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Short Communication

Biometrical study of internal genital organs of Gaddi goats

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ABSTRACT

Female genitalia from 51 healthy non-pregnant Gaddi goats were used for study. Almond shaped ovaries measured 1.57x1.11x0.83cm in length, width and thickness respectively. Isthmus part of oviduct form "S" or "U" shaped curve before terminting into uterine horn. The corpus uteri was longer (1.60cm) than cervix uteri (1.20cm).

Keywords: Biometry, internal genital organs, Gaddi goat

The knowledge of biometry of genital organs is very important for planning breeding strategies, diagnosis, control and treatment of various genital disorders. The study on this aspect are not available in respect to Gaddi goats, hence this report.

The normal female genital organs from ovary to cervix of 52 apparently healthy Gaddi goats were collected from the Palampur slaughter house. The collected specimens were brought to laboratory as early as possible and classified as prepubertal (6), pubertal follicular (20), pubertal luteal (14) and senile groups (11) depending upon the age of animal and presence of type of follicle, corpus luteum or corpus albicans on surface of ovary. The ovarian length (between the extremities), width (between the borders) and thickness (between two surfaces) number and size of follicles and corpora lutea, and also the number of corpora albicantia were recorded. The length of the oviduct and various segments of uterus were recorded. The results are summarized in Table 1.

The internal genitalia of the female Gaddi goats resembled in form and structure with that of the bovine female genitalia (Sisson and Grossman, 1953). The ovaries were almond shaped, ovoid bodies, flattened on both sides, held in the mesovarium of the broad ligament. The mean length (1.57±0.03cm), width (1.11±0.12cm) and thickness (0.80±0.11cm) of both ovaries were comparable with the observations of Puranik and Kaikini (1968), Srivastava *et al.* (1984), and Kwange and Aire (1988) in goats of various regions of India and abroad. The cyclic ovaries presented a number of follicles, corpora lutea and corpora albicantia on their surfaces. The number of follicles on the left ovary were comparatively more than on the right ovary. The largest follicles on the left ovaries of different age groups measured between 3-9mm in diameter whereas that on the right ovary measured 2-12mm in diameter. The percentage of corpora lutea, albicantia and different types of follicles as observed in the sections of ovaries are shown in Table 2.

The highest percentage of primary follicle occurred in the prepubertal animals. The senile group however showed the maximum percentage of corpora albicantia. The average number of follicles on left ovary was slightly more (9.0±2.80) than on the right ovary (8.0±2.19) however the difference was statistically non-significant (P<0.05).

The oviducts of Gaddi goat was a long coiled tube (10.98-20.50cm). Three well defined zones were identified viz. fimbrial, ampulla and isthmus as also earlier described by Abdalla (1968), Sisson and Grossman (*loc. cit*) in various domestic animals. The fimbriae attached to the ovarian surface and opened at the ostium abdominale tubae. Ampullary portion was not as flexuous as in Gaddi sheep (Rajput and Sharma, 1994). The isthmus was comparatively less coiled part and it took two and half or three sharp curves to form an "S" shaped or "U" shaped curve before terminating into uterine horn (Fig. 1). The mean length of right and left

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Table 1. Biometrical measurement of different parts of internal genitalia of Gaddi goats

Parameters	Prepubertal	Follicular phase	Luteal phase	Senile phase	Overall
Length of ovary (cm)	R 1.23±0.27	1.64±0.32	1.45±0.24	1.75±0.30	
	L 1.38±0.32	1.64±0.29	1.51±0.31	1.85±0.27	
Width of ovary (cm)	R 0.88±0.24	1.18±0.25	1.65±0.15	1.29±0.20	
	L 1.87±0.19	1.13±0.22	1.14±0.22	1.22±0.21	
Thickness of ovary (cm)	R 0.62±0.12	0.98±0.34	0.85±0.22	0.94±0.17	
	L 0.66±2.16	0.79±0.19	0.87±0.25	0.97±0.22	
Length of oviduct (cm)	R 11.49±2.16	15.68±3.64	14.25±3.39	17.07±5.15	
	L 11.88±3.63	16.36±3.81	15.03±4.45	18.09±4.09	
Length of free part of cornua (cm)	R 7.97±3.73	10.87±2.79	12.00±3.30	12.66±3.20	
	L 7.83±3.99	10.94±3.44	12.78±4.68	12.78±3.21	
Length of fixed part of cornua ovary (cm)	R 1.66±0.40	2.82±1.24	1.42±0.49	2.90±0.94	
	L 0.88±0.38	2.00±0.96	2.67±1.12	1.64±0.44	
Length of corpus (cm)	1.28±0.54	2.43±0.67	2.35±0.87	2.22±0.36	
Length of cervix	0.85±0.29	1.41±0.36	1.42±0.34	1.66±2.89	

The all parameters recorded in right and left half were non significant with in same group and between the groups at 0.05% level
R- Right L- Left

Table 2 Percentage of various types of follicles, corpora albicantia corpora lutea on ovary of Gaddi goat

Stage of reproduction	Primary follicle (%)	Secondary follicle (%)	Tertiary follicle (%)	Graafian follicle(%)	Corpus Luteum(%)	Corpus Albicans (%)
Prepubertal	64.87	8.11	8.11	10.87	-	8.11
Follicular phase	57.18	22.82	9.74	6.15	0.51	3.59
Luteal phase	30.86	22.22	14.81	7.40	2.47	9.88
Senile phase	22.00	14.00	14.00	4.00	4.00	42.001

oviducts of all group were 14.97 cm and 15.58 cm, respectively as the difference in length was statistically non-significant between the groups (P>0.05).

The uterus was having two uterine cornuae (fixed and free parts), corpus uteri and cervix uteri. The total length of the left cornu (free and fixed) part together was slightly more (13.91cm) than right cornu (13.43cm) although statistically non-significant (P>0.05). Similar observations were recorded by Singh *et al.* (1974) and Srivastava *et al.* (*loc. cit*). Basu *et al.* (1961) observed the right horn of she goat of Rajsthan longer (12.10cm) than the left horn (11.91cm). The average length of corpus uteri was 1.60±0.37 cm in contrast to the findings of Srivastava who measured it (1.44 cm).

The caudal most constricted and compact portion of the uterus was cervix uteri. The mean length of the cervix uteri was 2.19±0.49 cm (1.2-3.15 cm). This was in contrary to the findings of Basu *et al* (*loc. cit*) and Singh *et al* (*loc. cit*) who recorded the cervical length of 4.00 cm and 3.42 cm respectively in the she goats of Rajsthan and local goats of Uttar Pradesh.

Fig.1 Photograph showing Grfaffian follicle on surface of ovary and tortous termination of isthmus portion of oviduct into uterine horn forming "U" shaped flexure.

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