

Animals and experimental design

Nine male Nubian goat kids, nine male Desert goat kids and nine male Swiss Nubian goat kids (2-3 months old) with an average weight 9.23 kg were used. The animals were rested, ear tagged and injected prophylactic with abroad spectrum 5% antibiotic Oxytetracycline, for four days and dewormed with broad spectrum anthelmintic Ivermectin.

Experimental rations

Three experimental diets (Table 1) were labeled A, B and C subject to treatment groups. Ration A served as the control. The three rations were based on sorghum, wheat bran, and groundnut cake and groundnut hulls.

Table 1 - Percent experimental ration composition (fresh basis)

Ingredients % \ Rations	A	B	C
Sorghum	11	30	51
Wheat bran	40	25	18
Groundnut cake	8	10	9
Molasses	12	15	12
Groundnut hulls	27	18	8
Minerals/ NaCl	2	2	2
CP%	14.49	14.72	14.91
ME MCal / kg (calculated)	2.08	2.41	2.74
Energy: protein ratio	1:0.14	1:0.16	1:0.18
Chemical composition of the experimental rations (on dry matter basis)			
DM %	97.38	94.97	92.87
EE%	1.03	2.75	2.75
CP %	13.28	14.22	13.60
CF %	16.02	11.13	8.25
Ash %	9.20	9.51	7.66
NFE %	57.85	57.36	60.61
ME MCal / kg	2.58	2.66	2.73

Feeding pattern

Mixing of the experimental rations was done manually after weighing the recipe. The dry small quantity ingredients were mixed first then finally with the molasses and left to dry by air and then packed in labeled sacks (A, B and C).

Slaughter procedure and slaughter data

One animal of average body weigh per each experimental group was selected for slaughter. Slaughter weight was taken after an overnight fasting with access to water. The animal slaughter followed the Muslim practice, severing the right and left jugular veins, carotid arteries, esophagus and trachea by a sharp knife. After bleeding was effected, the animal was hung from hind legs to permit easy dressing. The head was removed at the occipto-atlantal articulation, and the fore and hind feet at the proximal metacarpal and metatarsal joints, respectively. Appendages (head, tail, skin and feet) were weighed each separately. The animal was then eviscerated on a full *linea alba* incision.

Visceral organs, (liver, spleen, kidney, pancreas, intestines, omental fat and genitals) and pluck (heart, lungs, trachea and diaphragm) were separated and individually weighed. The alimentary tract was weighed full and then empty to calculate the fill. The fill was subtracted from the slaughter weight to obtain the empty body weight (EBW). Carcasses were weighed warm (WCW) and cold (CCW) after storage 24 h at 4 °C. The dressing percentages were calculated.

Carcass data

The carcass was split into right and left halves by sawing along the vertebral column. Each half was weighed separately. The left half was then divided into fore and hind saddles cutting between the 12th and 13th rib. The hind saddle was further dissected into two wholesale cuts (leg and loin) by cutting proximal to *Ala* of the *Os ileum* of the pelvic girdle. The fore saddle was separated into two anterior and posterior parts between the 5th and 6th ribs. The anterior part was separated into two cuts neck and shoulder, and brisket and fore shank by cutting mid distance, horizontally parallel to the vertebral column. The posterior part was separated also into two cuts, rack (upper) and plate (lower) by cutting mid distance horizontally parallel to the vertebral column (MLC, 1977).

There is no the information of statistical analysis (cause there is no replicates and one animal is slaughtered from each treat)

Proximate analysis

Sample of meat were proximately analyzed for chemical components according to AOAC (1980).

To cite this paper: Tameem Eldar A.A., Elamin K.M., Amin A.E., Hassan H.E. 2012. Comparison of slaughter, carcass values of Sudan ecotypes goats fed different levels of energy/protein. *Online J. Anim. Feed Res.*, 2(4): 388-393.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

RESULTS AND DISCUSSION

Table 2 and 3 shows the slaughter weights of Nubian goats were higher for ration B and C than Desert and Swiss Nubian goats. Empty body weight of Nubian was higher for ration C than other ecotypes. This trend was also observed for feet, lung and trachea, liver and intestine. Highest weight of head and skin showed in Nubian goats for ration B and C. The weight of diaphragm and spleen was similar for all ecotypes in ration C. Nubian goats recorded highest values of kidney, omental fat, genital and tail for ration B and C. Pancreas was similar for both Nubian and Desert goats for ration C.

