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## Effect of age on edible and non-edible carcass parameters of Black Bengal goat in different agro-climatic zones in West Bengal

**Sandeep Kumar, Gopal Patra, Halim Sarkar, Ratnesh Kumar Choudhary, Amit Kumar Saren and Amitava Roy**

### Abstract

The study was conducted on twenty four numbers of castrated male Black Bengal goats from four different agro climatic zones of West Bengal at the age group of 6-9 month, 9-12 month and above 12 month age were selected from registered farmer under “AICRP on goat improvement, Black Bengal field unit-Kolkata” to edible and non-edible carcass parameters of Black Bengal goats. In the present study, the liver weight (gm.) of Black Bengal goat in Jhargram cluster at 6-9 month age group was significantly lower ( $p < 0.01$ ) and in Nadia cluster higher values was observed. The blood weight (gm.) of Black Bengal goats in Murshidabad cluster at all age groups was significantly higher ( $p > 0.01$ ) as compared with other three clusters. Regarding GI tract percentage of slaughter weight (%), significantly lower values were observed in Murshidabad cluster at 6-9 month age group and higher values were recorded in Sundarban cluster.

**Keywords:** Black Bengal goat, age, agro-climatic zones, carcass

### Introduction

Goats are among the main meat-producing animals in India and consumption of goat meat (chevon), unlike beef and pork, has special socio-cultural prestige since it has no religious taboos<sup>[1]</sup>. As per FAO, 1990 goat populations in the developing countries add up to 94.3% of the total world's population<sup>[6]</sup>. Asia produces about 73.8% of the world's chevon in 2005. Census data revealed that India accounts for 20% of the world's goat population with annual growth rate of 1.6%<sup>[3]</sup>. In general, the global demand for goat meat is growing<sup>[7]</sup>. As per 19<sup>th</sup> All India Livestock Census-West Bengal (2012)<sup>[1]</sup>, the population of Bengal Goat in West Bengal is 1, 15, 05, 950 which is about 8.51% of the Indian goat population. Women and children, the most vulnerable victims of extreme poverty are closely involved in goat rearing, which provides them an important means of livelihood security<sup>[9]</sup>. Black Bengal is a dwarf animal and it produces about 6.0 kg carcass<sup>[5, 2]</sup>. It is a prime goat of West Bengal and is famed for its adaptability, prolificacy, delicacy of meat and superior skin quality. Black Bengal goat is reared mainly for meat purpose though it has value for its skin also. There was comparison on meat production characteristics of male Black Bengal goat and its cross with Jamnapari, Beetal, Barbari or their crosses<sup>[10]</sup>. Both the researchers stated that the percentage of total edible meat was 74.15%, this was lowest in Black Bengal goat and 80% which was highest in Barbari goat. Relatively a fewer studies conducted on meat production characteristics of Black Bengal goat<sup>[4]</sup>. Therefore, the present study was designed in four different agro-climatic zones of West Bengal to investigate the effect of age on edible and non-edible carcass parameters of Black Bengal goat.

### Materials and Methods

A pilot survey for designing data collection format was conducted during the month of September, 2017 to March, 2018. All Parameters were studied at the Department of Livestock Products Technology, F/O-Veterinary and Animal Sciences, West Bengal University of Animal and fishery Sciences. The research programme was carried out in four adopted clusters of the ongoing project “AICRP on Goat Improvement, Black Bengal Field Unit - Kolkata” distributed in four agro-climatic zones (Coastal Saline Zone: Sundarban; Gangetic Alluvial Zone: Nadia; Undulating Red and Lateritic Zone: Jhargram and Old alluvial zone:

