LOSSES OF SPERMATOZOA FROM THE VAGINA OF THE EWE

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Very few spermatozoa inseminated into the vagina of the ewe reach the site of fertilization. Most are lost to the exterior (Hawk and Conley 1971). A series of experiments was conducted to quantify the losses over time of spermatozoa from the vagina of the ewe and to determine if mating contributed to losses.

A group of 21 entire Merino ewes, which had received at least four injections of progesterone (20 mg) every two days, were inseminated blindly with 1,786 ± 44 x 106 dead spermatozoa in 0.4 mls. Very few dead spermatozoa penetrate the cervix and spermatozoa were flushed from the vagina with normal saline at 0 (control), 3, 6, 9, 12, 18 and 24 hours after insemination. Mean recovery at time 0 was 102 ± 4%. The experiment was replicated twice. In subsequent experiments the effects of volume and concentration were investigated. To determine the effects of mating six ovariectomised Merino ewes were induced by treatment with oestrogen to display oestrus and were blindly inseminated with 0.1, 0.5 and 1.0 mls of semen containing 164 ± 12, 677 ± 105 or 1,233 ± 376 x 10^6 dead spermatozoa. The spermatozoa were recovered immediately (control) or after a single mating by a vasectomised ram. Between-ram differences were tested by repeating the procedure for four rams. Spermatozoa in all samples were counted by analysis for DNA content. In each experiment the effects of the treatments on populations of spermatozoa was assessed by comparing sperm recovery with the control samples.

The loss of spermatozoa from the vagina of the ewe was rapid (Fig. 1) and did not vary with volume or concentration. Between 3-9 hours after insemination the number of spermatozoa remaining in the vagina decreased from 82% to 18% of the number inseminated. Only 10% remained in the vagina after 12 hours. After insemination with 0.1, 0.5 or 1.0 mls of semen 92 ± 7%, 48 ± 5% or 70 ± 13% of the spermatozoa remained after mating. Losses did not vary between individual rams.

These data have shown that spermatozoa are lost in large numbers between 3-9 hours after insemination and, depending upon the volume of the inseminate, the loss is increased by mating. Thus with repeated mating it is unlikely that spermatozoa will accumulate in the vagina at a rate equal to the number of spermatozoa in the ejaculate, as suggested by Synnott et al. (1981). In addition, contrary to the finding of Restall (1961) that returning inseminated ewes to vasectomised rams improved fertility, our results show that mating with vasectomised rams accelerated losses of spermatozoa from the vagina and suggest that this may decrease the chance of conception.


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