BRIEF COMMUNICATION

ABSENCE OF LOCAL EFFECTS OF THE RABBIT
UTERUS ON WEIGHT OF CORPUS LUTEUM

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(Received 17th September 1966)

Summary. Six groups of rabbits were mated and used as follows: (1) embryos in one horn of the uterus, no embryos in the other; (2) pregnant, unilaterally hysterectomized; (3) pseudopregnant, unilaterally hysterectomized; (4) embryos present in both horns; (5) bilaterally pseudopregnant; and (6) bilaterally hysterectomized. At 26 days *post coitum* (p.c.) comparisons of the mean weights of corpora lutea in the ovaries adjacent to each horn showed no significant evidence of differences in local actions of the uterine horn on luteal growth and regression. The mean weights of corpora lutea in the two ovaries were similar in rabbits with one gravid horn and/or one non-gravid horn.

In a number of species, studies of the effects of unilateral hysterectomy have shown that the corpora lutea in the ovary adjacent to the remaining uterine horn regress earlier than those on the contralateral side (Anderson, Melampy & Chen, 1966, pseudopregnant rat; Fischer, 1965, guinea-pig; du Mesnil du Buisson, 1961, pig; Moor & Rowson, 1966, sheep; Ginther, Woody, Mahajan, Janakiraman & Casida, 1966, cow). In the pseudopregnant rabbit hysterectomy retards luteal regression to a rather limited extent (Loeb & Smith, 1936). In the non-pregnant rabbit 21 days p.c., Stormshak (1965) found no significant effect on the weight of the corpus luteum after either partial or total hysterectomy, although by this time the corpora lutea in both the control and hysterectomized rabbits were regressing. By 26 days p.c., however, luteal regression in the intact animals was greater than in hysterectomized rabbits. The object of the present experiment was to determine at 26 days p.c. in pregnant and in pseudopregnant rabbits, whether, as in the other species referred to, a locally-acting uterine mechanism affects the size of the corpus luteum.

New Zealand White rabbits were allocated at mating to one of six groups: (1) embryos in one uterine horn, none in the other; (2) pregnant, unilaterally hysterectomized; (3) pseudopregnant, one horn removed; (4) embryos in both horns; (5) pseudopregnant; and (6) total hysterectomy. Vasectomized

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bucks were used for mating rabbits in Groups 3 and 5. For statistical purposes, in Groups 1, 2 and 3 the left or right sides of the reproductive tracts were selected randomly for the designated treatments and in Groups 4, 5 and 6 the ovaries of each rabbit were randomly designated A or B. All rabbits were laparotomized, and surgery was carried out 2 to 6½ hr after mating, the condition indicated in Group 1 being obtained by cutting one of the oviducts. At autopsy on Day 26 p.c. (the day of mating being taken as Day 0) the corpora lutea of each ovary were dissected from the stromal tissue and weighed. The data were transformed to logarithms and unweighted means analyses performed (Steel & Torrie, 1960).

The differences in the mean weights of corpora lutea between ovaries within treatment Groups 1, 2 and 3 (Table 1) provided an estimate of any

TABLE 1

MEAN NUMBERS AND WEIGHTS OF RABBIT CORPORA LUTEA (C.L.) 26 DAYS p.c. IN OVARIES ADJACENT TO GRAVID OR NON-GRAVID UTERINE HORNS, OR AFTER UNILATERAL OR BILATERAL HYSTERECTOMIES

Treatment group	No. of rabbits	Condition of uterus in each animal*	In ovary adjacent to each horn	
			Mean No. of CL	Mean CL weight (mg)
1	10	One gravid horn	4.4	16.05
		One non-gravid horn	4.5	16.55
2	9	One gravid horn	4.9	17.71
		One horn removed	3.3	17.09
3	10	One non-gravid horn	4.4	6.26
		One horn removed	4.9	5.91
4	4	Both horns gravid:		
		Ovary A	5.5	16.22
		Ovary B	4.0	17.69
5	5	Both horns non-gravid:		
		Ovary A	4.0	5.51
		Ovary B	5.8	5.76
6	6	Both horns removed:		
		Ovary A	5.8	7.96
		Ovary B	3.8	8.99

* Left and right uterine horns were selected at random for treatment purposes (Groups 1, 2 and 3) or for designation as random controls, A or B (Groups 4, 5 and 6).

differences in the local effects on the corpora lutea due to the gravid and non-gravid uterine horns or to unilateral hysterectomy. In contrast to the species listed earlier, there was no statistically significant evidence of such local uterine effects on the corpora lutea in the rabbit.

Three pairs of planned comparisons were made to estimate the general effects, common to both ovaries, of: (a) unilateral hysterectomy, (b) a gravid horn, and (c) a non-gravid horn. Within pairs, the comparisons which follow are orthogonal, but because of the correlations which exist between the mean weights of the corpora in the two ovaries of the rabbit, the six comparisons are not independent.

The effect of unilateral hysterectomy common to both ovaries in pregnant

rabbits (Group 2) was estimated by the difference between the mean weight of corpora lutea in the ovaries opposite the removed horns (17.71 mg) and that in ovary 'A' in Group 4 (16.22 mg). Similarly, the common effect of unilateral hysterectomy in non-pregnant rabbits (Group 3) was estimated by the difference between the mean weight of the corpora lutea in the ovaries opposite the removed horn (6.26 mg) and that in ovary 'A' of Group 5 (5.51 mg). Neither of these differences was significant. Comparisons between corpora lutea weights in Group 1 and ovary 'B' in Group 5 showed an increase due to the common effect of a gravid horn (16.55 versus 5.76 mg; $P < 0.01$). In unilaterally hysterectomized rabbits, a gravid horn had a significant effect on the mean weight of corpora lutea in the opposite ovary (Groups 2 and 6, 17.09 versus 7.96 mg; $P < 0.01$). The presence of a non-gravid horn (Group 3) was associated with a slightly reduced mean weight of the corpora lutea in the opposite ovary when compared with ovary 'B' of Group 6 (5.91 versus 8.99 mg; $P < 0.05$). In Groups 1 and 4 the mean weights of corpora lutea, 16.05 mg and 17.69 mg, did not differ significantly; thus there was no significant common effect of a non-gravid horn in pregnant rabbits.

The association of the mean weight of corpora lutea in pregnant rabbits with the number of live embryos at 26 days p.c. was not significant.

The authors express their thanks to Dr A. B. Chapman for his advice on the statistical analysis.

This is paper No. 1088 from the Genetics Laboratory and is published with the approval of the Director of the Agricultural Experiment Station. The work was done under a cooperative agreement between the Wisconsin Agricultural Experiment Station and the Dairy Cattle Research Branch, U.S.D.A. It was supported in part by the Branch and also by funds from a Ford Foundation grant.

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