The pattern by which the treatment affects the yield of slaughter values differed in the three ecotypes. The differences in slaughter and empty body weights produced irregular pattern of internal and external offals weights. The percentage of external offals in this study were better than that reported by Elfadil (2001) in male kids fed high energy high protein levels, but inferior when compared to values reported by Ibrahim (1996). The present findings did not completely agree with the statement reported by Gaili (1977) which indicated that, when non-carcass components were expressed as percentage of empty weight, the treatment effect almost disappeared. The external and internal offals are early maturing organs which form a progressively declining proportion of body weight as body weight increases (Kirton et al., 1972; Tonney et al., 1987).

Table 2 - Slaughter values (kg) of experimental goat kids fed different levels of energy/protein

Goat kids / Items	Nubian			Desert			Swiss Nubian		
	A	B	C	A	B	C	A	B	C
Slaughter weight (kg)	08.90	13.80	15.10	11.60	13.30	10.20	10.00	10.70	10.40
Empty body weight (kg)	7.30	12.40	14.10	10.10	12.50	9.10	8.50	9.80	9.30
Head (kg)	0.87	1.14	1.23	1.05	1.10	0.89	1.05	0.94	0.80
Skin (kg)	0.70	0.95	1.32	0.87	0.90	0.74	0.66	0.79	1.00
Feet (kg)	0.40	0.55	0.63	0.48	0.60	0.41	0.43	0.44	0.46
Heart (kg)	0.09	0.13	0.12	0.08	0.11	0.10	0.08	0.09	0.10
Lung and Trachea (kg)	0.14	0.20	0.21	0.20	0.21	0.11	0.13	0.14	0.14
Diaphragm (kg)	0.04	0.05	0.05	0.05	0.04	0.05	0.03	0.04	0.05
Intestines (kg)	0.90	1.30	1.35	1.00	1.32	0.99	1.15	1.10	0.94
Liver (kg)	0.22	0.28	0.38	0.23	0.26	0.21	0.21	0.28	0.28
Spleen (kg)	0.01	0.04	0.03	0.03	0.04	0.03	0.03	0.03	0.03
Kidney (kg)	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.05	0.05
Pancreas (kg)	0.02	0.03	0.04	0.02	0.02	0.04	0.03	0.03	0.03
Omental fat (kg)	0.02	0.30	0.32	0.08	0.18	0.25	0.09	0.11	0.09
Genitals (kg)	0.11	0.24	0.22	0.15	0.09	0.11	0.14	0.15	0.16
Tail (kg)	0.02	0.05	0.04	0.03	0.02	0.02	0.03	0.03	0.02

Table 3 - Slaughter values (kg) of experimental goat kids fed different levels of energy /protein

Species	Rations	Slaughter weight (kg)	Internal offals (kg)	Internal offals (%)	External offals (kg)	External offals (%)
Nubian	A	8.9	1.64	18.43	1.97	22.13
	B	13.80	2.94	21.30	2.64	19.13
	C	15.10	2.88	19.07	3.18	21.06
Desert	A	11.60	1.92	16.55	2.40	20.69
	B	13.30	2.59	19.47	2.60	19.55
	C	10.20	2.46	24.46	2.04	20
Swiss Nubian	A	10	2.02	20.20	2.14	21.40
	B	10.70	2.13	19.97	2.17	20.28
	C	10.40	1.98	19.04	2.26	21.73

