

Seasonal variation in physical characteristics of native buck (*Capra hircus*) semen in Andhra Pradesh*

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Received : April 11, 2001

Accepted : March 13, 2002

ABSTRACT

Five native bucks aged between 2 to 2a years and weighing about 24.25±2.5 kgs were used to study the seasonal variation in physical attributes of semen. Semen samples were collected twice in a week during winter and summer seasons. The mean values for different semen characteristics were as follows, volume 0.70±0.10 and 0.60±0.02, mass motility 4.46±0.06 and 4.34±0.08, individual motility (%) 81.78±0.53 and 78.06±0.68, sperm concentration (x10⁹/ml) 2.45±0.31 and 2.35±0.02, live sperm count (%) 87.05±0.62 and 81.11±0.51, abnormal sperm (%) 8.98±0.23 and 9.28±0.20 and intact acrosomes (%) 72.68±0.97 and 77.76±0.76 in winter and summer seasons respectively. Seasons had significant effect on semen volume, individual motility, sperm concentration, live sperm count, abnormal sperms and intact acrosomes acrosomes where as mass motility did not significantly differ between the seasons.

Key words : Serum, sperm concentration, live sperm, seasonal, buck

Information related to the semen characteristics of native buck in country. In the present seasonal variation in the physical characteristics of native buck semen in five healthy native bucks aged between 2 to 2½ years and weighing about 24.25±2.5 kgs were used for the present study. The animals were housed in a well ventilated shed and fed 500 grams of concentrate mixture per animal per day besides grazing for 6 to 8 hours. Semen was collected from bucks twice a week, during winter and summer by Artificial Vagina method as per procedure described by Hafez (1980). A total of 120 ejaculates, 12 from each buck during winter (60 ejaculates) i.e. from December to February and 12 from each buck during summer (60 ejaculates) i.e. from March to May were collected. Immediately after collection the samples were incubated in a water bath maintained at 37°C and the physical attributes were evaluated. Volume was measured directly from the graduated collection tube. The mass motility, individual motility, sperm concentration, live sperm count, abnormal sperms, acrosomal evaluation were

estimated by adopting standard procedures (Herman and Madden, 1953). The data was subjected to Analysis of variance as per the method of Snedecor and Cochran (1968) to interpret the results.

The observed difference in the volume was highly significant ($P < 0.01$) between bucks and between seasons. The lowest volume (0.49 ± 0.03 ml) of semen was recorded in the month of May (summer season) and highest volume (0.76 ± 0.03 ml) was recorded in the month of February (winter season). These are in agreement with the findings of Kang and Chung (1976), Li *et al.* (1988), Sinha *et al.* (1981) and Reddy *et al.* (1989). The average mass motility was found to be 4.46±0.06 and 4.36±0.08 in winter and summer seasons respectively. The difference in the value was found to be significant ($P < 0.01$) between bucks only, but not between seasons. Mohan *et al.* (1980) and Silva and Nunes (1984) reported similar results. However Gunzel *et al.* (1980) concluded that mass motility in rams obtained in winter season was significantly better than those obtained in summer season.

The average percent of individual sperm motility was observed to be 81.78±0.53 and 78.06±0.68 in winter and summer seasons respectively. The variation in the

*Part of M.V.Sc., thesis of the first author

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percentage of individual motility was found to be highly significant ($P < 0.01$) between weeks, between seasons and between bucks. These results were in close conformity with the reports of Patil and Raja (1978), Rahman and Kandil (1984), Li *et al.* (1988) and Reddy *et al.* (1989). Where as Mittal (1985) concluded that season had no effect in Jamnapari bucks.

The mean concentration of spermatozoa ($\times 10^9$) was 2.45 ± 0.31 per ml in winter season and 2.35 ± 0.02 per ml in summer season. There was significant difference between seasons ($P < 0.05$) in the concentration of spermatozoa and this is in agreement with the reports of Kang and Chung (1976), Gamcik *et al.* (1979), Rahman and Kandil (1984) where as Mittal (1985) recorded that season had no significant effect on sperm concentration on the contrary, Neves *et al.* (1980) reported that sperm concentration was highest in summer and lowest in other seasons.

The percent of live sperm count was found to be significantly ($P < 0.01$) higher during winter (87.05 ± 0.62) than during summer (81.11 ± 0.51). Similar significant seasonal variations were observed by Sahni and Roy (1969) in Jamnapari bucks. Where as Patil and Raja (1978), Reddy *et al.* (1989) reported non-significant seasonal variation in the live sperm count. The abnormal sperm count was lower in winter (8.98 ± 0.23) than in summer (9.28 ± 0.20). These results are in agreement with the reports of Bardoloi and Sharma (1982) in bucks, Singh *et al.* (1982) in Black Bengal goats and Reddy *et al.* (1989) in native bucks, however Mittal (1985) reported that abnormalities were not affected by season.

The mean percent of intact acrosomes was found to be 73.68 ± 0.97 and 77.76 ± 0.76 in winter and summer seasons respectively. The percentage of intact acrosomes was significantly higher during summer season than in winter season. The results are in agreement with the findings of Roca *et al.* (1992) in Murciano-Granadina goats. It can be concluded from the present that the volume, individual motility, sperm concentration and percent of live sperms in native buck semen were significantly higher during winter when compared to summer. Non-significant increase in mass motility during winter was noticed. However, non-significantly higher percent of abnormal sperms were observed in summer when compared to winter, where as intact acrosomes were significantly lower in winter than during summer.

ACKNOWLEDGEMENTS

The authors are thankful to the authorities of Andhra Pradesh Agricultural University, Hyderabad for providing the necessary facilities and according permission for publishing this article.

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