Changes in Carcass Characteristics of Egyptian Buffaloes during the First Six Months of Age

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Nineteen male buffalo calves were slaughtered at seven ages ranging from one to six months to investigate changes in carcass characteristics during this early stage of life. Means of live body weight were 59.7, 65.0, 85.7, 118.3, 109.7, 139.5, and 168.0 kg while carcass weights averaged 32.0, 36.7, 46.3, 60.3, 52..0, 70.5 and 79.0 for animals slaughtered at 1, 1.5, 2, 3, 4, 5, and 6 months of age, in their respective order. Dressing percentage (carcass weight/body weight) declined significantly with advancement in age and averaged 53.4, 56.2, 54.1, 51.3, 47.4, 50.3, and 47% for the seven formentioned slaughter age groups and the drastic increase in weight of the contents of digestive tract was found to be the main reason for this decline. When calculated as % carcass weight/empty body weight, dressing percentage showed no significant differences and averaged 56.9, 59.6, 57.0, 58.7, 56.7, 59 7 .and 59.2 for the seven slaughter age groups, in their respective order.

Except for percentage of leg with hind knuckle, none of the meat cuts percentages showed significant change during the range of ages considered in this study. The lean percentage in the best ribs cut differed significantly with advancement in age while those of fat and bone did not exert any significant differences.

The continuous increase in the population size of Egyptian buffaloes made it interesting to investigate the potentiality of this animal as milk and meat producer. It is well known that buffaloes excell the native cattle in Egypt in both milk and butterfat production. However, very few studies have been carried out on production of meat from buffaloes.

The common practice of the Egyptian farmer is to sell his male buffalo calves for slaughter at about 40 days of age. To face the very marked shortage in beef production it was suggested that buffalo males should be slaughtered at order age. In this respect, the daily weight gain, feed efficiency and carcass characteristics of buffaloes should be economically evaluated at different ages of slaughter. The present study was designed to investigate changes of carcass charcteristics in male buffaloes during the first six months of age.

Material and Methods

This study was carried out on Om-Saber farm, South Tahreer, west of the Nile Delta. The study was a part of a joint project between the Faculty of Agriculture, Cairo University and the Egypitan Academy of Science and

Technology executed for genetic improvement of milk and meat production of Egypitan Cattle and Buffaloes.

Nineteen male buffalo calves were randomly devided into seven groups to be slaughtered as follows :

Slaughter age (moa.)	1	1.5	2	3	4	5	6
No. of calves	3	3	3	3	3	2	2

Calves used in this study were delivered during the period from February to April, 1976 and were raised on whole milk. Trifolium Alexandrinum (Egyptian clover) and concentrate growing mixture were available from the third week of age. Calves were weaned at 16 weeks of age and were mainly fed on standard concentrate mixture and available green fodder. The concentrate mixture was composed of cotton seed cake (45%), wheat bran (26%), rice bran (7%), maize (14%), rice germ cake (3%), lime (1%), molasses (3%) and ordinary salt (1%).

Live body weight was recorded just before slaughter and after fasting for 18 hr. Weights of the following body and carcass components were recorded: head, hide, four legs, heart, liver, kidnies, testes, spleen, lungs, full and empty digestive tract, kidney fat and gut fat. The warm carcass was weighed without any attached offals and then devided into left and right sides. The left side was devided into seven outs according to the procedure described by Schon (1961) (Fig. 1).

Each of the seven cuts was weighed separated. Best ribs (9, 10 and 11) cut was separated from the left side and weighed. The cut was then physically dissected into lean, fat and bone tissues which were separately weighed.

Data were analysed according to the one-way classification ANOVA using the computer program developed by Harvey (1960). Tests of significance for individual means were also performed by applying the Duncan Multiple Range Test (Duncan, 1955). The model used included the single main effect of age at slaughter. and error

Results and Discussion

1. *Body weight, empty body weight and carcass weight*

Means of body weight (BW), empty body weight (EBW) and carcasweight (CW) are shown in Table 1. Except for weight at 4 months, BW increased significantly with advancement in age. Empty body weight showed the same trend reaching the highest weight at six months (133 8) which was significantly different from means of weight scored by the first four groups of age at slaughhter. The relatively lower estimates of BW and EBW scored by animals slaughtered at four months could be attributed to both of the individual differences among animals belonging to different ages and to the effect of weaning time on the performance of this groups.

