THE EFFECTS PRODUCED IN THE GROSS BODY WEIGHT AND IN THE VARIOUS INTERNAL ORGANS OF THE ALBINO RAT BY FEEDING THE DESICCATED ANTERIOR LOBE OF THE HYPOPHYSIS.

Dissertation

submitted to

the

Faculty of Science

of the

University of Cincinnati

in

Partial Fulfillment

of the requirements

for the degree of

Doctor of Philosophy

By

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1923.

CONTENTS

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BY

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INTRODUCTION.

The differences in embryological origin and histological structure of the two principal parts of the pituitary gland, the anterior and posterior lobe, are suggestive of specifically different physiological functions, an a priori supposition that has been confirmed by experimental studies.[1] Howell ('98) observed that the marked effects produced by extracts of the gland upon the blood pressure and the heart, as discovered by Oliver and Schaefer ('95), were due to substances contained in the posterior lobe. Cushing ('09) demonstrated that the effects following upon complete extirpations of the gland are different from those which occur when only a part of the gland is removed. These discoveries have suggested the advisability of making an independent study of the two lobes, the anterior and posterior, of the pituitary. In the experiments recorded in this paper, a study is made of the effects produced on the gross body weight and the various internal organs of the albino rat by feeding the desiccated substance of the anterior lobe. Our report admits of two divisions, concerned respectively with (1) the gross body weight; (2) the size of the various internal organs; (together with muscle and bone).

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1. For the literature on the anatomy and histology of the hypophysis, see Cushing ('13) and Biedl ('13).

I wish to acknowledge my great indebtedness to Dr. Martin H. Fischer, Professor of Physiology in the Medical College of the University of Cincinnati, for the kind encouragement and invaluable assistance which, on many occasions, I have received from him. To Mr. Joseph Kupka, Dr. Fischer's able technican, I would also extend my thanks for helping me in technical matters. I am also greatly indebted to Miss Agnes Grant, research worker in the Cincinnati Medical College, for supplying me with many of the animals used in this experiment.

LITERATURE.

Body Weight. Schaefer ('09) believes that the growth of young animals is favored, or, at least not retarded, by the addition of small amounts of the anterior lobe of the pituitary substance to the regular diet.

Robertson ('16) working with a large number of white mice, endeavors to establish, by statistical methods, that their growth was stimulated by feeding the anterior lobe. In another experiment ('16b) Robertson describes a method of isolating from the anterior lobe of the gland, a white or pale cream substance to which he gives the name "Tethelin". Tethelin, he maintains, is the growth controlling principle of the hypophysis. Feeding this substance to white mice, Robertson and Delprat ('17) report produces an increase in their body weight.

The acceleration in growth, which was quite noticeable during the second growth cycle (second to fifth weeks) was followed by a marked retardation at the initiation of the third cycle. Retardation continued although the administration of tethelin was discontinued at the end of the fifth week.

Drummund and Cannan ('22), following the methods described by Robertson in isolating tethelin, report that the product they obtained did not show the constancy of nitrogen and phosporus content as described by Robertson. Tethelin, these authors conclude, is a "very impure mixture of the lipoid class."

Goetsch ('16) observed an acceleration in growth and an increase in body weight from feeding the anterior lobe to white rats.

Wulzen ('14) experimenting on growing fowls, reports a retardation of growth from feeding the anterior lobe pituitary substance. However, in a later report, Robertson states that Wulzen informed him that one fowl, which was fed the pituitary for a longer period than designated in Wulzen's paper, began to show a marked acceleration in growth until it finally exceeded its control in body weight.

Aldrich ('12a) and ('12b), Gudernatsch ('14), Hoskins ('16), Session and Broyles ('21), Drummund and Cannan ('22) obtained negative results.

