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RESEARCH NOTE

CONCEPTION RATES OF ANGORA EWES INSEMINATED WITH DEEPFROZEN SEMEN

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Controlled breeding and the stimulation of out of season breeding in the Angora offers several advantages especially when artificial insemination is practised (Pretorius & Van der Westhuysen, 1971; Van der Westhuysen, 1976; 1979), but a "limited" semen supply from specific rams within a short period of time often limits the practicability of these techniques. However, the availability of deepfrozen semen will provide an alternative in cases of shortage of fresh semen from proved rams. The possibility of freezing Angora semen has been indicated (Van der Westhuysen, 1978), but the fertilizing ability of such semen has not been tested. These experiments were planned to further investigate different diluents before the fertilising ability of semen frozen in 0,5 ml and 0,25 ml straws was tested.

In the first experiment semen was collected by an artificial vagina from 6 mature Angora goat rams at 2 occasions and maintained at 32°C until diluted. The semen from each ram was divided into 3 aliquots and the diluents (Table 1), also at 32°C, were added to the semen in one step to achieve a dilution rate of 1 : 4 without reference to sperm numbers. The diluted semen was centrifuged at 200 g for 5 minutes, the supernatant aspirated and an equal volume of diluent added. The spermatozoa were then mixed by gentle repeated inversion and mixing with a pasteur pipette. This "washing" process was repeated and the twice-washed semen cooled to 5°C in 30 minutes. The semen was then aspirated into 0,5 ml straws and equilibrated at 5°C for 4 to 6 hours before freezing in liquid nitrogen vapour. The semen was thawed by rapid immersion of the straw into water at 37°C.

From these results (Table 2) it was obvous that skimmed milk diluents gave superior results to the Tris-based diluent. However, the absence of egg yolk drastically reduced the viability after thawing, whereas sperm motility in the Tris based diluent showed poor directional movement. For these reasons the skimmed milk egg yolk diluent and similar techniques of freezing and thawing were used in an experiment on the fertilizing capacity of

Table 1

Composition of diluents for deepfreezing of semen

Tris-Based		Milk		Milk & Egg yolk	
Basic Solution		Glocose	0,9 g	Glucose	0,9 g
Tris	2,8 g	Glycerol	7,0 ml	Glycerol	7,0 ml
Fructose	1,4 g in 100 ml pH 7,0	To 100 ml with sterilised skimmed milk		Egg yolk	20,0 ml
Citric acid	1,35 g			Up to 100 ml with sterilised skimmed milk.	
Working Solution					
Basic solution	66,5 %				
Egg yolk	22,0 %				
Sorrenson's Phosphate Buffer	8,5 %				
Glycerol	3,0 %				

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deepfrozen semen. Diluted semen of the same concentration was either aspirated into 0,25 or 0,5 ml straws. The latter thus contained double the number of sperms compared to the former. During the peak of the breeding season (May) mature Angora ewes were treated with intravaginal (MAP) sponges for 14 days and teased at 12 h intervals from 24h after sponge withdrawal. Ewes in oestrus were either mated naturally or inseminated intracervically with fresh or frozen semen. Insemination and mating were performed at 12h intervals commencing 12 h following the first positive test for oestrus. The conception rate was estimated by determining the ewes not returning to service within 45 days following insemination (Table 3)

From the results of these experiments it can be concluded that the deepfrozen Angora goat semen had sufficient fertilizing ability provided adequate numbers were inseminated. Corteel (1976) found the success of intracervical insemination with deepfrozen goat semen dependent on the total number of sperm, especially at hormonally induced oestrus. It is therefore suggested that further work in this field should be focussed on refining the technique with regard to diluents, concentration of semen and optimal sperm numbers for insemination.

Table 2

The effects of various diluents on the percentage motile sperm at thawing

	Tris	Milk	Milk & Egg Yolk
Number of samples	12	12	12
Motile sperm (%)	15,0 ±13,6	31,7 ±16,1	41,7 ±5,6

Table 3

The conception rates of Angora ewes to natural mating insemination with fresh semen, insemination with 0,5 ml deepfrozen semen straws and 0,25 ml straws at oestrus synchronised with progestogen (MAP) sponges

		Artificial insemination		
	Mated Natural	Fresh Semen	Deepfrozen Semen 0,25 ml	0,5 ml
Number of ewes	28	30	15	20
Conception rates	28 (100%)	27 (90%)	(4) 27%	(10) 50%

Reference

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