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Brief Communication

THE FERTILITY OF DEEP-FROZEN RAM SEMEN SUPPLEMENTED WITH $PGF_{2\alpha}$

Insufficient sperm transport to the oviducts might be an important cause of the unsatisfactory pregnancy results obtained after cervical deposition of frozen-thawed ram semen. An indirect support for this theory is that normal fertilization rate has been achieved when using an insemination technique by which it is possible to pass the catheter through the cervical canal and deposit the semen into the body of uterus (e.g. *Andersen et al.* 1973). Recently it was shown that $PGF_{2\alpha}$, administered intramuscularly after the insemination or added to the diluted semen prior to freezing, remarkably improved the transport of frozen-thawed spermatozoa from the posterior cervix to the oviducts in the ewe (*Edqvist et al.* 1975a). Prostaglandin $F_{2\alpha}$ stimulates the contractibility of both cervix and uterus of ewes (*Edqvist et al.* 1975b). This might be the mechanism by which $PGF_{2\alpha}$ promotes the sperm transport from the deposition site. Whether supplementation of the diluted semen with prostaglandin before freezing can have a beneficial effect on the spermatozoa per se is so far not established. However, investigations have shown that $PGF_{2\alpha}$ could be added to the diluted ram semen before freezing or after thawing without any detrimental effect on post-thawing motility, morphology or survival of the spermatozoa (*Crabo et al.* 1975).

The present paper deals with the results of a preliminary fertility test with deep-frozen ram semen supplemented with $PGF_{2\alpha}$* prior to freezing.

The semen derived from one ram, and the method of split ejaculate was used. The extender was $TESNaK_2$ (*Graham et al.* 1972) containing 20 % egg yolk and 5 % glycerol with antibiotic added (1000 i.u. penicillin/ml). The semen was diluted 1:3 and cooled to 5°C over a period of 3 hrs. To one half of the diluted

* The prostaglandin $F_{2\alpha}$ was kindly supplied by the Upjohn Company, Kalamazoo, USA.

Table 1. The fertility of deep-frozen ram semen supplemented or not with $PGF_{2\alpha}$ prior to freezing.

	$PGF_{2\alpha}$ added to the semen	Controls
Number of inseminated ewes	10	10
Number of lambing ewes	7	3
Lambing rate (%)	70	30
Number of lambs born per pregnancy	1.6	1.3

semen was then added 300 µg $PGF_{2\alpha}$ per ml. The semen was filled into mini straws (0.25 ml) and thereafter frozen. The freezing took place in a horizontal position 4 cm above the surface of liquid nitrogen. Thawing of the straws was performed in water bath at 45 °C in 12 sec. just prior to insemination.

Twenty adult ewes belonging to a herd on Gotland were used. All ewes were inseminated twice (first and second day) during the same heat with 0.25 ml frozen-thawed semen containing ab. 250×10^6 spermatozoa. The frozen-thawed semen was deposited in posterior cervix in all ewes. Ten ewes were inseminated with semen to which $PGF_{2\alpha}$ had been added and 10 with unsupplemented semen.

As can be seen from Table 1 the lambing rate in the experimental group was 70 % while the corresponding figure for the control group was 30 %. The number of lambs born per pregnancy was 1.6 in the experimental group and 1.3 in the control group. As the number of ewes in this preliminary study was far too limited it is of course not possible to draw any definite conclusions of the effect of $PGF_{2\alpha}$ to improve the pregnancy results with deep-frozen ram semen. The results are, however, so promising that we consider them worth reporting. Investigations aimed to further study this very interesting and for the sheep breeding very important question are in progress.

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