Observations on Internal Organs. Clark ('15) feeding 20 mgs. of the anterior lobe (fresh) substance to laying hens at a time of the year when their egg production was on the decline, observed a marked increase in the egg production. From this he concludes that the fecundity of laying hens is improved by feeding the anterior pituitary substance, that is to say, the anterior lobe of the pituitary exerts some activating influence on the ovaries of the hen. Pearl ('16) worked out a similar expriment but obtained negtive results. He maintains that the anterior pituitary does not affect the fecundity of laying hens, neither does it bring on an early activition of the ovaries in growing pullets. Clark thinks the discrepancy between his results and those reported by Pearl might be due to differences in the age of the animals from which the pituitary gland was derived, since McCord ('14) found that in feeding experiments of the pineal gland, more striking results were obtained when his animals were fed with the glandular substance taken from cattle that had not reached the adult age.

Goetsch ('16), employing a small number of animals in his experiments, observed a premature sexual development, expecially of the testes, in his pituitary fed animals.

Session and Broyles ('21) on the other hand, working with a larger number of animals report that in the two groups, the hypophysis fed (ant. lobe) and the controls, the testes descended synchronously and showed no variation in consistency and size.

Hoskins ('16) autopsied his animals (white rats) and from a study of the average weights of the various organs concludes that no apparent effects were produced in the weight of the organs beyond differences probably within the limits of normal variation. The dosage administered was comparatively small, from 5 to 100 mgs.

As far as I am able to ascertain from the literature, no complete histological study has been made of the internal organs. Goetsch ('16) sectioned the testes. He reports a marked acceleration in the pituitary fed animals. Session and Broyles ('21) also made a microscopic study of the testes of a number of white rats, but observed no difference between those of pituitary fed and those of the control animals.

MATERIALS AND METHOD.

The animals listed in tables 1, 2, 3 and 4, were taken from the litters of forty pairs of albino rats obtained from the Wistar Institute of Anatomy, Philadelphia, which, upon being mated, were divided into two groups, one experimental, the other control. Care was taken to keep the two groups separate throughout the entire experiment. The regular diet, which was fed once a day to both the experimental and control animals, consisted of bread, milk and cracked corn. Enough food was given so that at the end of the day there remained a small amount left in the cages. In addition to the regular diet, each rat in the experimental group was fed also, once a day, fifty milligrams of the anterior lobe of the pituitary substance. The desiccated pituitary was placed on a small piece of bread moistened with milk and pressed into the bread with the blade of a knife. Each rat was removed to a separate cage and was returned only after the pituitary had been eaten. The pituitary was given before the regular diet and was generally devoured immediately.

The desiccated pituitary substance obtained from the Armour and Co. laboratories was used throughout the experiment. One gram represents four grams of the fresh substance.

Owing to the fact that the general racial variability is twice as great as the variability within the litter, as reported by Jackson ('13) and King('15), it is advisable, in experiments of this nature, to select the control rats from the same litter as the experimental animals. Nevertheless we thought that, by using a large number of animals, the averages of the groups, by the theory of probability, might serve as a fairly accurate basis of comparison, and that such a method would have the advantage of making possible a division into experimental and control groups before the period of gestation, thereby enabling us to observe whether or not any marked effects are produced on the growth of the young by feeding the pituitary to the mothers before and during the periods of pregnancy and lactation.

The control animals were not fed, as has been done in some experiments of this nature, on an amount of muscle corresponding to the amount of pituitary substance fed the experimental animals. Muscle-fed controls, we are led to believe from recent experimental work, are no more strictly control animals than non-muscle-fed controls. Although with muscle fed controls a corresponding amount of protein would be consumed by pituitary fed and control animals. Mendel, Osborne, McCollum and others have shown that it is not the protein as such, but the amino acids and the relative amount of amino acids, that determine the growth-producing and nutritive qualities of the proteins.[1] Furthermore, in studying the effects produced by feeding the pituitary substance, it seems to us there are two problems which should be treated separately, viz. (1) does the pituitary exercise an accelerating influence on the growth of the organism? (2) can the same effects be produced by feeding an amino acid or combination of amino acids?

The animals listed in table 5 were taken from the litters of mothers that had received no pituitary. Three different litters are represented but each experimental animal and its control were taken from the same litter.