Murshidabad) of West Bengal. In the present study, 6 nos. of castrated male Black Bengal goats from each agro climatic zone at the age group of 6-9 month, 9-12 month and above 12 month age were purchased from registered farmer under AICRP. Goats were weighted and kept off-feed overnight with free access to water and were slaughtered and dressed by the Halal method in different local slaughter booths in the study areas. By this method goat were bled by cutting throat and then slaughtered by severing the head at its articulation on the atlanto-occipital space. At the time of slaughtering blood were collected in the polyethene packet and thorax of the goat was pressed sufficiently for complete bleeding. Weight of blood was recorded. Slaughtered goats were hoisted by the hocks. The head was removed and weighed. The weight of skin was recorded. The entire digestive tract was removed and weighed. Again after removing gut fill, the empty gut was weighed and recorded. Liver, kidney, lung with heart were removed and weighed separately. Warm carcass weight was recorded immediately after completing dressing and evisceration. All the experimental data which were obtained during the present investigation were analyzed statistically to

draw valid conclusion in SPSS (Version 16.0) software.

## Results and Discussion

In the present study, it was found that the liver weight (gm.) of Black Bengal goats from different clusters namely Nadia, Murshidabad, Jhargram and Sundarban under four different agro-climatic zones at different age groups viz. 6-9 month, 9-12 month and above 12 month were 215.83±1.42, 282.33±1.42 & 306.50±1.42 in Nadia; 215.00±1.42, 287.50±1.42 & 310.83±1.42 in Murshidabad; 211.00±1.42, 284.33±1.42 & 308.50±1.42 in Jhargram; 213.00±1.42, 284.67±1.42 & 305.83±1.42 in Sundarban cluster respectively. The liver weight (gm) of Black Bengal goat in Jhargram cluster at 6-9 month age group was significantly lower ( $p<0.01$ ) and in Nadia cluster higher values was observed. In the age group of 9-12 month the liver weight was lower in Nadia cluster and higher values was observed in Murshidabad cluster. Whereas at above 12 months, higher values was observed in Murshidabad cluster and lower values was observed in Sundarban cluster respectively.

