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Effect of active immunization against androstenedione on reproductive performance of Angora ewes

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The effect of active immunization against androstenedione on reproductive performance was investigated in a flock of 151 Angora ewes. Although differences occurred between groups in some of the reproductive parameters recorded, the eventual number of kids produced was virtually the same for treated and untreated ewes. These results suggest that the concept of androstenedione immunization to increase ovulation rate in sheep is less effective in the goat when the same treatment procedure is followed.

Die invloed van aktiewe immunisasie teen androsteendioon op reproduksieprestasie is by 'n kudde van 151 Angorabokooie ondersoek. Alhoewel verskille tussen groepe ten opsigte van sommige van die reproduksieparameters wat aangeteken is, voorgekom het, was die uiteindelike aantal klein bokkies geproduseer feitlik dieselfde vir behandelde en onbehandelde ooie. Hierdie resultate dui moontlik daarop dat die konsep van androsteendioon-immunisasie om ovulasietempo by skape te verhoog, minder doeltreffend is by die bok wanneer dieselfde behandelingsprosedure gevolg word.

Keywords: Angora ewe, androstenedione immunization, reproduction

Several studies in sheep have demonstrated that androstenedione is an active regulator of ovarian feedback at the hypothalamus and pituitary level (Martensz & Scaramuzzi, 1979; Martin, Scaramuzzi, Cox & Gherardi, 1979; Scaramuzzi, Baird, Clarke, Martensz & Van Look, 1980; Scaramuzzi, Davidson & Van Look, 1977). Immunization of sheep against this steroid raised endogenous LH levels (Martensz & Scaramuzzi, 1979; Scaramuzzi, *et al.*, 1977) and ovulation rates in Merino ewes (Martin, *et al.*, 1979).

Although the endocrine system controlling reproduction in goats differs in various respects from the system found in sheep (Thorburn, Nicol, Basett, Shutt & Cox, 1972; Van Heerden, 1963; Van Rensburg, 1970) the principle of effecting changes in the negative feedback system between the hypothalamus, pituitary and ovaries in order to alter the ovulation rate, remains similar. As no information on these aspects in goats exist, this trial was undertaken to investigate the effect of active immunization against androstenedione on subsequent reproductive performance of Angora goat ewes.

A flock of 151 Angora ewes, consisting of 30 two-tooth and 121 adult ewes, was divided into two groups on an age and stratified-mass basis (Table 1). The experimental group received a primary immunization by subcutaneous administration of an androstenedione-protein conjugate (Fecundin-Coopers) 42 days before the onset of the mating period during the active breeding season (April) followed by a booster injection 21 days later. A dose of 2 ml per animal of a solution containing 0,6 mg/ml of the immunogen Polyandro-

Table 1 Effect of immunization against androstenedione on reproductive performance of Angora ewes

Item	Young ewes		Adult ewes		Total flock	
	Control	Treated	Control	Treated	Control	Treated
Number of ewes	15	15	61	60	76	75
Number of ewes served during first cycle	15	10	51	53	66	63
Number of ewes served during second cycle	1	5	10	13	11	18
Number of ewes kidding	14	12	47	53	61	65
Percentage of ewes kidding	93,3	80,0	77,1	88,3	84,2	86,7
Abortions	0	0	3	0	3	0
Still births	1	2	2	1	3	0
Kidding percentage (viable kids)	113,3	100,0	101,6	115,0	104,0	112,0
Fecundity, (%)	128,6	141,7	142,6	132,1	134,4	133,9

albumin was used at each injection. The non-treated group served as the control.

Vasectomized rams were used for the detection of oestrus and all ewes in oestrus were served twice daily at 08h00 and 16h00 with confirmed fertile rams for the duration of oestrus. The total mating period lasted 42 days.

Data pertaining to the reproductive performance of the ewes are summarized in Table 1.

From the results presented in Table 1 it is apparent that active immunization against androstenedione had little or no effect on the reproductive performance of the flock as a whole. Although considerable differences between groups occurred in some of the parameters recorded, the eventual number of kids (including abortions and stillbirths) delivered, was virtually the same for both groups. The fact that fecundity was not significantly affected by the treatment, as in the case in sheep, suggests that immunization against androstenedione does not provide a consistent means of increasing ovulation rate in the goat.

This apparent difference in response to androstenedione immunization between sheep and goats also indicates the need for more basic knowledge on the primary steroids involved in the feedback mechanism between the ovaries, hypothalamus and pituitary of the goat.

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