Comparable estimates for body weight were reported by Badreldin (1955) who estimated the male buffalo calves weight aging 30-40 days to be 60 9 kg; Ragab *et al.* (1966) reported 74 and 157 7 kg for male buffalo calves at 50 days and 6 months, respectively. Mostageer *et al.* (1981) estimated male buffalo weights to be 105.2 and 134«9 kg at 4 and 6 months, respectively, and Mostageer (1982) reported 61,99.4 and 135kg at 45 days, 4 and 6 months, in their respective order.

Carcass weight (CW) showed gradual increase with advance in age, except for animals slaughtered at 4 months (Table 1). Differences among means of different age groups were statistically highly significant (P<.01). Ragab *et al.* (1966) reported carcass weight of 42.5 and 86.7 kg for the male buffaloes slaughtered at 50 days and 6 months, respectively, which are some seven-kilograms heavier than those obtained in this study. However, Mostageer (1982) obtained lower carcass weights of 32 4, 45 and 60 kg at 42 days, 4 and 6 months, in their respective order.
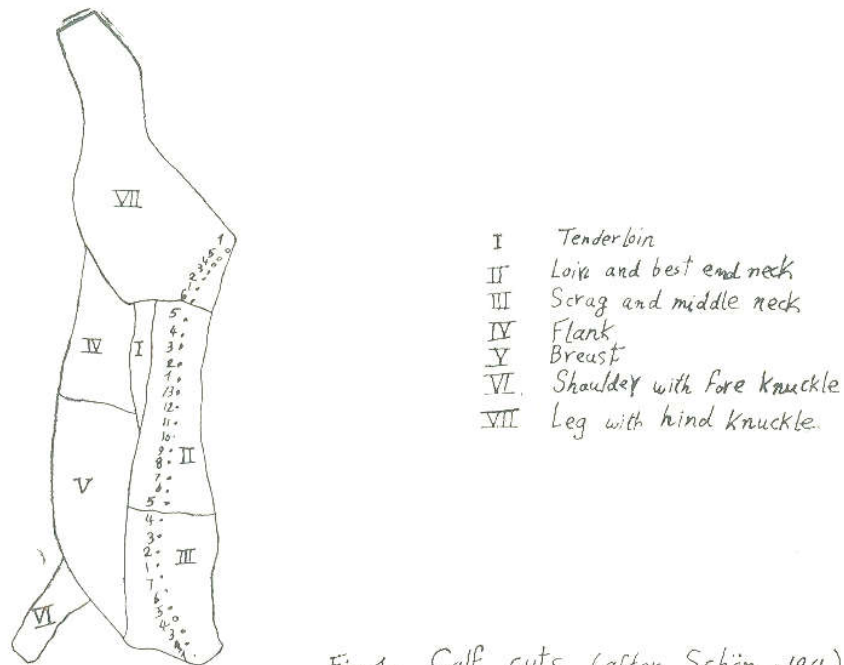

I	Tenderloin
II	Loin and best end neck
III	Scrag and middle neck
IV	Flank
V	Breast
VI	Shoulder with fore knuckle
VII	Leg with hind knuckle

Fig. 1. Calf cuts (after Schön, 1961)

2. Dressing percentage

Dressing percentage (DP) is more indicative in expressing meat productivity than both BW or CW taken as a single measure. Factors reported to influence dressing percentage are access to feed and water prior to slaughter,

transport, use of hot or cold carcass weight and dressing procedure. The last two coloumns of Table 1 represent the DP at different ages of slaughter. When expressed as % CW-BW, DP significantly differed between age groups scoring the highest percentage at 45 days (56.2%) and declined gradually after that to reach only 47% at 6 months of age. Badreldin (1955) reported higher estimate of 66% for buffalo veals aging 30-40 days while Ragab *et al.* (1966) reported 59.9, 57.2, 53.7, 57.6 and 52.7% for male buffaloes at 50 days, 6, 12, 18 and 24 months, in their respective order. Mostageer (1982) estimated lower DP of 53, 45.3 and 44.4 for male buffalo calves at 42 days, 4 and 6 months of age in their respective order.