**Table 1:** Age wise variation of Edible Carcass Components of Black Bengal goats

Parameter	Cluster	Age Group			
		6-9 month	9-12 month	Above 12 month	Overall
Liver Weight (gm)	Nadia	215.83±1.42 <sup>ar</sup> (6)	282.33±1.42 <sup>bq</sup> (6)	306.50±1.42 <sup>bp</sup> (6)	268.22±0.82 <sup>b</sup> (18)
	Murshidabad	215.00±1.42 <sup>ar</sup> (6)	287.50±1.42 <sup>aq</sup> (6)	310.83±1.42 <sup>ap</sup> (6)	271.11±0.82 <sup>a</sup> (18)
	Jhargram	211.00±1.42 <sup>br</sup> (6)	284.33±1.42 <sup>bq</sup> (6)	308.50±1.42 <sup>bp</sup> (6)	267.94±0.82 <sup>b</sup> (18)
	Sundarban	213.00±1.42 <sup>br</sup> (6)	284.67±1.42 <sup>bq</sup> (6)	305.83±1.42 <sup>bp</sup> (6)	267.83±0.82 <sup>b</sup> (18)
	Overall	213.70±0.71 <sup>s</sup> (24)	284.70±0.71 <sup>f</sup> (24)	307.00±0.71 <sup>c</sup> (24)	
Liver percentage of slaughter weight (%)	Nadia	2.39±0.08 <sup>ap</sup> (6)	2.38±0.08 <sup>ap</sup> (6)	1.94±0.08 <sup>bq</sup> (6)	2.23±0.04 <sup>a</sup> (18)
	Murshidabad	1.89±0.08 <sup>bp</sup> (6)	1.86±0.08 <sup>bp</sup> (6)	1.84±0.08 <sup>bq</sup> (6)	1.86±0.04 <sup>b</sup> (18)
	Jhargram	2.56±0.08 <sup>ap</sup> (6)	2.33±0.08 <sup>aq</sup> (6)	2.13±0.08 <sup>ar</sup> (6)	2.34±0.04 <sup>a</sup> (18)
	Sundarban	2.50±0.08 <sup>ap</sup> (6)	2.38±0.08 <sup>aq</sup> (6)	2.15±0.08 <sup>ar</sup> (6)	2.34±0.04 <sup>a</sup> (18)
	Overall	2.34±0.08 <sup>c</sup> (24)	2.24±0.08 <sup>c</sup> (24)	2.01±0.08 <sup>f</sup> (24)	
Kidney Weight (gm)	Nadia	33.33±0.54 <sup>ab</sup> (6)	34.50±0.54 <sup>qb</sup> (6)	51.17±0.54 <sup>pb</sup> (6)	39.67±0.32 <sup>b</sup> (18)
	Murshidabad	35.00±0.54 <sup>ra</sup> (6)	37.00±0.54 <sup>qa</sup> (6)	53.00±0.54 <sup>pa</sup> (6)	41.67±0.32 <sup>a</sup> (18)
	Jhargram	31.17±0.54 <sup>rc</sup> (6)	34.17±0.54 <sup>qc</sup> (6)	50.83±0.54 <sup>pc</sup> (6)	38.72±0.32 <sup>c</sup> (18)
	Sundarban	31.00±0.54 <sup>rc</sup> (6)	34.00±0.54 <sup>qc</sup> (6)	50.00±0.54 <sup>pc</sup> (6)	38.33±0.32 <sup>c</sup> (18)
	Overall	32.62±0.27 <sup>s</sup> (24)	34.92±0.27 <sup>f</sup> (24)	51.25±0.27 <sup>e</sup> (24)	
Kidney percentage of slaughter weight (%)	Nadia	0.37±0.01 <sup>ap</sup> (6)	0.29±0.01 <sup>aq</sup> (6)	0.33±0.01 <sup>bq</sup> (6)	0.32±0.00 <sup>a</sup> (18)
	Murshidabad	0.31±0.01 <sup>bp</sup> (6)	0.24±0.01 <sup>bq</sup> (6)	0.31±0.01 <sup>cp</sup> (6)	0.29±0.00 <sup>b</sup> (18)
	Jhargram	0.38±0.01 <sup>ap</sup> (6)	0.28±0.01 <sup>ar</sup> (6)	0.35±0.01 <sup>aq</sup> (6)	0.33±0.00 <sup>a</sup> (18)
	Sundarban	0.36±0.01 <sup>ap</sup> (6)	0.29±0.01 <sup>ar</sup> (6)	0.35±0.01 <sup>aq</sup> (6)	0.33±0.00 <sup>a</sup> (18)
	Overall	0.36±0.01 <sup>c</sup> (24)	0.27±0.01 <sup>s</sup> (24)	0.34±0.01 <sup>f</sup> (24)	

#Means ±SE brief with super scripts a, b, c, p, q, r & e, g, r, significant within different cluster and different age group.

Table-1 represented the liver percentage of slaughter weight (%) of Black Bengal goat at different age groups and different clusters. In all age groups, the liver percentage of slaughter weight (%) was found to be significantly lower in Murshidabad cluster. At 6-9 month age group higher values was observed in Jhargram cluster. At 9-12 month and above 12 month higher values were observed in Sundarban cluster. Significantly higher kidney weight (gm) of Black Bengal goats were recorded in Murshidabad cluster and lower values were observed in Sundarban cluster irrespective of all age groups (Table-1). Regarding kidney percentage of slaughter weight (%), significantly lower values were observed in Murshidabad cluster in all the age groups. At 6-9 month higher values were observed in Jhargram cluster than others, whereas at 9-12 month higher values were observed in Nadia & Sundarban cluster. At above 12 month age group higher values were noticed in Jhargram & Sundarban cluster. These results were almost similar to the results of Warriss

(2006) [12], who found no significant effect ( $P>0.05$ ) for non-carcass components of goats in function of their genotypes. Again, this result can be attributed to morphological and genetic similarities among breeds and to the environment which these animals were submitted to during the experiment, which contributed to the uniformity of data and similar slaughter weight. Regarding heart weight (gm.), Black Bengal goats from Sundarban cluster showed significantly lower values in all age groups (Table-2). Significantly higher values were observed in Murshidabad cluster at 9-12 month and above 12 month age group. At 6-9 month age group higher values was observed in Nadia cluster. Regarding heart percentage of slaughter weight (%), Black Bengal goats from Murshidabad cluster showed significantly lower values in all age groups. At 6-9 month age group higher values was observed in Jhargram cluster. At 9-12 month age group higher values was recorded in Nadia cluster and above 12 month age group higher values were observed in Jhargram and Sundarban district.

