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CRYOPRESERVATION OF GOAT SPERMS COLLECTED FROM DIFFERENT REGIONS OF THE EPIDIDYMIS

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Cryopreservation of epididymal sperms in domestic and non-domestic animals has a number of important practical applications such as preservation of valuable genetic material from non-breedable animals.

In the present study, we assessed the motility, morphology and viability of sperms from the head, body and tail regions of 11 epididymides obtained from goats from the Kandy abattoir soon after slaughter. Eosin and nigrosin staining was used to assess the changes of morphology and viability.

Statistically significant differences were observed in the motility and viability of sperms in the head, body and tail of the epididymis ($P < 0.05$) before and after cryopreservation. Before cryopreservation, the highest motility and viability were detected in sperms collected from the tail of the epididymis and the mean values (± standard error) observed were 75.45 ± 5.22% and 78.18 ± 5.65% for motility and viability respectively. These values reduced to 39.09 ± 8.31% and 37.72 ± 4.96% after freezing. The lowest motility and viability were observed in sperm of the head of the epididymis, which were 5.27 ± 2.72%, and 47.27 ± 10.52% respectively and reduced to 1.00 ± 0.89% and 24.18 ± 6.90% after freezing. The motility and the viability of sperms from the body of the epididymis were found to be 35.7 ± 31.39% and 58.3 ± 16.48% and reduced to 14.8 ± 13.7% and 31.5 ± 8.31% respectively due to freezing. Cryopreservation significantly increased ($P < 0.05$) numbers of head and tail abnormalities, such as small heads, acrosomal defects, coiled tails and bent tails, in sperms collected from all three parts of the epididymis. A significant difference ($P < 0.05$) was detected in the proportion of sperms having proximal cytoplasmic droplets among the head, body and tail regions of the epididymis, whereas no such difference ($P > 0.05$) was observed for the distal cytoplasmic droplet in sperms collected from the different regions before cryopreservation. Similar trends were observed in sperms collected from these regions after freezing. Analysis of variance revealed a significant interaction ($P < 0.05$) between cryopreservation and the region of the epididymis for the parameters of motility, viability and acrosomal defects.

From these observations, it was concluded that the cryopreservation was most successful when the sperms were obtained from the tail of the epididymis.