TABLE 1. Means[1] and mean squares of body weight (BW), empty body weight (EBW), carcass weight (CW) and dressing percentages.

Age (month)	BW (kg)	EBW[2] (kg)	CW (kg)	% CW/ BW	% CW/ EBW
1	59.7 [a]	55.9 [a]	32.0 [a]	53.4 [ab]	56.9 [a]
1.5	65.0 [a]	61.3 [ab]	36.7	56.2 [a]	59.6 [a]
2	85.7 [ab]	81.3 [bc]	46.3 [ab]	54.1 [ab]	57.0 [a]
3	118.3 [cd]	103.0 [cd]	60.3 [cd]	51.3 [bd]	58.7 [a]
4	109.7 [bc]	91.9 [cd]	52.0 [bc]	47.4 [cd]	56.7 [a]
5	139.5 [de]	117.8 [de]	70.5 [de]	50.3 [bcd]	59.7 [a]
6	168.0 [e]	133.8 [e]	79.0 [e]	47.0 [d]	59.2 [a]
SD	14.4	12.7	7.7	2.0	2.3
Mean squares					
AGE	3797***	2007**	725**	31**	5NS
	208	162	60	4	5

Lower estimates of dressing percentage scored by the last three classes of age. (4-6 months) could be explained in view of the figures obtained for the non-carcass organs (Tables 2 and 3 and FIG.2). Table 2 shows means of weights and percentages of edible offals (heart, liver, kidney testes, spleen and lungs) and the non-carcass fat components (gut fat and kidney fat).

TABLE 2 Means¹ and mean squares of weights of edible offals and fat components and their percentages from Empty body weight.

AGE (month)	Heart wt. (g)	Heart %	Liver wt. (kg)	Liver %	Kidnies wt. (g)	Kidnies %	Spleen wt. (g)	Spleen %	Testes wt. (g)	Testes %	Lungs wt. (kg)	Lungs %	Gut fat wt. (g)	Gut fat %	Kidney fat wt. (g)	Kidney fat %
L	322a	0.58ab	1.2a	2.1a	233a	0.43a	158a	0.28ab	188a	0.34ab	1.2a	2.1a	220a	0.38a	148a	0.26a
1.5	388a	0.64c	1.3ab	2.2ab	320a	0.53ad	207ad	0.33a	201ab	0.32abc	1.3ab	2.2a	143a	0.22a	230a	0.35a
2	467ab	0.57ab	1.6b	2.0ab	378ad	0.47a	260bcd	0.32a	301abc	0.37b	1.8bc	2.2a	323ab	0.40a	350ab	0.44a
4	543bc	0.53a	1.8c	1.7c	490bc	0.48a	250abc	0.24b	286abc	0.27ac	1.7abc	1.7a	193a	0.19a	337ab	0.32a
5	565bc	0.62bc	1.7bc	1.8c	577ce	0.63bc	268	0.29ab	228bc	0.25c	2.0bc	2.2a	238ab	0.25a	225a	0.25a
6	668cd	0.57ab	2.1cd	1.8bc	823d	0.69c	345cd	0.29ad	330bc	0.28ac	2.6c	2.2a	488b	0.40a	240a	0.21a
D	740d	0.55a	2.5d	1.9dbc	695de	0.52ab	355	0.27ad	355	0.26ac	2.6cd	1.9a	500b	0.38a	595b	0.45a
	78	0.03	0.2	0.1	83	0.1	.9	0.03	.06		0.4	0.4	124	0.1	139	0.17

MEAN SQUARES

	Heart wt. (g)	Heart %	Liver wt. (kg)	Liver %	Kidnies wt. (g)	Kidnies %	Spleen wt. (g)	Spleen %	Testes wt. (g)	Testes %	Lungs wt. (kg)	Lungs %	Gut fat wt. (g)	Gut fat %	Kidney fat wt. (g)	Kidney fat %
AGE	54042 **	0.005 **	0.48 **	0.10 **	10755 **	0.04 *	1986 **	0.002 NS	0.011 NS	0.010 *	0.74 *	0.10 NS	47186 *	0.02 NS	48669 NS	0.02 NS
RESIDUAL	6065	0.001	0.05	0.02	6952	0.01	2383	0.001	0.004	0.003	0.16	0.14	15452	0.01	10365	0.03

1 Means not followed by the same letter differ significantly from each other at the 5 level.

NS Not significant.