Table 4 shows that the highest weight of warm carcass and cold carcass for ration B and C recorded by Nubian goats. High losses showed in Swiss Nubian for ration C. Dressing percentage on both basis (slaughter weight and empty body weight) of Nubian were higher for ration B and C than for Desert and Swiss Nubian goats. Highest values of dressing percentage on cold basis showed in Desert goat for ration B. Warm carcass weights of test groups were increasing as energy: protein ratio increases, being higher than the control group. Warm carcass weights of test groups were in the range of 4.46-7.15 kg. This is in accordance to the results reported by Mahgoub et al. (2005), but lower than the results reported by Shrestha and Fahmy (2007). The present results of cold carcass weight compare favorably with result reported by Mahgoub et al. (2005) and Choi et al (2006), but lower than that indicated by Webb et al. (2005) and Ryan et al. (2007). The dressing percentage values reported in this study was compare favorably with values observed by Lupton et al. (2008) and Ryan et al. (2007), but lower than those reported by Abd El-Moula (1996); Elkhidir (1989) and Webb et al. (2005). The dressing percentage on slaughter weight basis reported in this study were lower than the result reported by Sen et al. (2004), but higher than those indicated by Dadi et al. (2005). However the dressing percentage on empty body weight basis reported in this study were lower than the resulted reported by Sen et al. (2004) and Dadi et al. (2005). In the present investigation the

To cite this paper: Tameem Eldar A.A., Elamin K.M., Amin A.E., Hassan H.E. 2012. Comparison of slaughter, carcass values of Sudan ecotypes goats fed different levels of energy/protein. *Online J. Anim. Feed Res.*, 2(4): 388-393.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

dressing percentage on worm and cold basis compare favorably with results reported by those Daskiran et al. (2006) and Ibrahim (1996), but then the result showed by Elfadil (2001) for kids fed high energy high protein. Bello and Babiker (1988) reported dressing percentage of 54.1 for the Desert goats and 54.8 for their temperate crosses which were highly comparable with our result.

The low values of dressing percentage observed in this study may be due to the effect of slaughter weight, since there was positive relationship between slaughter weight and carcass weight which was observed by Devendra and Owen (1983) and McGregor (1982). Bhattacharyya and Khan (1988) stated that empty body weight or the amount of rumen and intestinal contents might have affected the dressing percentage. Dressing percentage is usually quoted on the basis of live weight, but it is more accurate to quote this on the basis of empty body weight in order to eliminate the variation caused by the contents of the alimentary tract (Devendra and Owen, 1983).

The proportion of carcass weight loss due to evaporation during dressing or cold storage is referred to as carcass shrinkage or hanging loss. There is direct relationship between carcass shrinkage and fat deposition in the carcass, mainly subcutaneous fat. The values of carcass shrinkage percentage in this study were in the range of 0.16–3.02. These values were lower than those reported by Ibrahim (1996); Osman (1984); Bello (1985) and Elkhidir (1989) in carcasses of Desert goats.

Table 4 - Dressing percentage values of experimental goat kids fed different levels of energy /protein

Species	Rations	Warm carcass weight (kg)	Cold carcass weight (kg)	Carcass shrinkage %	Dressing % (slaughter weight basis) warm	Dressing % (empty body weight basis)	Dressing % (cold basis).
Nubian	A	03.60	03.50	02.78	40.45	49.32	39.33
	B	6.45	6.35	1.55	46.74	52.02	46.01
	C	7.15	6.95	2.80	47.35	50.71	46.03
Desert	A	05.20	05.10	01.92	44.83	51.49	43.97
	B	6.21	6.20	0.16	46.69	49.68	46.62
	C	4.55	4.52	0.66	44.61	50	44.31
Swiss Nubian	A	3.93	2.92	0.25	39.30	46.24	39.20
	B	4.46	4.42	1.90	41.68	45.51	41.31
	C	4.64	4.50	3.02	44.62	49.89	43.27

Table 5 shows that the highest weight of leg, loin, rack and neck and shoulder were recorded by Nubian goats for ration B and C. The weight of plate and brisket and foreshank was similar of Nubian and desert goats for ration B.

In the Sudan the meat production system depends on live weight and visual assessment of the animal. The grading systems practiced should consider that the consumer prefers more lean in the carcass. In the present investigation the percentage of carcass cuts (leg, loin, neck and shoulder) were found lower than the values reported by McGregor (2007). In present study the percentage of primal cuts were lower than that reported by Sen et al. (2004) and Ryan et al. (2007).

Table 5 - Weights (kg) of carcass cuts of experimental goat kids fed different levels of energy: protein.

