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Effect of Male Hormone on Protein Metabolism of Castrate Dogs.

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Two castrated male adult dogs—No. 1 thin and very active, and No. 2 fat and inactive—were brought into weight and nitrogen equilibrium on a diet of beef heart, cracker meal, lard, cod liver oil, Wesson's salt mixture, and bone ash. The nitrogen intake of dog No. 1 was approximately 5.60 gm. per day, and of dog No. 2, 7.60 gm. per day. The amount varied somewhat with the nitrogen content of each beef heart, but was always determined by analysis. Periods of 5 days each were used.

The male hormone was prepared according to the Funk and Harrow method¹ and dissolved in olive oil so that 1 cc. of the oil solution was equivalent to 4 liters of urine or 40 bird units (B.U.). The hormone was administered subcutaneously twice per day, in the a.m. and p.m.

The results of 6 experiments are given in Table I.

TABLE I.
Summary of Nitrogen Balances. Gm. per period (5 days).

B.U. male hormone per day		Dog No. 1				Dog No. 2	
		20	40	60	40	40	60
Periods before injection	1	—0.10	+0.30	0.05	+0.65	+4.75	+0.45
	2			0.80	+1.30		+1.10
Injection periods	1	+1.45	+2.65	+2.55	+2.40	+4.50	+2.90
	2	+3.05	+3.45	+2.35	+3.10	+6.35	+6.45
	3	+2.85	+5.05	+0.50	+4.25	+6.45	+6.55
	4			+2.45		+6.60	+6.55
	5			+3.65			
Periods after injection	1	+3.15	+3.00	+1.30	+4.20*	+4.05	+3.90
	2	0.00	+0.75	—1.00	+1.90	+1.00	—2.75
	3		+0.55*	+0.65	+2.10	—1.75†	—1.50
	4			+1.30	+2.50	—1.30	—1.45
	5				+1.20	+0.40‡	—0.65

* Four-day periods, but calculated for 5 days.

† Three days lost between this and the preceding period.

‡ Five more periods following but not recorded.

The results indicate in every experiment a definite and marked retention which is attained in the first injection period and maintained through the injection periods and into the first or second

¹ Funk, C., Harrow, B., and Lejwa, A., *Am. J. Physiol.*, 1930, **92**, 440.

after period. Furthermore, the same effect is produced with the different doses. The latter effect is shown very strikingly by dog No. 2, but not so clearly by dog No. 1 with the exception of experiment No. 1, and possibly No. 3.

Although there is an excess output of nitrogen after cessation of injections, it is not at any time comparable with the amount retained. Also to be noted in this respect is the fact that in both dogs a minus balance is reached sooner after the 60 B.U. than in the other experiments. However, this may not prove to be especially significant.

In every experiment the retention is due to a decrease in urinary nitrogen; none in fecal nitrogen. Partition of urinary nitrogen indicated a change in urea paralleling that of the urinary nitrogen, ammonia and creatinine remained constant, creatine increased the second period after cessation of injections.

In every experiment the dogs' weights showed a gradual and definite increase which continued into the first period after injections and then gradually returned to basal. Dog No. 2 showed a much greater increase in weight than dog No. 1.

No excessive thirst or diuresis was noted.

Whether the retention of nitrogen is due to the male hormone, *per se*, or to an indirect effect, e. g., the anterior pituitary growth hormone, cannot at present be definitely stated.

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Further Observations on the Action of Adenosine on the Perfused Heart.

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In an earlier study³ of the action of adenosine on the perfused heart of the rabbit it was believed that this substance improved the beat of the heart, although records which were obtained by attaching a lever to the ventricle never showed an increase in height of contraction. There was no change in amplitude provided the rate was kept constant. When the normal rhythm was slowed by adenosine there was a decrease in height of contraction due, as Dale¹ has

³ Wedd, A. M., *J. Pharmacol. and Exp. Therap.*, 1931, **41**, 355.

¹ Dale, A., *J. Physiol.*, 1930, **70**, 455.