* Significant at the 5% level of probability.

** Significant at the 1% level of probability.

Absolute weights of edible offals and fat components increased significantly with advancement of age. However, percentages of these organs showed contradictory trends; while most of the percentages of edible offals decreased, the fat percentage showed no significant change within the range of ages considered. When taken as a sum, edible offals tended to exert gradual decrease scoring percentages (from EBW) of 5.9, 6.2, 5.9, 4.9, 5.8, 5.8, and 6.4 for carcasses obtained at 1,1 5, 2,3, 4,5 and 6 months, in their respective order Fig.2).

TABLE 3.   Means[1] and mean squares of weights of non-edible components and their percentages fiom empty body weight.

AGE (month)	Head		Hide		Four legs		Full digestive tract		Empty digestive tract	
	Wt. (lg)	%	Wt. (kg)	%	Wt. (kg)	%	Wt. (kg)	%	Wt. (kg)	%
1	5.2a	9.3ab	4.1a	7.4a	3.5a	6.4a	6.6a	11.7a	2.9a	5.2abc
1.5	5.9a	9.6a	5.6ab	9.1a	3.5a	5.8ab	6.3a	10.7a	2.7a	4.5a
2	7.0ab	8.7abc	7.2bc	8.9a	4.0ab	5.0bc	7.5a	9.3a	3.2a	3.9a
3	8.7bc	8.4bc	8.3cd	8.0a	4.9cd	4.9bc	21.9b	20.8b	6.5b	6.2bcd
4	7.9b	8.7abc	7.5bc	8.2a	4.6bc	5.1bc	24.2b	26.5bc	6.4b	6.9d
5	9.2bc	7.8c	10.3de	8.8a	5.8de	5.0bc	29.2b	25.1bc	7.5b	6.4cd
6	10.4c	7.7c	12.0e	9.0a	5.9a	4.4c	44.0c	33.2c	9.9c	7.4d
SD	1.0	0.5	1.1	0.9	0.4	0.5	3.9	3.6	0.9	0.8
				MEAN SQUARES						
	**	*	**	Ns	**	*	**	**	**	**
AGE	8.7	1.2	17.5	1.2	2.4	1.19	481 5	216.0	18.5	4.52
RESIDUAL	1.1	0.3	1.2	0.8	0.17	0.26	15.6	13 3	0.8	0.67

1   Means not followed by the same letter differ significantly from each other
    at the 5% level.

Ns Not significant.

*   Significant at the 5% level of probability

**   Significant at the 1% level of probability

Contents of the digestive tract and non-carcass organs(head,hide and feet) were reported to influence significantly the dressing percentge(Badrellin, 1955; Ragab *et al.*, 1966; Afifi *et al.*, 1974 and Mostageer *et al.*, 1981). Table 3 shows weights and percentages of head, hide, feet and full and empty digestive tract.