Species	Rations	Leg (kg)	Loin (kg)	Rack (kg)	Plate (kg)	Neck and Shoulder (kg)	Brisket and Foreshank (kg)
Nubian	A	0.60	0.15	0.13	0.10	0.43	0.40
	B	1.11	0.31	0.30	0.23	0.75	0.55
	C	1.15	0.32	0.29	0.24	0.80	0.70
Desert	A	0.87	0.25	0.22	0.15	0.60	0.50
	B	1.09	0.30	0.29	0.23	0.65	0.55
	C	0.71	0.24	0.20	0.18	0.50	0.45
Swiss Nubian	A	0.62	0.18	0.20	0.14	0.44	0.40
	B	0.80	0.20	0.18	0.16	0.45	0.44
	C	0.74	0.22	0.18	0.16	0.50	0.46

Table 6 Shows the Swiss Nubian goat had higher moisture percent than the Nubian and Desert goats. Compared to Desert and Swiss Nubian goats higher protein percent was observed for Nubian goat fed ration B and C. Fat percentage of ration C for Desert goat was higher than other ecotypes. This trend was also observed for percentage of ash. In the present study, the values of meat moisture percent compared favorably with results reported by those Elfadil (2001); Sen et al. (2004) and Paleari et al. (2008), but lower than the result indicated by Lee et al. (2008). In the present study, the values of meat protein percent compared favorably with values showed by Lee et al. (2008); Sen et al. (2004) and Arguello et al. (2005), but slightly lower than the result indicated by Paleari et al. (2008) . However, fat percentages in this investigation were lower than those reported by Paleari et al. (2008); Lee et al. (2008); Arguello et al. (2005) and Elfadil (2001).

El–Tayeb et al. (1988) reported in mutton significant differences among dietary treatments in percentages of moisture and fat. The moisture increased linearly ($p<0.05$) while fat decreased linearly ($p<0.05$) as the level of

To cite this paper: Tameem Eldar A.A., Elamin K.M., Amin A.E., Hassan H.E. 2012. Comparison of slaughter, carcass values of Sudan ecotypes goats fed different levels of energy/protein. *Online J. Anim. Feed Res.*, 2(4): 388-393.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

supplemental blood meal increased. Generally the fat and moisture contents of meat are inversely related. However, the results of moisture and fat obtained here in this study were not in line with the previous statement as the moisture and fat values were irregular. Park et al. (1991) reported 2.27 and 2.03% fat for Alpine and the crosses of Nubian goats respectively which were higher than that reported in the present study.

Lawrie (1991) reported that the mammalian muscle contains about 0.65% of minerals such as phosphorus, potassium and magnesium. The values of ash percentage in this study were lower than those reported by Lee et al. (2008); Ibrahim (199 and Elfadil (2001) and higher than that reported by Shahjalal et al. (1992) for Angora goats (0.76-0.81). Generally, the protein, ash and water percentages of the body decrease with advancing age and fattening (Gaili et al. 1972).

Table 6 - Percent values of meat chemical composition of experimental goat kids fed different levels of energy: protein

Species	Rations	Moisture (%)	Protein (%)	Fat (%)	Ash (%)
Nubian	A	73.25	22.08	0.11	1.10
	B	69.10	22.75	0.83	0.94
	C	70.15	21.35	0.55	1.0
Desert	A	62.21	24.15	0.14	7.75
	B	71.94	19.25	0.66	0.83
	C	69.13	20.30	1.60	2.81
Swiss Nubian	A	73.49	22.93	0.08	1.08
	B	75.10	18.90	0.25	1.01
	C	72.67	19.25	0.23	0.06

CONCLUSION

It is concluded that in domestic goat, the Nubian and Desert ecotypes (in this order) generally performed better than the Swiss Nubian, as reflected in good carcass yields. Exotic blood (genetic) and the tropical environmental conditions were the factors retardant to their adaptation. Therefore results obtained can be applied for the local goat ecotypes studied to encourage goat meat consumption and exportation.

REFERENCES

Abd El-Moula IH (1996). The Effect of Sex on Goat Meat Production. M.Sc. Thesis University of Khartoum, Sudan.

Anous MR and Mourad MM (1993). Crossbreeding effects on reproductive traits of does and growth and carcass traits of kids. Small Ruminant Research, 12: 141-149.

