

Research Article

Effect of animal breed on the different parts of carcass traits of various sheep breeds of Baluchistan

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Abstract

The role of breed differences in productive traits consider as major genetic resources for enhancing meat quality, quantity and production efficiency. It is important to determine the potential value of carcass traits from breed crosses and breed differences as alternate source of germplasm for production of meat. This study was performed to observe the influence of breed on the different parts of carcass of four sheep breeds including Balochi, Rakhshani, Harnai and Bibrik. In this study total 120 male animal having 8 month of age 30 animals from each breed were selected. They were reared in semi-intensive management system with inbreeding method was applied. In order to observe the influence of breed on the different parts of carcass traits, the 10 randomly selected animals from each breed were slaughtered to analysis the different parts of carcass traits including shoulder with neck, neck with lion and flank, leg with shank and each part of carcass traits was boned out. The result for different parts of carcass including shoulder with neck, rack with loin and flank, legs with shanks for Balochi breed were observed significantly ($P \geq 0.05$) higher except bone weight followed by Bibrik, Rakhshani and Harnai sheep breeds, whereas the higher bone weight was observed in Bibrik sheep breed as compared with other breeds. Based on the present

study, it is concluded that comparatively higher carcass weight of different parts of carcass and boneless weight were better in Balochi breed followed by Bibrik, Rakhshani and Harnai. It is concluded that Balochi breed could be better animal to use for meat purpose.

Keywords: Balochistan; Breed; Parts of carcass; Sheep breeds

Introduction

Sheep consider as an important source of food (meat & milk) also for higher economical values such as wool and leather. The carcass can be defining as the part of animal meat which is received after removing of skin, head, feet except kidney fat and kidney. It has been reported in number of publications that health, management, nutrition and breed are key factor that influenced the carcass traits including length, height and thickness [1]. The main factor of meat production is procedure of measuring carcass traits is main factor to achieve higher weight in the form of carcass quantity and quality. It has been reported that the average carcass yield of sheep in various countries also Pakistan has been reported that about (10 to 12) kilo gram that is almost half of weight of different other sheep rearing countries in the world. The sheep animal is mainly preferring and having better producing carcass at the young age of 6 months with diet including concentrate as well as forage fodder [2, 3]. It has been also reported that carcass traits are mainly influenced by gender, breed, nutrition, age and anti-mortem as well as post-mortem treatment with animal body [5-7]. Balochistan covers the 44% of the total land area of Pakistan with small and scattered population. Most of the population is directly or indirectly involved with the livestock especially small ruminants and earn their livelihood by raising sheep and goats [8]. This province is the most favorable place for the raising of small ruminant specially sheep due to its vast rangeland, climate condition and geographical region. Out of thirty sheep breeds of Pakistan four important well known fat tailed sheep breeds raised in Balochistan are Balochi, Harnai, Rakhshani, and Bibirak [9, 10]. Balochi is fat tail medium

size sheep breed having ability to survive in extreme harsh environment kept in different areas of Balochistan and Iran with average 36 to 32 kg body weight. Harnai is medium size and fat tail sheep found reared for mutton and wool mainly found in Quetta, Sibi, Loralai, and other district of Baluchistan. Rakhshani and Bibrik are also medium size sheep breeds have medium size body kept for mutton and wool adult weight 32 to 28, 30 to 28 kilo gram average body weight average [11-13].

Materials and Methods

Selection of animals

In order to observe the influence of breed on different parts of carcass traits including shoulder with neck, rack with loin and flank, leg with shank of four different sheep breeds including Balochi, Rakhshani, Harnai and Bibrik; 30 male animals from each breed were randomly selected on their phenotypic bases and slaughtered at Organic Meat Company Karachi. Their phenotypic characteristics for breeds confirmation and health status including age was confirmed using the [14, 15].

Phenotypic data

After observing health status animals randomly selected animal from each breed were slaughtered; their hide, head and non-carcass components were removed. The carcass weight was further divided into different parts and following parameters were recorded.

1. Shoulder with neck
2. Rack with loin and flank
3. Leg with shank.

After observing the weight of different parts of carcass, each part was deboned to achieve the boneless and bone weight. The carcass weight, weight of different parts of carcass, boneless and bone weight was taken using digital weighing balance.

Statistical analysis

The data was typed and tabulated in computer using the MS Excel software.

Result

Present study was performed on four different sheep breeds of Baluchistan including Balochi, Rakhshani, Harnai and Bibrik breeds. To observe the influence of animal breed on the different parts of carcass traits total 120 animals and 30 males and 10 animals from each breeds were randomly selected and slaughtered for this study. The details of this study are given below.

Weight of different parts of carcass traits of sheep breeds of Balochistan

To observe the influence of breed difference on the various parts of carcass traits including shoulder with neck, Rack with loin and flank and Leg with shank were observed 6.61 ± 0.34 , 5.94 ± 0.17 and 5.12 ± 0.74 for Balochi, 5.80 ± 0.24 , 5.28 ± 0.69 and 5.07 ± 0.69 for Rakhshani, 5.62 ± 0.76 , 4.91 ± 0.25 and 4.89 ± 0.9 for Harnai, 5.91 ± 0.43 , 5.68 ± 0.37 and 5.09 ± 0.64 for Bibrik sheep breeds, respectively. The results showed that higher carcass weight was observed for different parts of carcass in Balochi sheep followed by Bibrik, Rakhshani and Harnai, sheep breed (Table 1).