Absolute weights of these organs increased significantly with advancement of age. However, animals slaughtered at 4 months scored lower estimates than those killed a month earlier, except for weight and percentage of full digestive tract and percentage of empty digestive tract which scored higher estimates in the older group. Means of full digestive tract percentage were 6.6, 6.3, 7.5, 21.9, 24.2, 29.2, and 44 while percentages of the digestive tract contents were 6.5, 6.2, 5.4, 14.6, 19.6, 18.7 and 25.8 for animals slaughtered at 1, 1.5, 2,4,5, and 6 months, in their respective order.
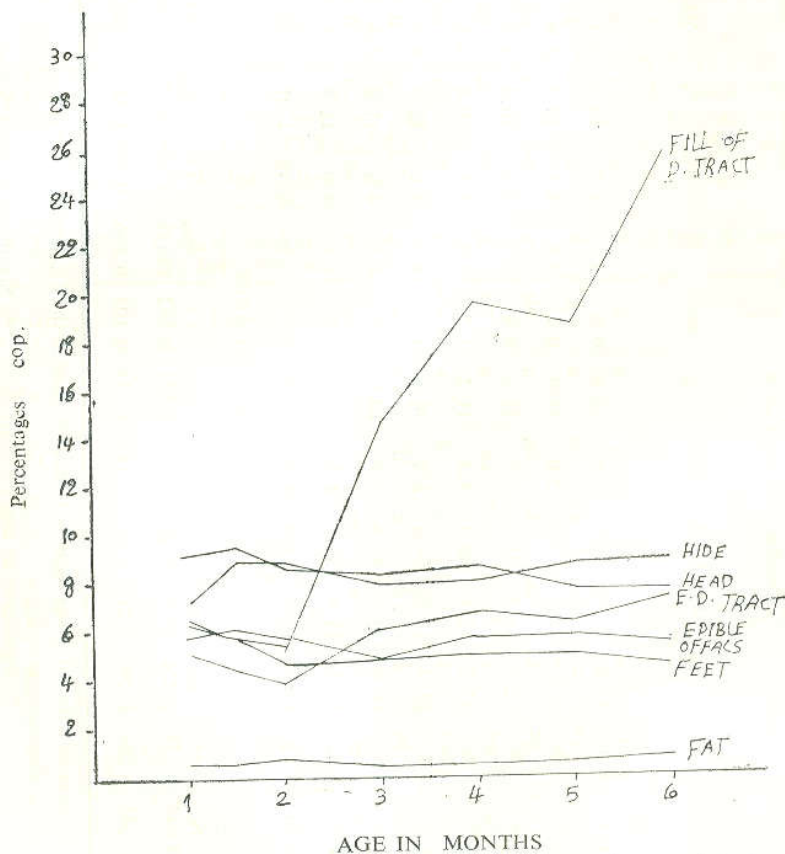

Fig. 2. Percentages of some edible and non-edible offal from emplybody weight.

Results shown in tables 2 and 3 and in Fig. 2 indicate clearly that the drastic increase in weight of contents of the digestive tract is the main reason for the observed decrease in dressing percentage during the period from 3 to 6 months of age (Table 1).

It should be noted that dressing percentage when expressed as % CW/EBW, which represent a more reliable measure, did not show any significant differences among groups of age at slaughter with the highest estimates obtained for animals slaughtered at 5 months and 45 days (59.7 and 59.6, respectively).

TABLE 4. Means[1] and mean squares of primal cuts weights (<g) and their percentages from carcass weight.