AOAC (1980). Official Methods of Analysis. Association of Official Analytical Chemists, 13th ed., Washington, USA.

Arguello A, Castro N, Capote J and Solomon M (2005). Effects of diet and live weight at slaughter on kid meat quality. Meat Science 70 (2005) 173–179.

Bello A (1985). Performance Carcass Yield and Characteristics of Desert Goats and Their Temperate Crosses. M.Sc. Thesis, Univ. of Khartoum, Sudan.

Bello A and Babiker SA (1988). Growth and carcass characteristics of Desert goat kids and thir temperate crosses. Anim. Prod., 46:231-235.

Bhattacharyya NK and Khan BU (1988). Goat meat production in India. Proc., Workshop, Goat Meat Production in Asia, Tandojam-Pakistan, pp. 31-45.

Cameron MR, Luo J, Sahlu T, Hart SP, Caleman SW and Goetsch AL (2001). Growth and slaughter traits of Boer X Spannish, Boer X Angora and Spanish goats consuming a concentrate basal diet. J.Anim.Sci., 79: 1423-1430. http://jas.fass.org

Choi SH, Choy YH, Kim YK and Hur SK (2006). Effects of feeding browses on growth and meat quality of Korean Black Goats. Small Ruminant Research 65 (2006): 193–199.

Dadi H, Woldu T and Lema T (2005).Comparison of carcass characteristics of Borana and Arsi- Bale goats under different durations of feediot management. Livestock Research for Rural Development 17(12) 2005.

Daskiran I, Kor A and Bingol M (2006). Slaughter and carcass characteristics of Norduz male kids raised in either intensive or pasture condition. Pakistan Journal of Nutrition, 5(3): 274-277.

Devendra C (1990). Goat production: An international perspective. Proc., Int. Goat Prod. Symp., A&M Univ., Tallahassee, Florida, USA.

Devendra C and Owen JE (1983). Quantiative and qualitative aspects of meat production from goats. Wld. Anim. Rev., 47:19-29.

Elfadil AS (2001). Comparative Growth and Body Composition of Nubian Goat Kids Fed Different Protein and Energy Levels. Ph.D. Thesis, University of Khartoum, Sudan.

Elhag FM (1976). Comparative study between Desert goat and sheep efficiency of feed utilization. Wld. Rev. Anim. Prod., 12(3):43-48.

To cite this paper: Tameem Eldar A.A., Elamin K.M., Amin A.E., Hassan H.E. 2012. Comparison of slaughter, carcass values of Sudan ecotypes goats fed different levels of energy/protein. *Online J. Anim. Feed Res.*, 2(4): 388-393.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir

Elkhidir IA (1989). Desert Goats and Sheep Meat Production and Quality. M.V.Sc. Thesis, Univ. of Khartoum, Sudan.
El-Tayeb AE, Mansour ME, Tibin IM and Sulieman AH (1988). Feeding blood meal to Sudan Desert sheep. II. Effect on chemical composition and palatability of lambs meat. Sudan J. Anim. Prod., 1(1): 33-38.
FAO (1992). Livestock Numbers and Products. Food and Agriculture Organization, Rome, Italy.
FAO (1995). Production Yearbook, vol. 49., Food and Agricicultural Organization, Rome, Italy.
Gaili ESE, Ghanem YS and Mukhtar AMS (1972). A comparative study of some characteristics of Sudan desert sheep and goats. Anim. Prod., 11: 191–196.
Gaili ESE (1977). Evaluation of body composition of male Sudan Desert sheep. Trop. Agric. (Tr.), 54(2):127-133.
Hadjipanayiotou M, Burn-Bellut J and Lindberg JA (1991). Protein nutrition and requirements of growing goat. Goat nutrition, 94-103.
Ibrahim A (1999). The nutritive value of propose chilensis "Molina" stuntz (Mesquite) pods for feeding goats. Sudan, J. Anim. Prod. vol. 12.1-4.
Ibrahim SE (1996). The effect of dietary energy level on finishing goats. M.Sc. Thesis, University of Khartoum, Sudan.
Kirton AH, Fourie PD and Jury KE (1972). Growth and development of sheep. III.Growth of the carcass and non-carcass component of the Southern and Romeny and their cross and some relationship with composition. J. Agric. Research, 15: 214-227.
Lawrie RA (1991). Meat Science. 5th edition, Pergamon Press, Oxford, UK.
Lee JH, Kouakou B and Kannan G (2008). Chemical composition and quality characteristics of chevon from goats fed three different post-weaning diets.Small Ruminant Research 75 (2008): 177–184.
Lillywhite J (2002). Meat industry census and survey. Agriculture Utilization Research Institute (AURI) and the Universityof Minnesota .USA. http://www.mda.state.mn.us/mgo/
Lupton CJ, Huston JE, Hruska JW, Craddock BF, Pfeiffer FA and Polk WL (2008). Comparison of three systems for concurrent production of high quality mohair and meat from Angora male kids.Small Ruminant Research 74 (2008) 64–71.
MLC (1977). Cutting and preparing of lamb and pork. Technical Bulletin No. 24. Meat and Livestock Commission, Queenway, Bletchly, UK.
Mahgoub O, Kadim IT, Al-Saqry NM and Al-Busaidi RM (2005). Potential of Omani Jebel Akhdar goat for meat production under feedlot conditions. Small Ruminant Research 56 (2005): 223–230
McGregor BA (1982). Growth of organs and body components of grazing goats. Proc. Aust. Soc. Anim. Prod., 14:487-490.
McGregor BA (2007). Meat and offal yields of goats, the state of Victoria. Customer.service@dpi.vic.gov.au.
Oman JS, Waldron DF, Griffin DB and Savell JW (1999). Effect of breed –type and feeding regimen on goat carcass traits. J. Anim. Sci., 77: 3215-3218.
Osman BM (1984).The effect of the feeding molasses and low quality roughages on performance and body compostion of goats. M.V.Sc. Thesis, University of Khartoum, Sudan.
Paleari MA, Moretti VM, Beretta G and Caprino F (2008). Chemical parameters, fatty acids and volatile compoundsof salted and ripened goat thigh.Small Ruminant Research 74 (2008): 140–148.
Park YW, Kouassi MA and Chin KB (1991). Moisture, total fat and cholesterol in goat organs and muscles. J. Food. Sci., 56:1191-1193.
Ryan SM, Unruh JA, Corrigan ME, Drouillard JS and Seyfert M (2007). Effects of concentrate level on carcass traits of Boer crossbred goats.Small Ruminant Research 73 (2007): 67–76.
Sen AR, Santra A and Karim SA (2004). Carcass yield, composition and meat quality attributes of sheep and goat under semiarid conditions.Meat Science 66 (2004): 757–763.
Shahjalal MD, Gallriath H and Topps JH (1992). The effect of changes in dietary protein and energy on growth, body composition and mohair fibre characteristics of British Angora goats. J. Anim. Prod., 54: 405-412.
Shelton JM (1990). Goat production in the United States. Proc., Int. Goat Prod. Symp., A&M Univ., Tallahassee, Florida, USA.
Shrestha JNB and Fahmy MH (2007). Breeding goats for meat production 2. Crossbreeding and formation of composite population_Small Ruminant Research 67 (2007): 93–112.
Timon VM and Hanrahan JP (1986). Small ruminant production in the developing countries. FAO Animal Production and Health Paper 58, 234 pp. Food and Agriculture Organization of United Nations, Rome, Italy.
Tonney ML, Taylor, StCS, Murray JI and McClelland TzH (1987). Breed and sex difference in equally mature sheep and goat, body component at slaughter. Anim. Prod., 45: 261-276.
Warmington BG and Kirton AH (1990). Genetic and non-genetic influences on growth and carcass traits of goats. Small Ruminant Research, 3: 147-165.
Webb EC, Casey NH and Simela L (2005). Goat meat quality. Small Ruminant Research 60 (2005): 153–166.

To cite this paper: Tameem Eldar A.A., Elamin K.M., Amin A.E., Hassan H.E. 2012. Comparison of slaughter, carcass values of Sudan ecotypes goats fed different levels of energy/protein. *Online J. Anim. Feed Res.*, 2(4): 388-393.
Scienceline/Journal homepages: http://www.science-line.com/index/; http://www.ojafr.ir