**Table 2:** Age wise variation of Edible Carcass Components of Black Bengal goats

Parameter	Cluster	Age Group			
		6-9 month	9-12 month	Above 12 month	Overall
Heart weight (gm)	Nadia	63.17±0.52 <sup>ar</sup> (6)	71.00±0.52 <sup>bq</sup> (6)	74.00±0.52 <sup>bp</sup> (6)	69.39±0.30 <sup>b</sup> (18)
	Murshidabad	62.00±0.52 <sup>br</sup> (6)	73.00±0.52 <sup>aq</sup> (6)	76.00±0.52 <sup>ap</sup> (6)	70.33±0.30 <sup>a</sup> (18)
	Jhargram	60.00±0.52 <sup>cr</sup> (6)	70.00±0.52 <sup>cq</sup> (6)	73.83±0.52 <sup>cp</sup> (6)	67.94±0.30 <sup>c</sup> (18)
	Sundarban	59.00±0.52 <sup>cr</sup> (6)	70.00±0.52 <sup>cq</sup> (6)	73.00±0.52 <sup>cp</sup> (6)	67.33±0.30 <sup>c</sup> (18)
	Overall	61.04±0.26 <sup>s</sup> (24)	71.00±0.26 <sup>f</sup> (24)	74.20±0.26 <sup>e</sup> (24)	
Heart percentage of slaughter weight (%)	Nadia	0.70±0.02 <sup>bp</sup> (6)	0.60±0.02 <sup>aq</sup> (6)	0.47±0.02 <sup>br</sup> (6)	0.59±0.01 <sup>a</sup> (18)
	Murshidabad	0.55±0.02 <sup>cp</sup> (6)	0.47±0.02 <sup>cq</sup> (6)	0.45±0.02 <sup>cr</sup> (6)	0.49±0.01 <sup>b</sup> (18)
	Jhargram	0.73±0.02 <sup>ap</sup> (6)	0.57±0.02 <sup>bq</sup> (6)	0.51±0.02 <sup>ar</sup> (6)	0.60±0.01 <sup>a</sup> (18)
	Sundarban	0.69±0.02 <sup>bp</sup> (6)	0.59±0.02 <sup>aq</sup> (6)	0.51±0.02 <sup>ar</sup> (6)	0.60±0.01 <sup>a</sup> (18)
	Overall	0.67±0.02 <sup>e</sup> (24)	0.56±0.02 <sup>f</sup> (24)	0.48±0.02 <sup>g</sup> (24)	
Lung weight (gm)	Nadia	101.83±0.75 <sup>br</sup> (6)	166.17±0.75 <sup>bp</sup> (6)	211.67±0.75 <sup>bp</sup> (6)	159.89±0.44 <sup>b</sup> (18)
	Murshidabad	103.00±0.75 <sup>ar</sup> (6)	170.00±0.75 <sup>ap</sup> (6)	214.00±0.75 <sup>ap</sup> (6)	162.33±0.44 <sup>a</sup> (18)
	Jhargram	100.50±0.75 <sup>br</sup> (6)	167.33±0.75 <sup>bp</sup> (6)	213.33±0.75 <sup>bp</sup> (6)	160.39±0.44 <sup>b</sup> (18)
	Sundarban	99.83±0.75 <sup>br</sup> (6)	167.50±0.75 <sup>bp</sup> (6)	211.50±0.75 <sup>bp</sup> (6)	159.61±0.44 <sup>b</sup> (18)
	Overall	101.29±0.38 <sup>s</sup> (24)	167.75±0.38 <sup>f</sup> (24)	212.62±0.38 <sup>e</sup> (24)	
Lung percentage of slaughter weight (%)	Nadia	1.13±0.04 <sup>ar</sup> (6)	1.40±0.04 <sup>ap</sup> (6)	1.34±0.04 <sup>ap</sup> (6)	1.29±0.02 <sup>a</sup> (18)
	Murshidabad	0.91±0.04 <sup>br</sup> (6)	1.10±0.04 <sup>bq</sup> (6)	1.26±0.04 <sup>bp</sup> (6)	1.09±0.02 <sup>b</sup> (18)
	Jhargram	1.22±0.04 <sup>ar</sup> (6)	1.37±0.04 <sup>aq</sup> (6)	1.47±0.04 <sup>ap</sup> (6)	1.35±0.02 <sup>a</sup> (18)
	Sundarban	1.17±0.04 <sup>ar</sup> (6)	1.40±0.04 <sup>aq</sup> (6)	1.49±0.04 <sup>ap</sup> (6)	1.35±0.02 <sup>a</sup> (18)
	Overall	1.11±0.02 <sup>g</sup> (24)	1.32±0.02 <sup>f</sup> (24)	1.39±0.02 <sup>e</sup> (24)	