AGE (month)	Tenderloin wt.	Tenderloin %	Loin and Best end neck wt.	Loin and Best end neck %	Leg with hind Knuckle wt.	Leg with hind Knuckle %	Scrag and middle neck wt.	Scrag and middle neck %	Flank wt.	Flank %	Breast wt.	Breast %	Shoulder Wt.	Shoulder %	Best cuts[2] wt.	Best cuts[2] %
1	0.2 [a]	1.4 [a]	1.9 [a]	11.8 [a]	6.3 [a]	41.8 [a]	1.8 [a]	10.6 [a]	0.6 [a]	3.9 [a]	1.7 [a]	10.3 [a]	3.5 [a]	22.3 [a]	8.4 [a]	52.9 [a]
1.5	0.3 [a]	1.7 [a]	1.7 [ac]	12.2 [a]	12.1 [ab]	7.2 [ab]	2.0 [ab]	11.0 [a]	0.7 [ab]	3.9 [a]	1.8 [a]	10.3 [a]	3.9 [ab]	21.7 [a]	9.6 [ab]	53.1 [a]
2	0.3 [ab]	1.4 [a]	2.8 [ac]	12.0 [a]	9.5 [bc]	41.1 [bc]	2.5 [bc]	11.0 [a]	0.9 [ab]	3.7 [a]	2.4 [bc]	10.5 [a]	4.7 [ab]	20.3 [ab]	12.6 [bc]	54.4 [a]
3	0.3 [bc]	1.3 [a]	3.6 [cd]	12.2 [a]	12.1 [cd]	40.1 [cd]	3.3 [cd]	11.2 [a]	1.2 [bc]	3.9 [a]	3.1 [bc]	10.6 [a]	6.3 [cd]	20.7 [ab]	16.0 [cde]	53.6 [a]
4	0.4 [bc]	1.5 [a]	3.1 [bcd]	11.9 [a]	10.2 [c]	39.1 [c]	2.8 [cd]	10.9 [a]	1.1 [abc]	4.5 [a]	3.0 [b]	11.8 [a]	5.3 [bc]	20.3 [ab]	13.6 [cd]	52.5 [a]
5	0.4 [c]	1.3 [a]	4.1 [be]	11.6 [a]	14.8 [de]	40.8 [ab]	3.5 [d]	10.0 [a]	1.6 [c]	4.3 [a]	4.0 [cd]	11.2 [a]	7.4 [d]	20.8 [ab]	19.3 [ef]	53.7 [a]
6	0.7 [d]	1.7 [a]	5.0 [e]	12.1 [a]	15.4 [e]	38.9 [ab]	4.5 [e]	11.5 [a]	1.8	4.6 [a]	4.6 [d]	11.7 [a]	7.4 [d]	18.9 [b]	21.1 [f]	53.3 [a]
SD	0.06	0.20	0.53	1.12	1.48	1.0	0.37	1.12	0.32	0.95	0.48	1.07	0.86	1.05	2.0	1.5
MEAN SQUARES																
AGE	** 0.054	Ns 0.044	** 2.854	Ns 0.224	** 29.9	* 3.18	** 2.29	** 1.374	** 0.502	Ns 0.443	Ns 2.806	Ns 1.221	** 6.120	Us 2.824	** 54.2	Ns 2.655
RESIDUAL	0.004	0.043	0.284	1.260	2.21	1.01	0.141	1.274	0.103	0.896	0.240	1.149	0.746	1.110	4.0	2.291

1 Means not followed by the same letter differ significantly from each other at the 5% level.
2 Best cuts = Tenderloin + Bestendneck + leg.
Ns = Not significant

* Significant at the 5% level   ** Significant at the 1% level.

3. Meat cuts

The percentage of high priced cuts determines the econmical value of the whole carcass. Table 4 shows means of weights and percentages of calf cuts obtained in this study. It could be seen that weights of all cuts increased with advancement in age with differences being highly significant ($P < .01$) between slaughter age groups. When best cuts (tenderloin, best end neck and leg with hind knuckle) were weighed altogether, their absolute weight increased gradually, except for animals slaughtered at 4 months (Table 4). Except for, the percentage of leg cut from whole carcass, none of the other cuts percentages showed any significant differences with advancement in age.

Percentages of leg cut from the whole carcass were 39.7, 39.3, 41.1, 40.1, 40.1, 39.1, 40.8 and 38.9 for animals slaughtered at 1,1.5, 2,3,4,5, and 6 months, in their respective order. The comparable estimates of the total best cuts were 52.9, 53.1, 54.4,53.6, 52.5, 53.7 and 53.3 for the forementioned seven slaughter age groups, in their respective order.

TABLE 5. Carcass composition expressed as mean¹percentages of lean, fat and bone in the best ribs cut.

AGE	Lean		Fat		Bone	
(month)	wt. (g)	%	wt. (g)	%	wt. (g)	%
1	208^a	55.1^a	35^a	9.5^a	125^a	35.4^a
1.5	280^{ab}	62.5^{bc}	30^a	6.5^a	137^a	31.0^{ab}
2	346^{abc}	63.8^b	66^{ab}	11.6^a	132^a	24.6^b
3	377^{bc}	56.5^{ac}	79^{ab}	10.4^a	218^b	33.1^a
4	366^{abc}	61.6^{bc}	44^a	7.4^a	185^{ab}	31.0^{ab}
5	518^c	64.9^b	50^{ab}	6.2^a	229^b	28.9^{ab}
6	736^d	62.3^{bc}	126^b	10.6^a	318^c	27.1^{ab}
SD	82.8	3.2	35.7	4.1	32.9	4.2
			Mean squares			
AGE	68882**	38*	2553^{Ns}	12^{Ns}	11410**	38^{Ns}
Residual	6864	10	1274	17	1080	18

1. Means not followed by the same letter differ significantly from each other at the 5% level.

* Significant at the 5% level of probability.