Table 1: Results for different parts of carcass traits of sheep breeds of Balochistan

Breed	Traits		
	Shoulder with neck	Rack with loin and flank	Leg with shank
Balochi	6.61 ± 0.34	5.94 ± 0.17	5.12 ± 0.74
Rakhshani	5.80 ± 0.24	5.28 ± 0.69	5.7 ± 0.69
Harnai	5.62 ± 0.76	4.91 ± 0.25	4.89 ± 0.9
Bibrik	5.91 ± 0.43	5.68 ± 0.37	5.09 ± 0.64

P-Value < 0.004

Boneless weight of different parts of carcass traits of sheep breeds of Balochistan

The result for boneless weight of different parts of carcass traits including boneless weight of shoulder with neck, boneless weight of rack with loin and flank, boneless weight of leg with shank were 4.01 ± 0.16 ; 3.63 ± 0.27 and 3.89 ± 0.27 for Balochi, 3.35 ± 0.71 ; 3.95 ± 0.21 and 3.71 ± 0.19 for Rakhshani, 3.01 ± 0.17 ; 2.15 ± 0.13 and 2.65 ± 0.15 for Harnai, 3.45 ± 0.11 ; 3.52 ± 0.41 and 3.81 ± 0.12 for Bibrik sheep breed, respectively. The results for boneless weight of different carcass traits were observed higher in Balochi sheep breed as compared with others (Table 2).

Bone weight of different parts of carcass traits of sheep breeds of Balochistan

The result for bone weight of different parts of carcass traits including bone weight of shoulder with neck, rack with loin and flank and leg with shank were 1.63 ± 0.27 ; 1.15 ± 0.23 and 1.56 ± 0.02 for Balochi; 1.78 ± 0.11 ; 2.87 ± 0.23 ; 1.14 ± 0.52 and 7.86 ± 0.041 for Rakhshani, 2.01 ± 0.15 ; 2.01 ± 0.10 ; 1.69 ± 0.32 ; 1.96 ± 0.65 and 7.22 ± 0.17 for Harnai, 3.32 ± 0.3 ; 2.14 ± 0.32 ; 2.15 ± 0.31 and 8.56 ± 0.32 for Bibrik sheep breed, respectively. The results for bone weight was observed higher in Bibrik sheep breed as compared with other sheep breeds (Table 3).

Table 2: Results for boneless weight of different parts of carcass traits of sheep breeds of Balochistan

Breed	Traits		
	Boneless weight of shoulder with neck	Boneless weight of rack with loin and Flank	Boneless weight of leg with shank
Balochi	4.01±0.16	3.63±0.27	3.89±0.27
Rakhshani	3.50±0.71	3.95±0.21	3.71±0.19
Harnai	3.01±0.17	2.15±0.13	2.65±0.15
Bibrik	3.45±0.11	3.52±0.41	3.81±0.12

P- Value <0.01

Table 3: Results for bone weight of different parts of carcass traits of sheep breeds of Balochistan

Breed	Traits			
	Bone weight of shoulder with neck	Bone weight of rack with loin and Flank	Bone weight of leg with shank	Total bone weight
Balochi	1.63±0.27	1.15±0.23	1.56±0.02	4.78±0.03
Rakhshani	1.78±0.11	2.87±0.23	1.14±0.52	7.86±.041
Harnai	2.01±0.10	1.69±0.32	1.96±0.65	7.22±0.17
Bibrik	3.32±0.3	2.14±0.32	2.15±0.31	8.56±32

P-Value <0.002

Discussion

The findings of present study are consistent by the results of [16], who reported that weight of shoulder with neck, rack with loin and flank were recorded comparatively higher as compared with weight of leg with shank, the mentioned variation among the different parts of carcass traits were due to health status of animal, leg length, body size, nutrition and management system of farm. Researchers also reported that there was no significant difference was observed among the gender of carcass and its different parts. These results are supported by the findings of [17]. A study was conducted by [18, 19], they reported more values for weight of different parts of carcass traits including shoulder with neck, rack with lion and flank and leg with shank. Author reported higher values for different parts such as 9.11, 8.54 and 9.22 kilo gram. Similar study was conducted by [7], [20], they suggested that weight of different parts of carcass such shoulder with neck, rack with lion and flank and leg with shank are associated with live body weight

and carcass weight as carcass weight increased weight of different parts of carcass will also increase [21, 22], reported that breed difference is highly influenced factor on the weight of carcass as well as different parts of carcass which are positively linked with each other. The findings of [1, 20, 23] were also related to our study they reported that different between the different parts of carcass weight may be to influence of sex, body condition, during slaughtering of animal, age, size of body length and width of carcass. They reported that some animals have ability to stamp fat and meat on their legs and some animals have bony and long shallow legs which are actual factor showing difference among the results of various studies. [24], suggested that various factors influencing the different parts of carcass weight are vary which prove it difficult that produce more carcass production through physical examining of live animal as well as slaughter and carcass. [25, 26], conducted study and reported higher values for boneless weight as compared our investigation values

in Nijdi sheep breed which were specially raised for meat purpose.

Conclusion

Based on the present study, it is concluded that comparatively higher carcass weight of different parts of carcass and boneless weight were better in Balochi breed followed by Bibrik, Rakhshani and Harnai.

Authors' contributions

Conceived and designed the experiments: RR Kaleri & HA Kaleri, Performed the experiments: AN Khoso, RA Mangi, & GM Solangi, Analyzed the data: HA Kaleri. Contributed reagents/ analysis/ tools: M Ismail, Gopang & A Khan. Wrote the paper: RR Kaleri, H Uddin & SM Khosa.

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