#Means ±SE brief with super scripts a, b, c, p, q, r & g, f, e, significant within different cluster and different age group.

Significantly higher lung weights (gm) were noticed in Black Bengal goats of Murshidabad cluster irrespective of all age groups (Table-2). Lower values were observed in Sundarban cluster at 6-9 month and above 12 month age group, whereas lower values were observed in Nadia cluster at 9-12 month age group. The observed lung percentage of slaughter weight (%) in Murshidabad cluster was found to be significantly lower than others in all age groups. At 6-9 month higher values were observed in Jhargram cluster. At 9-12 month higher values were recorded in Nadia & Sundarban cluster respectively. At above 12 month higher values were noticed in Sundarban cluster. Chowdhury *et al.* 2004 similar observations were also found but no further research work on Black Bengal goat carcass with the variation of age was reported, and hence results of our study cannot be compared with research findings of others. The deviation of the results of our study may be due to age of the animal as well as geographical location and agro-climatic condition.

Blood weight (gm) of Black Bengal goats from different clusters namely, Nadia, Murshidabad, Jhargram and Sundarban at different age groups *viz.* 6-9 month, 9-12 month and above 12 month were 378.50±7.52, 503.66±7.52 & 642.00±7.52 in Nadia; 465.00±7.52, 611.67±7.52 & 707.50±7.52 in Murshidabad; 361.00±7.52, 507.00±7.52 &

641.33±7.52 in Jhargram; and 365.33±7.52, 508.50±7.52 & 641.50±7.52 in Sundarban cluster respectively (Table-3). The blood weight (gm) of Black Bengal goats in Murshidabad cluster at all age groups was significantly higher ( $p>0.01$ ) as compared with other three clusters. At 6-9 month and above 12 month age group lower values were observed in Jhargram cluster. At 9-12 month lower values were observed in Nadia cluster. The blood percentage of slaughter weight (%) of Black Bengal goat in Murshidabad cluster at 6-9 month and 9-12 month age group was significantly lower ( $p<0.05$ ) as compared with other three clusters. At 6-9 month higher values were observed in Jhargram cluster. At 9-12 month and above 12 month higher values were recorded in Sundarban cluster. In all age groups, the head weight was found to be significantly higher in Murshidabad cluster at 6-9 month age group and above 12 month age group. At 6-9 month lower values were observed in Sundarban cluster. At 9-12 month and above 12 month significantly lower values were observed in Jhargram cluster. Regarding head percentage of slaughter weight (%), significantly lower values were observed in Murshidabad cluster in all age groups. At 6-9 month and 9-12 month higher values were observed in Nadia cluster, whereas at above 12 month of age higher values were observed in Sundarban cluster than others.