* Significant at the 1% level of probability.

It could be concluded that, within the first six months of age the percentages of the high priced cuts seem to keep constant.   The same conclusion was reported by Ragab *et al.* (1966) who eatimrted 50,51,79,5S. 68,49,42. and 50. 79% high priced cuts from the whole carcasses of buffalo males slaughtered at 50 days, 6,12,18 and 24 months, in their resprective order.

Carcass composition

The best ribs cut (9,10 and 11) is widely used for the prediction of the lean, fat and bone percentages in the whole carcass. Table 5 shows means of weights and percentages of these tissues in the best ribs cut. With respect to the absolute weights, it can be seen that the increase of lean and bone weights with advancement in age is significant at the 1% level. However, though there is a trend
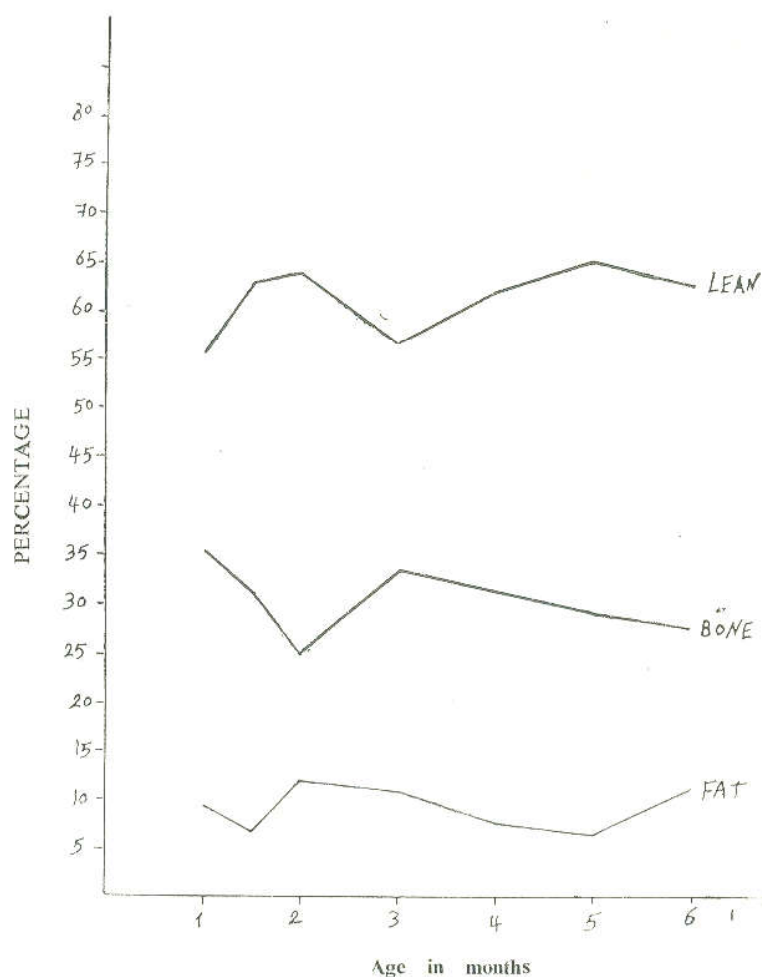

Fig 3.   Percentages of lean, fat and bone in the best ribs cut.

towards increasing fat weight, differences due to slaughter age did not reach the level of significance. This finding is quite expected at this early stage of life since the growth rate of the fatty tissues is very slow at that range of ages (Berg and Butterfield, 1966).

