Freezing of Post Mortem Collected Semen from Moose and Red Deer

MROŻENIE NASIENIA METODĄ *POST MORTEM* OD ŁOSIA I JELENIA

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The semen was collected from *cauda epididymides, vasa deferentia,* and ampullae of red deer (*Cervus elaphus* Linnaeus, 1758) stags and moose [*Alces alces* (Linnaeus, 1758)] bulls killed during the rut. This semen was placed in the glycerolated fructose-yolkcitrate extender and next frozen in solid carbon dioxide and liquid nitrogen. Even the semen collected two hours after the animals death was suitable for freezing. From one male it is possible to obtain about 100 pellets for artificial insemination. This method seems to be suitable for application in wildlife management.

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INTRODUCTION

The semen from non-domesticated deer was collected by the method of electroejaculation (Bierschwal *et al.*, 1968; Jaczewski & Morstin, 1973; Fletcher, 1974; Seager, 1978). The semen obtained by electroejaculation after freezing did not caused pregnancy. The semen collection from red deer stags with the artifical vagina was described by Krzywiński (1976). This semen was used for insemination of hinds and the first fawns after frozen semen were born (Krzywiński & Jaczewski, 1978). In domestic animals the method of *post mortem* semen collection is very rarely used (Carbonero-Bravo & Guerrero Cerezo, 1964; Waters, 1976, Bolchorloo, 1978). However in deer this method could be of practical value. Among deer killed during the hunting season there are males especially valuable for breeding with very fine antlers. Freezing of semen collected *post mortem* would allow to obtain a larger number of progeny after these valuable males.

MATERIAL AND METHODS

The semen was collected from the males killed during the hunting season. After the animals death *symphysis pelvis* was cut and the whole urogenital system collected. The semen was placed in the glycerolated fructose-yolk-citrate extender (protected from cold by a water jacket) in two ways: (1) by squeezing *ductuli defferentes, cauda epididymides* and *ampullae,* (2) by cutting into small pieces *ductuli defferentes, cauda epididymides* and *ampullae* and placing in a diluent.

These actions were done either at once after the animals death or after about two hours in a laboratory. During transportation a rather constant temperature was maintained by placing the urogenital organs in a thermos or simply in the carcass. In one case the constant temperature was not held and the organs were transported without any covering. After placing in extender the semen was cooled

to the temperature +5°C. The equilibration time was four hours. Before freezing the diluent with pieces of organs (the second method) was filtrated through sterile gauze into another collector with water jacket. The semen was frozen in pellets (Nagase & Niva, 1964) in solid carbon dioxide and liquid nitrogen. The semen quality (motility and concentration) was evaluated and if necessary some diluent was put in to obtain appropriate number of spermatozoa in one pellet. The motility was tested again after thawing.

RESULTS

By the *post mortem* method the semen of one male red deer was collected in March 1973. Afterwards in September and October 1979 by the same method the semen was obtained from three moose bulls and two red deer stags. Nearly all males exculding one red deer stag were killed during the rutting season. The semen frozen in 1973 preserved its characteristic unchanged till the present time. In mooses *A* and *B* and also in the stag *A* the method one (squeezing) was applied. In other animals the method 2 (cutting into pieces) was used (Table 1).

Table 1

Characteristic of the animals and the results of semen freezing collected *post mortem*.

	Date of death	Age, years	Combined testicles weight, g	The interval from the death to semen collection, min.	Spermatozoa motility, %		No. of pellets
					Before freezing	After thawing	
				Moose			
A	16.09.1979	15	182.0	5	25	15	5
B	17.09.1979	10	169.5	90	20	15	9
C	21.10.1979	1.5	113.6	5	30	20	30
				Red deer			
A	9.02.1971	3	—	150	—	20	35
B	3.10.1979	8	248.5	120	50	30	100
C	4.10.1979	10	221.9	120	60	35	140

DISCUSSION

It seems that the semen collection by squeezing (1) is a great deal worse than collection by rinsing the cut pieces (2). The moose bulls had a smaller testicles weights and a smaller semen productivity than red deer stags. Probably it is connected with the bigger polygamy of red deer than moose. Preliminary experiments suggest that it is possible to get good semen for freezing even two hours after the animal's death. It seems that after positive tests with the insemination of females the method of semen collection *post mortem* could find numerous practical application. Among others the semen collected from the males with

record antlers could be frozen and used for insemination of females to improve the quality of deer population (breeding for fine heads). This method could be helpful in obtaining interspecific hybrids and also in prevention of inbreeding in Zoological Gardens.

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