EFFECT OF PROSTAGLANDIN ANALOGUES ON SEXUAL RECEPTIVITY, FECUNDITY AND PREGNANCY OF DOES

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Abstract - The effect of prostaglandin analogues on the sexual receptivity, pregnancy and ovarian inactivity was studied on a number of 537 does belonging to the « Supercuni » grand-parent stocks of our institute.
Analogue PGE2, Cloprostenol IPE, Flavoliz and Revoliz (Romanian products) were tested for their physiological and pathologic aspects on constituted stocks of does. No obvious modifications of the general behaviour were observed. The rhythm of the breathing frequency was higher after 15 minutes since injection of prostaglandin analogues and came back to normal after an hour.
Administrating 0.2 ml(50 µg) Flavoliz in 36 pregnant does for 13-30 days, abortion was induced in 80% of them. The dose of 2.5 µg in not enough to have such an effect. When injecting 117 does never pregnant before with 0.1 ml Flavoliz, fecundity is increased in injected does compared to control does (80.4 % vs 72 %).
Ovarian inactivity of 17 does was treated with Flavoliz recording a fecundity of 82.3%.
Analogue effect on does is suggested by a better sexual receptivity, from 85 to 95% compared to the controls(67.5). Fecundity ranged between 67.64 and 75% higher than that of the controls(48.14%).

INTRODUCTION

Ovulation in domestic mammal females takes place at regular intervals during kindling period. After the follicular dehiscence, instead of the ovule, a corpus lutea is formed (either progestative or gestative according to the effectiveness of fecundation) (BOITOR, 1979; OTEL, 1987; REBREANU, 1989; SEICIU, 1990).
Ovulation in rabbit is triggered by mating and subsequent to follicular dehiscence, only gestative corpus lutea is formed (ABO ELEZZ, 1988; AVMANN, 1984; CERVERA, 1988; CAILLOL, 1990; LEBAS, 1988; UBILLA, 1988).
Within the mechanism of ovulation, prostaglandins act, too (BUNACIU, 1990; DRAGAN, 1990). In the present study, the effect of prostaglandin analogues was investigated on the sexual receptivity (mating acceptance, since mating is the triggering factor in the ovulation).

MATERIAL AND METHOD

The experiment took four years(1991-1994) in our institute using 537 grand-parent rabbits. We have used synthesis cloprostenol products in different variants and concentrations: Revoliz, Flavoliz, Estril, I.P.R. Does were selected according to the daily record of mating.
A first step in the procedure, was to inject different doses from 0.1 to 2 ml solution of analogues. Besides, the general behaviour, the breathing frequency was also monitored (the climax was reached in 15 minutes) coming back to normal in an hour. Thus, nonsignificant modifications were remarked for the general behaviour, being able to use these analogues in subsequent experiments.
A stock was constituted to study the effect of inducing abortion with Flavoliz. Thus, 36 pregnant does, from the 13 to 30th day of pregnancy received 0.2 ml. Previous to the administration of this dose, a group of 28 pregnant does (pregnant from 17 to 31 days) with a dose of 0.1 ml Flavoliz injected did not induce abortion.
Another group of 117 does never pregnant before compared to a similar number of controls was constituted to synchronise mating. The former received 0.1 ml Flavoliz.
The treatment of the ovarian inactivity expressed by a delayed mating or by repeated matings was carried out on a number of 17 does with a pathological puerperium.
Other 200 females(30-40 weeks) were used to investigate the effect of the following products: Cloprostenol IPE, Analog PGE2, Flavoliz K and Revoliz K. 160 does with other previous pregnancies(four groups of 40 does each) were injected with the above products and compared to 40 controls. Mating takes place a day after deliverance, thus, having an intense reproduction rhythm.

RESULTS AND DISCUSSION

No significant modifications of the normal behaviour were remarked when the prostaglandin analogues were administered. Breathing frequency increased after 15 minutes since injection and came back to normal in an hour.

When 0.1 ml Flavoliz was given to 28 pregnant does (17-30 days), the dose was not enough to induce abortion. With a dose of 0.2 ml injected to 36 pregnant does 29 (80%) does aborted within 16-162 hours. Five pregnant females in 28-30 days delivered after 24-48 hours since injection and only two does (13 and 22 days of pregnancy, respectively) delivered as expected (Table 1). There are no relationships between the length of interval and the day of injection.