Considering percentages of lean from the whole cut weight, influence of age at slaughter was significant at the 5% level averaging 55.1, 62.5, 63.8, 56.5, 61.6, 64.9, and 62.3% at 1,1.5, 2,3,4,5 and 6 months, in their respective order. The percentage fat seems to be constant with advancement of age while that of bone tends, to decrease (Fig.3). Differences in both fat and bone percentages 67.5 were statistically not singificant. Ragab *et al.* (1966) reported 68 5, 69.9., 67.0, and 69.8 as percentages of lean in carcasses of male buffaloes slaughtered at 50 days, 6,12,18 and 24 months, in their respective order. The authors reported 6.34, 5.7, 11.7, 13.4 and 12.5, for fat percentages and 24.8, 24.3, 20.4, 18.7 and 16.2 for bone percentages of the male buffalo carcasses at the five forementioned ages, in their respective order. Afifi *et al.* (1974) reported 71.4, 69.3 and 73.4 as percentages of lean : 8.5, 12.1 and 8.9 as percentages of fat and 20.1, 18.4 and 17.5 as percentages of bone in carcasses of male buffaloes slaughtered at 12,1 and 24 months, in their respective order.

Previous results agreed with those obtained in the present study that percentage of lean meat tends to increase and percentage of bone tends to decrease while fat percentage keeps constant during the early stage of life of male buffalo calves.

Though differences in carcass characteristics with advancement in age were mostly insignificant, results revealed that there was a trend towards improvem ent in carcass traits studied. In general, results obtained from the present study strongly suggest that male buffalo calves should not be slaughtered at early stages of life.

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التغيرات فى صفات ذبيحة الجاموس المصرى خلال أول ستة أشهر من العمر .

محمد على ابراهيم سالم ، على عطية نجم وأحمد سعيد عبد العزيز

كلية الزراعة ـ جامعة القاهرة

أجريت هذه الدراسة فى مزرعة أم صابر بجنوب مديرية التحرير لدراسة التغيرات التى تحـدث فى صفات الذبيحة لعجول الجاموس خلال أول ستة شهور من العمر . ذبح ١٩ عجلا عند أعمار تتراوح بين شهر واحد وستة أشهر وكانت متوسطات وزن الجسم ٥٩ر٧ ، ٦٥ ، ٨٥ر٧ ، ١١٨ر٣ ، ١٠٩ر٧ ، ١٣٩ر٥ ، ١٦٨ كيلو جراما بينما كانت متوسطات وزن الذبيحة الساخن ٣٢ ، ٣٦ر٧ ، ٤٦ر٣ ، ٦٠ر٣ ، ٥٢ ، ٧٠ر٥ ، ٧٩ كيلو جراما للعجول المذبوحة عند أعمار شهر ، شهر ونصف ، وشهرين ، ثلاثة شهور ، أربعة شهور وخمسة شهور وستة شهور .

انخفضت معنويا نسبة التصافى (المحسوبة باستخدام وزن الذبيحة ووزن الجسم القائم) مع التقدم فى العمر وكانت ٥٣ر٤ ، ٥٦ر٢ ، ٥١ر٣ ، ٤٧ر٤ ، ٥٠ر٣ ، ٥٠٫٣٪ لمجموعات العمر السبعة السابق الاشارة اليها وكان للزيادة الكبيرة فى وزن محتويات الكرش والامعاء الاثر الرئيسى فى انخفاض نسبة التصافى من عمر ثلاثة الى ستة شهور . لم تظهر نسبة التصافى المحسوبة باستخدام وزن الجسم الفارغ أى اختلاف معنوى بين مجموعات العمر المختلفة وبلغت ٥٦ر٩ ، ٥٩ر٦ ، ٥٧ر٠ ، ٥٨ر٧ ، ٥٩ر٧ ، ٥٩ر٢ لمجموعات العمر السبعة المشار اليها على الترتيب .

لم يكن المتقدم فى العمر تأثير معنوى على نسب قطعيات اللحم المختلفة الى وزن الذبيحة باستثناء نطقية الفخذ وكذلك كان الوضع بالنسبة لتركيب الذبيحة حيث لم يختلف معنويا باستثناء نسبة اللحم الاحمر التى أظهرت اختلافا معنويا بين مجموعات عمر الذبح المختلفة .