**Table 3:** Age wise variation of non-edible carcass components of Black Bengal goats

Parameter	Cluster	Age Group			
		6-9 month	9-12 month	Above 12 month	Overall
Blood Weight (gm)	Nadia	378.50±7.52 <sup>br</sup> (6)	503.66±7.52 <sup>bq</sup> (6)	642.00±7.52 <sup>bp</sup> (6)	508.06±4.34 <sup>b</sup> (18)
	Murshidabad	465.00±7.52 <sup>ar</sup> (6)	611.67±7.52 <sup>aq</sup> (6)	707.50±7.52 <sup>ap</sup> (6)	594.72±4.34 <sup>a</sup> (18)
	Jhargram	361.00±7.52 <sup>br</sup> (6)	507.00±7.52 <sup>bq</sup> (6)	641.33±7.52 <sup>bp</sup> (6)	503.11±4.34 <sup>b</sup> (18)
	Sundarban	365.33±7.52 <sup>br</sup> (6)	508.50±7.52 <sup>bq</sup> (6)	641.50±7.52 <sup>bp</sup> (6)	505.11±4.34 <sup>b</sup> (18)
	Overall	392.47±3.76 <sup>s</sup> (24)	532.70±3.76 <sup>f</sup> (24)	658.08±3.76 <sup>e</sup> (24)	
Blood percentage of slaughter weight (%)	Nadia	4.17±0.11 <sup>b</sup> (6)	4.25±0.11 <sup>b</sup> (6)	4.06±0.11 <sup>b</sup> (6)	4.16±0.07 <sup>b</sup> (18)
	Murshidabad	4.04±0.11 <sup>b</sup> (6)	3.96±0.11 <sup>b</sup> (6)	4.18±0.11 <sup>ab</sup> (6)	4.06±0.07 <sup>ab</sup> (18)
	Jhargram	4.38±0.11 <sup>a</sup> (6)	4.16±0.11 <sup>a</sup> (6)	4.41±0.11 <sup>a</sup> (6)	4.32±0.07 <sup>a</sup> (18)
	Sundarban	4.27±0.11 <sup>a</sup> (6)	4.26±0.11 <sup>a</sup> (6)	4.50±0.11 <sup>a</sup> (6)	4.35±0.07 <sup>a</sup> (18)
	Overall	4.21±0.06 (24)	4.16±0.06 (24)	4.29±0.06 (24)	
Head weight (gm)	Nadia	677.50±17.13 <sup>br</sup> (6)	872.00±17.13 <sup>aq</sup> (6)	1138.67±17.13 <sup>bp</sup> (6)	896.06±9.89 <sup>b</sup> (18)
	Murshidabad	718.00±17.13 <sup>ar</sup> (6)	865.00±17.13 <sup>bq</sup> (6)	1147.50±17.13 <sup>ap</sup> (6)	910.17±9.89 <sup>a</sup> (18)
	Jhargram	540.00±17.13 <sup>cr</sup> (6)	769.17±17.13 <sup>dq</sup> (6)	924.17±17.13 <sup>dp</sup> (6)	744.44±9.89 <sup>d</sup> (18)

	Sundarban	523.33±17.13 <sup>dr</sup> (6)	818.00±17.13 <sup>ca</sup> (6)	1010.00±17.13 <sup>cp</sup> (6)	783.78±9.89 <sup>c</sup> (18)
	Overall	614.70±8.57 <sup>e</sup> (24)	831.04±8.57 <sup>f</sup> (24)	1055.08±8.57 <sup>e</sup> (24)	
Head percentage of slaughter weight (%)	Nadia	7.49±0.15 <sup>a</sup> (6)	6.94±0.15 <sup>a</sup> (6)	6.67±0.15 <sup>b</sup> (6)	7.03±0.08 <sup>a</sup> (18)
	Murshidabad	5.89±0.15 <sup>d</sup> (6)	5.36±0.15 <sup>d</sup> (6)	6.34±0.15 <sup>c</sup> (6)	5.86±0.08 <sup>d</sup> (18)
	Jhargram	6.47±0.15 <sup>b</sup> (6)	6.31±0.15 <sup>b</sup> (6)	6.35±0.15 <sup>c</sup> (6)	6.38±0.08 <sup>c</sup> (18)
	Sundarban	6.07±0.15 <sup>c</sup> (6)	6.82±0.15 <sup>b</sup> (6)	7.09±0.15 <sup>a</sup> (6)	6.66±0.08 <sup>b</sup> (18)
	Overall (NS)	6.48±0.07 (24)	6.36±0.07 (24)	6.61±0.07 (24)	

#Means ±SE brief with super scripts a, b, c, p, q, r & g, f, e, significant within different cluster and different age group.

