MORPHOLOGICAL EVALUATION OF FOLLICLES AND OOCYTES IN ADULT GADDI GOAT

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ABSTRACT

Ovaries from 10 healthy adult female Gaddi goats were collected and their biometrical parameters and visible follicles were recorded. The visible surface follicles were classified into small, medium and large categories. The number of follicles was more in left ovary when compared to right ovary. However, the recovery of oocytes from follicles was more in right ovary rather than the left. The A and B types of oocytes were maximum recovered from all three categories of follicles. The diameter of oocytes with zona pellucida was recorded maximum in A type whereas thickness of zona pellucida was maximum in C and N types of oocytes.

Key words : Follicles, Oocytes, Gaddi goat

The livestock production is based on reproduction. Recent advances in Embryo Biotechnology by way of *in vitro* maturation (IVM) and *in vitro* fertilization (IVF) of oocytes followed by *in vitro* embryo development can produce substantial number of embryos in laboratory (Agarwal and Tomar, 1998) in large animals. Leifried and First (1979) reported a direct relationship between morphological characteristic of follicular oocyte and their ability to mature *in vitro*. There is lack of information regarding the pattern of oocytes present in different follicles of adult Gaddi goat. Therefore, this study was designed to get raw data for ETT in this particular study.

The female genitalia of 10 adult Gaddi goats collected from the slaughter house of Paprola (Himachal Pradesh), in phosphate buffer saline in ice box were brought to laboratory at F.V.Sc. and A.H., SKUAST--J, R.S.Pura within 24 hrs. The length, width and thickness of ovaries were recorded using vernier callipers (Singh *et al.*, 1974). Thereafter ovaries were examined for presence of visible types of follicles which were classified into small (1 to 3 mm), medium (> 3 to 6 mm) and large (> 6mm) as according to Chakravarty (1986). The oocytes were aspirated out from each follicle and microscopic examination was done to record the morphology and micrometry of oocytes recovered from each ovary. The data collected were subjected to statistical analysis (Snedecor and Cochran, 1967).

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The classification of oocytes was done on the basis of number of layers of cumulus cells as:

A type - more than 3 layers of compact cumulus cells

B type - at least one layer of cumulus cells

C type - broken incomplete cumulus cells

N type - naked oocytes enclosed by zona pellucida only

The mean length, width and thickness of ovary were 1.63 ± 0.04cm, 1.29 ± 0.04cm and 1.04 ± 0.04cm. The biometrical values closely resembled the findings of Basu *et al.* (1961), Singh *et al. (loc.cit)* and Chakravarty *et al.* (1994) in adult goat. These mean biometrical values were slightly more in the left ovary than right ovary but statistically non-significant.

Three types of visible surface follicles were observed viz. small, medium and large. The small type of follicles were found maximum followed by medium and large types with an overall 8.00 ± 0.45 per ovary. These findings were in contrary to the findings of Salama (1972), Camp *et al.* (1983) and Thakre *et al.* (1995) in goat. This might be due to the breed variation. In this study, the left ovary had maximum number of small type of follicles whereas the situation was vice versa in respect of medium and large types of follicles. This variation in follicular number was statistically non-significant.

The highest percentage of oocytes was recovered from medium type of follicles followed by small and large types with an overall recovery percentage 81.25. These findings were almost similar with the observations of Thakre *et al.* (1995). In this study, the right ovary had higher recovery percentage of oocytes than the left ovary. However, no significant difference was observed. Oocyte recovery was also higher from the ovaries with corpus luteum than smooth ovary. Similar type of findings were also recorded by Agarwal and Tomar (1998).

In present study most of the oocytes recovered were A and B types irrespective of types of follicles and sides of ovary. These findings were in contrast to the reports of Chakravarty (1986) in adult Assam local goat. Thus indicating the more recovery of good quality oocytes in this species which could be utilized for IVM and IVF.

The micrometric values of different types of oocytes recovered from Graafian follicles, irrespective of sides are presented in Table. The diameter of A and B types of oocytes was more in small follicles whereas it was more in A and C types of oocytes in medium and large follicles. Irrespective of types of follicles, the thickness of zona pellucida was more in C and N types

Table : Mean ±SE Micrometry of A, B, C and N types of oocytes (in µm) recovered from different types of follicles in Gaddi goat

Follicles	Including zona pellucida				Excluding zona pellucida				Thickness of zona pellucida			
	A	B	C	N	A	B	C	N	A	B	C	N
Small	210.82 ±:3.79	207.17 ±:3.09	203.52 ±:3 .41	200.20 ±:3 .71	177.62 ±:3.79	173.97 ±:3.09	170.32 ±:3.41	167.00 ±:3.71	16.07 ±:0.57	15.44 ±:0.80	17.93 ±±.09	17.93 :I: 1. 09
Medium	211.48 ±:4.00	207.83 ±:3 .37	211.65 ±:0 .59	209.16 ±±.17	178.28 ±:4.00	174.63 ±:3.3 7	178.45 ±:0.59	175.96 ±±.17	16.73 ±:0.91	16.10 ±±.14	19.92 ±±.17	19.92 ±±.17
Large	215.80 ±:6.78	206.39 ±:9.78	215.80 ±:0.00	-	182.60 ±:6.78	177 .62 ±:6.21	182.60 ±:0.00	-	18.26 ±±.57	17.71 ±±.97	21.58 ±:0.00	-

as compared to A and B types according to Chakravarty (1986)

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