Table 1 : Abortion effect of Flavoliz on does (0.2 ml/doe)

No	Pregnancy day	Abortion	Parturition triggering (induction)	Interval from injection to abortion (hours)
1	13	*		162
2	13		*	17 days
3	14	*		51
4	14	*		120
5	15	*		94
6	15	*		72
7	16	*		72
8	16	*		78
9	17	*		96
10	17	*		96
11	18	*		48
12	18	*		48
13	19	*		54
14	19	*		48
15	20	*		24
16	20	*		54
17	21	*		48
18	21	*		48
19	22		*	8 days
20	22	*		48
21	23	*		48
22	23	*		30
23	24	*		72
24	24	*		96
25	25	*		48
26	25	*		30
27	26	*		48
28	26	*		18
29	27	*		48
30	27	*		30
31	28	*		24
32	28		*	48
33	29		*	24
34	29		*	24
35	30		*	24
36	30		*	24

It is worth mentioning the exceptional sexual receptivity of the does who had accepted mating only after 24 hours since abortion and parturition.

The 117 does inoculated with 0.1 ml Flavoliz mated as follows: 21 does on the first day; 23 does on the second day, 19 on the third day; 12 on the fourth day and 7 on the fifth (within the first 5 days 92 females were mated (78.6%), and in the control group 65 does in the first five days (55.5%).

Fecundity percentage in females mated within the first five days of the experiment was 83.6% compared to the controls (81.5%) and for the whole period of 15 days, it was 80.3% versus 71.8% for controls (Table 3). The inoculated does manifested their sexual receptivity more intensively than those belonging to the controls, gaining time to survey mating.

The ovarian inactivity clinically expressed by the chronic inacceptance of the male or by repeated mating seen in 17 females was treated with two Flavoliz inoculations(0.2 ml). Fecundity percentage was 82.3% (Table 2).

The comparison of the different analogue effects was made on 200 does. The results show that in does with other previous pregnancies this effect is indicated by the acceptance of mating in 85-95% compared to 65% in controls. Fecundity ranges between 67.64 and 75% higher than the 48.14% in controls (Table 4).

CONCLUSIONS

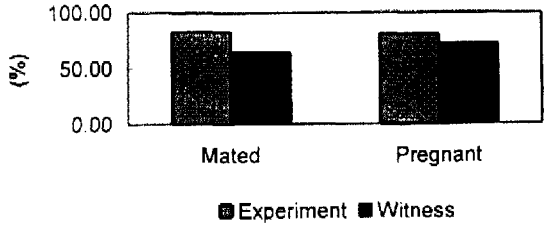
When experimenting the prostaglandin analogues in rabbits the following remarks took place:

- product are well tolerated by rabbits;
- abortion and parturition are induced by Flavoliz (0.2 ml)
- sexual receptivity and fecundity are stimulated ;
- the ovarian inactivity is cured:
- synchronisation of kindling and the

improvement of fecundity in does never pregnant before are achieved.

Table. 2 : Flavoliz treatment influence on does with other previous pregnancies (0.2 ml/doe)

No	Matings		Mating delay (days)	Diagnosis (pregnant/ non pregnant)
	total	negative		
1	2	1	78	+
2	4	4	6	-
3	3	2	21	+
4	6	4	2	+
5	3	3	2	+
6	13	11	7	+
7	1	1	24	+
8	3	1	55	+
9	4	3	25	+
10	1	0	57	+
11	1	0	71	-
12	4	2	41	+
13	4	4	27	+
14	3	3	3	+
15	3	1	61	-
16	3	2	48	+
17	1	0	36	+
				82.3%



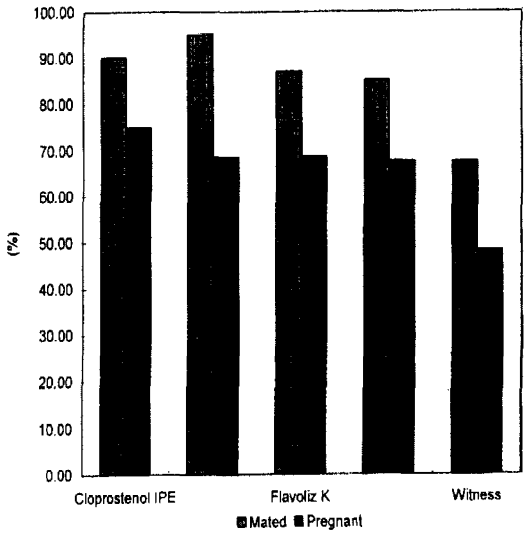


Table 3 : Sexual receptivity synchronisation in does never pregnant before by the injection Flavoliz 0.1ml

Stock	No of does	Mated does within 7 days		Pregnant does	
		No	%	No	%
Experiment	117	97	82.90	78	80.41
Witness	117	75	64.10	54	72.00

Table 4 : Comparison between the effects of some different prostaglandin analogues (Romanian products)

Stock	No of does	Prostaglandin analogue (PA)	Mated does		Pregnant does	
			Total	%	Total	%
A	40	Cloprostenol IPE	36	90.00	27	75.00
B	40	Analog PGE²	38	95.00	26	68.42
C	40	Flavoliz K	35	87.00	24	68.57
D	40	Revoliz K	34	85.00	23	67.64
Witness	40		25	67.50	13	48.14

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