In all age groups, the skin weight (gm) was found to be significantly higher in Murshidabad cluster which was significantly lower in Sundarban cluster (Table-4). Significantly higher values of skin percentage of slaughter weight (%) were found in Jhargram cluster at 6-9 month and

9-12 month age group. At above 12 month significantly higher values was observed in Sundarban cluster. The deviation of the results of our study may be due to age of the animal as well as geographical location and agro-climatic condition.

**Table 4:** Age wise variation of Non-Carcass Components of Black Bengal goats

Parameter	Cluster	Age Group			
		6-9 month	9-12 month	Above 12 month	Overall
Skin Weight (gm)	Nadia	540.00±11.89 <sup>abr</sup> (6)	809.50±11.89 <sup>abq</sup> (6)	980.17±11.89 <sup>abp</sup> (6)	776.56±6.86 <sup>ab</sup> (18)
	Murshidabad	575.00±11.89 <sup>ar</sup> (6)	816.67±11.89 <sup>aq</sup> (6)	982.50±11.89 <sup>ap</sup> (6)	791.39±6.86 <sup>a</sup> (18)
	Jhargram	511.17±11.89 <sup>bcr</sup> (6)	812.00±11.89 <sup>bq</sup> (6)	953.67±11.89 <sup>bcp</sup> (6)	758.94±6.86 <sup>bc</sup> (18)
	Sundarban	502.83±11.89 <sup>cr</sup> (6)	778.33±11.89 <sup>cq</sup> (6)	945.67±11.89 <sup>cp</sup> (6)	742.28±6.86 <sup>c</sup> (18)
	Overall	532.25±5.93 <sup>e</sup> (24)	804.13±5.94 <sup>f</sup> (24)	965.50±5.94 <sup>e</sup> (24)	
Skin percentage of slaughter weight (%)	Nadia	5.96±0.17 <sup>bq</sup> (6)	6.44±0.17 <sup>bp</sup> (6)	5.73±0.17 <sup>br</sup> (6)	6.05±0.10 <sup>b</sup> (18)
	Murshidabad	4.70±0.17 <sup>cr</sup> (6)	5.06±0.17 <sup>cq</sup> (6)	5.43±0.17 <sup>cp</sup> (6)	5.06±0.10 <sup>c</sup> (18)
	Jhargram	6.17±0.17 <sup>ar</sup> (6)	6.67±0.17 <sup>aq</sup> (6)	6.56±0.17 <sup>ap</sup> (6)	6.47±0.10 <sup>a</sup> (18)
	Sundarban	5.90±0.17 <sup>br</sup> (6)	6.50±0.17 <sup>aq</sup> (6)	6.64±0.17 <sup>ap</sup> (6)	6.35±0.10 <sup>a</sup> (18)
	Overall	5.69±0.08 <sup>e</sup> (24)	6.17±0.08 <sup>e</sup> (24)	6.09±0.08 <sup>f</sup> (24)	
GI tract weight (kg)	Nadia	2.93±0.13 <sup>br</sup> (6)	3.50±0.13 <sup>bq</sup> (6)	4.65±0.13 <sup>bp</sup> (6)	3.69±0.08 <sup>b</sup> (18)
	Murshidabad	3.00±0.13 <sup>ar</sup> (6)	4.54±0.13 <sup>aq</sup> (6)	5.30±0.13 <sup>ap</sup> (6)	4.27±0.08 <sup>a</sup> (18)
	Jhargram	2.58±0.13 <sup>br</sup> (6)	3.75±0.13 <sup>bq</sup> (6)	4.50±0.13 <sup>bp</sup> (6)	3.61±0.08 <sup>b</sup> (18)
	Sundarban	2.81±0.13 <sup>br</sup> (6)	3.70±0.13 <sup>bq</sup> (6)	4.20±0.13 <sup>bp</sup> (6)	3.56±0.08 <sup>b</sup> (18)
	Overall	2.82±0.07 <sup>e</sup> (24)	3.87±0.07 <sup>f</sup> (24)	4.66±0.07 <sup>e</sup> (24)	
GI tract percentage of slaughter weight (%)	Nadia	32.09±0.60 <sup>a</sup> (6)	27.70±0.60 <sup>c</sup> (6)	27.13±0.60 <sup>c</sup> (6)	28.97±0.35 <sup>b</sup> (18)
	Murshidabad	24.68±0.60 <sup>c</sup> (6)	28.13±0.60 <sup>b</sup> (6)	29.20±0.60 <sup>b</sup> (6)	27.34±0.35 <sup>c</sup> (18)
	Jhargram	30.70±0.60 <sup>b</sup> (6)	30.74±0.60 <sup>a</sup> (6)	30.94±0.60 <sup>a</sup> (6)	30.79±0.35 <sup>a</sup> (18)
	Sundarban	32.14±0.60 <sup>a</sup> (6)	30.66±0.60 <sup>a</sup> (6)	29.47±0.60 <sup>b</sup> (6)	30.76±0.35 <sup>a</sup> (18)
	Overall (NS)	29.90±0.30 (24)	29.30±0.30 (24)	29.17±0.30 (24)	

