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Time Factor Relationship of Follicle Stimulation and Luteinization in the Immature Rat.

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In a previous communication from this laboratory it was shown that both luteinizing and follicle stimulating reactions can be obtained with extracts prepared by the acetone precipitation method¹ from castrate and post-menopause urines. It was also demonstrated that with the same extract either pure follicle stimulation or luteinization or combinations of both effects may be obtained by varying the dosage of the extract injected.² In these studies all the animals were sacrificed 96 hours after the first injection.

The present investigation was undertaken to determine the effect upon the ovarian reaction produced by varying the time factor.

The gonadotropic material used was obtained from the 4 following sources: (1) castrate urine prepared by the acetone precipitation method, (2) whole pregnancy urine, (3) anterior hypophysis 'Maturity Factor'† (Collip), (4) placenta—'A.P.L.'† (Collip). Litter mate immature female rats 25-30 days old were used in the majority of the experiments. In a few instances the animals were not litter mates but were of approximately the same age and weight.

In one series of experiments immature rats were injected with the equivalent of 200 cc. of castrate urine (sufficient to produce luteinization at the end of 96 hours), and the animals were sacrificed at intervals of 48-96 hours. The ovaries were then examined in serial sections.

A similar experiment was performed using whole pregnancy urine.

In another series of experiments other animals were injected with 'Maturity Factor', 'A.P.L.', and castrate urine extracts. Laparotomies were performed at intervals varying from 26 to 72 hours after injections were started and one ovary removed. The animals were then sacrificed at different time intervals varying from 52 to 144

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¹ Frank, R. T., Salmon, U. J., and Friedman, R., *PROC. SOC. EXP. BIOL. AND MED.*, 1935, **32**, 1666.

² Salmon, U. J., and Frank, R. T., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **34**, 463.

† We are indebted to Ayerst, McKenna and Harrison of Montreal for a generous supply of the "Maturity Factor" and "A.P.L."

TABLE I.

Type of G.H. extract	Dosage, cc.	Rat No.	Laparotomy		Autopsy	
			Hr. after 1st inject.	Ovarian reaction	Hr. after 1st inject.	Ovarian reaction
Castrate Urine	200	29			48	I
	200	30			72	L, III slight
	200	31			96	III, I
	100	1			120	L, III "
	150	9			96	L, III "
	200	2		I*	96	L, III
	200	6		I strong	120	L, III I
	200	24		I, III* slight	96	L, III "
	200	10		I strong	120	III, I
	200	11		I slight	120	I slight
	200	12		I "	120	I "
	200	12		I	144	III
Anterior Hypophyseal Extract ("Maturity Factor") (24 units/cc.)	2	1			52	III
	2	2		I slight	76	I slight, III
	2	5		I	98	III
	2	7	1A	I "	96	L, III slight
	2	7		0	120	0
	2	7		0	120	III
	2	6A		I	144	III
	2	5A		I	144	III
	2	4		I, III slight	120	III
	2	2A		I, III "	144	III
	2	6B		I, III "	144	III
	2	3		I, III "	96	III, I
Whole Pregnancy Urine (P9U6)	3.5	18			48	0
	3.5	19			60	L, III slight
	2.5	20			72	L, III "
	3.5	21			96	III, I
	1	7			24	0
	1	8			48	I slight
Whole Pregnancy Urine (3402)	1	9			72	L, III slight
	1	23			96	III, I
	1	4		I	76	III, I
	1	10		0	82	0
	1	2		I slight	82	III slight
	1	12		0	96	III slight
A.P.L., 100 units/cc.	2	11			120	III, I slight
	2	7		I	98	I slight, III
	2	9		I and III	96	III slight
	2	10		III	96	III "
	2	10		III	96	III
	2	10		III	96	III

I* follicle stimulating effect. III* luteinizing effect.

hours after the first injection. The ovaries were serially sectioned. The results are presented in Table I.

It appears that in some cases the immature rat ovary will respond to gonadotropic hormone with a follicle stimulating reaction as early as 26 hours after the first injection. This reaction becomes progressively more marked and reaches its maximum at approximately 64-72 hours after injections are begun. After 64 hours luteinization begins to occur and progresses steadily thereafter. In the majority of animals luteinization reaches its maximum at the end of 96 hours. In one instance (M31UA42) only follicle stimulation was present at the end of 96 hours and 120 hours. At 144 hours, however, extensive luteinization was found.‡

From these experiments it appears that the ovaries of normal immature animals respond to gonadotropic hormone extracts when given in sufficient dosage, first by follicle stimulation which is followed, after a variable period of time, by luteinization. From this and the preceding study it is evident that at least 3 factors influence the production of luteinization, *viz.*, the method of extraction, the quantity of extract administered, and the time.

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Resistance of the Viruses of Poliomyelitis, Human Influenza and Swine Influenza to Intense Vibration.*

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There is great need for a technique whereby the pathogenicity of viruses may be destroyed without altering the immunological properties of their antigenic constituents. The results of past work indicated that sonic vibration might be the agent by means of which this result could be accomplished. Thus, it was recently reported¹

‡ From this it might appear that when a subthreshold dose of luteinizing factor is given, prolongation of the time beyond 96 hours may result in luteinization.

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¹ Chambers, L. A., and Flosdorf, E. W., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **31**, 631.