BRIEF COMMUNICATION

SEMEN COMPOSITION AND EJACULATION OF THE
BOAR AFTER PILOCARPINE ADMINISTRATION

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Summary. Pilocarpine (50 mg) administered to the boar 20 min before semen collection had no detectable effect on either ejaculation or semen composition. However, the volume of fluid semen, the total volume of semen, and the time required for ejaculation differed significantly ($P < 0.01$) between breeds of boars.

Atropine, a parasympathetic-blocking drug, has been found to reduce the volume of semen with little or no effect on the total number of spermatozoa ejaculated by the boar (Dziuk & Norton, 1962). Differences in composition of the semen from atropine-treated and control boars indicated that atropine suppressed the secretion of the urethral glands (Dziuk & Mann, 1963).

In the bull, atropine has been found to reduce both the volume of semen and the number of spermatozoa per ejaculate (Signoret, 1962; Baker, VanDemark & Graves, 1963), whereas pilocarpine, a parasympathetic-stimulating drug, has significantly increased the volume of semen and total spermatozoa per ejaculate (Baker *et al.*, 1963; J. P. Signoret, personal communication).

The purpose of the present study was to determine the effects of pilocarpine on the ejaculatory process and semen composition of the boar. The experimental animals were four purebred, yearling boars, two Yorkshire and two Duroc Jersey, weighing about 450 lb. They were injected subcutaneously behind the ear, 20 to 30 min before semen collection began, with either 4 ml of physiological saline solution or 4 ml of saline solution containing 50 mg of pilocarpine hydrochloride. The interval between collections was 3 or 4 days. Each treatment was applied to each boar four times, so that thirty-two ejaculates were collected.

The semen was collected by grasping the tip of the boar's penis with the bare hand as the boar mounted a dummy. The time required for ejaculation was recorded. Immediately after collection, the total volume of ejaculate was noted. The semen was then strained through gauze to remove the gelatinous material. The volume of fluid was then recorded and the volume of gelatinous material was determined by subtraction. The concentration of spermatozoa was determined with a haemocytometer.

A copious flow of saliva from the pilocarpine-treated boar, beginning about 15 min after injection and continuing for about 45 min, indicated that the drug was effective.

Even though 50 mg of pilocarpine greatly stimulated salivation in all boars, it did not significantly affect libido, erection, duration of ejaculation, semen volume, sperm number, or sperm concentration. This is in contrast to the results obtained in the bull that showed pilocarpine increased the volume of semen and number of spermatozoa.

The duration of ejaculation did vary significantly ($P < 0.01$) between breeds. Yorkshire boars ejaculated in 4.6 min, while the Duroc boars ejaculated in 7.2 min. The Yorkshire boars also produced a significantly higher volume of fluid semen and total semen than Duroc boars (Table 1). These breed differences

TABLE 1
SEMEN COMPOSITION OF YORKSHIRE AND DUROC JERSEY BOARS
AFTER PILOCARPINE TREATMENT

Semen composition	Treatment		Breed	
	Pilocarpine	Control	Yorkshire	Duroc
Fluid volume (ml)	131	152	172*	111
Gel volume (ml)	36	41	43	35
Total volume (ml)	167	193	215*	146
Sperm per ml ($\times 10^6$)	382	332	312	403
Sperm per ejaculate ($\times 10^9$)	47.0	48.6	51.4	44.0

* Significantly different, $P < 0.01$.

are in agreement with previous observations made at our laboratory.

As pilocarpine did not increase the volume of semen ejaculated by the boar in this study, it is supposed that the urethral and bulbourethral glands did not respond to the parasympathetic stimulant by producing additional secretion. A chemical investigation of semen of boars treated with different doses of pilocarpine and other parasympathomimetic drugs would be helpful in understanding the role of the parasympathetic system in the control of male reproduction in swine.

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