#Means ±SE brief with super scripts a, b, c, p, q, r & g, f, e, significant within different cluster and different age group.

The GI tract weight (gm) was found to be significantly higher in goats from Murshidabad cluster in all age groups (Table-4). At 6-9 month lower values was noticed in Jhargram cluster. Lower values were observed at 9-12 month in Nadia cluster and at above 12 month in Sundarban cluster. Regarding GI tract percentage of slaughter weight (%), significantly lower values were observed in Murshidabad cluster at 6-9 month age group and higher values were recorded in Sundarban cluster. At 9-12 month age group higher values was reported in Jhargram cluster and lower values was observed in Nadia cluster. At above 12 month age group significantly higher values were observed in Jhargram cluster and lower values were observed in Nadia cluster. Mursheda *et al.* (2014) [8] reported that the blood weight (gm.) 589.50 and head weight (gm.) 1.24 respectively. Chowdhury and Faruque (2004) [4] reported that the blood weight (g), blood as% of live weight, head weight (kg), head as% of live weight, skin weight (g), skin as% of live weight, Gastro-intestinal (GI) tract weight (kg) and GI tract as% of live weight were 741 & 797; 3.64 & 3.56; 1.53 & 1.63; 7.6 & 7.4; 1614 & 1582; 7.95 & 7.14; 2.37 & 2.78 and 11.63 & 12.71 at 181-365 days and at more than >365 days in Black Bengal goats of Bangladesh respectively. The variation in values in the present findings may be due to the effect of age, management, regional variation and genetic makeup of goat.

## Conclusion

In the age group at above 12 months, higher values were observed in Murshidabad cluster and lower values were observed in Sundarban cluster respectively. Higher kidney weight (gm.) of Black Bengal goats were recorded in Murshidabad cluster and lower values were observed in Sundarban cluster irrespective of all age groups. Regarding kidney percentage of slaughter weight (%), significantly lower values were observed in Murshidabad cluster in all the age groups. The blood weight (gm.) of Black Bengal goats in Murshidabad cluster at all age groups was significantly higher ( $p>0.01$ ) as compared with other three clusters. The blood percentage of slaughter weight (%) of Black Bengal goat in Murshidabad cluster at 6-9 month. Regarding head percentage of slaughter weight (%), significantly lower values were observed in Murshidabad cluster in all age groups. In all age groups, the skin weight (gm.) was found to be significantly higher in Murshidabad cluster. The GI tract weight (gm.) was found to be significantly higher in goats from Murshidabad cluster in all age groups.

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