The animals of tables 6, 7 and 8 were obtained from the laboratory of Miss Agnes Grant, research worker in the Medical College of the University of Cincinnati. Her adult rats came from the Wistar Institute of Philadelphia. From a comparison of the body weights of the last three tables (9, 10 and 11) it will be observed that these animals are the same as those whose growth records are given in tables 6, 7 and 8.

The young rats were weaned on the twenty-second day after birth, each weighed individually, given a mark by clipping the ears and a record made of the identification mark, weight and date of birth. The controls of tables 1, 2,3, 4, and 5 were kept separate from the experimental group but under identical conditions. Each experimental rat of tables 1, 2, 3 and 4 was fed 25 mgs. of the desiccated pituitary substance on the day of weaning and thereafter 50 mgs. daily. Those of table 5 received 25 mgs. pituitary the day when weaned, 50 mgs. for the following ten days and thereafter 100 mgs. daily. The pituitary fed rats of tables 6, 7, and 8 were kept in the same cages with their controls. The dosage employed is given in each table.

In feeding the young animals the pituitary substance a different method was followed than that used for the mothers of the rats in tables 1, 2, 3 and 4. The pituitary was carefully weighed out and placed on a clean piece of paper. Once a day, each rat was taken out of its cage, held in the hand and the pituitary offered it with a small spoon. This procedure presented no difficulty since after the first or second feeding all the animals readily devoured the pituitary.

An autopsy was made of each animal. Before killing the animal (with chloroform) it was weighed. The rats of the first five tables were weighed to the tenth of gram, but as a greater variation was observed in the other animals fractions of a gram are not given. The organs enumerated in the tables were quickly removed, disentangled from muscle or fatty tissue, placed in a moist and air tight weighing bottle and weighed immediately. In the early stages of the experiment each organ was weighed to the tenth of a milligram, but this was soon found to be unnecessary, since the large variability in the same organs of different animals rendered the milligram sufficiently accurunnecessary to a plot a graph for the sensibility of the balance.

The cages were cleaned daily and disinfected twice a week. The feeding dishes and the water receptacle were scoured in boiling water before each feeding.

The first part of this experiment, which comprises tables 1 to 5 inclusive, was completed before the second part was begun. The animals enumerated in the first five tables, and also their mothers, were fed on a diet consisting of bread, milk and cracked corn. The animals whose growth records are given in tables 6, 7 and 8 and autopsy records in tables 9, 10, 11 were divided into two groups. One group was given the diet, corn, bread and milk; the other was fed, in addition, a mixture made by boiling the following ingredients: 30 lbs. whole wheat, 30 lbs. oat meal, 30 lbs. yellow corn meal, 10 lbs. linseed oil meal, 1½ lbs. bone meal, ½ lb. salt. Our purpose was to observe if any marked differences might be obtained by feeding the pituitary when two different diets were used. Recent experimental work has pointed out the necessity of taking into account the factor of diet in experiments of this nature. McCarrison ('20) has shown that dietary deficiency has a marked effect of endocrine activity, and that all the endocrine organs, with the exception of the adrenals and the pituitary body, become more or less atraphied as a result of dietetic deficiencies; the adrenals, and, in males, the pituitary become enlarged. Stubel [cited from Cannon ('22)] discovered that, after feeding amino acids and protein food, protein is stored in the liver. He also found that this protein material, is discharged by a subcutaneous injection of adrenalin, thereby pointing out, as Cannon observes, the possible relations of diet to internal secretions. (Cf. Henderson '21). For reasons that will be given later, the two groups are combined in the calculation of averages. In tables 6, 7 and 8, the animals fed on corn, bread and milk are marked (a); those that were given a richer diet, are marked (b). This arrangement makes possible a study of the individual data. By comparing the body weight with tables 6, 7 and 8, the corresponding animals can be found in tables 9, 10 and 11. The mothers of these animals were fed on a diet richer in iron than the diet given the mothers of tables 1 to 5 inclusive. There were furthermore some slight variations in the diet of the mothers of the animals used in the second part of the experiment. A record was carefully kept so that, should any marked variations be observed in the growth curves or in the percentage weights of the various organs, it might be possible to check up on the diet of the mothers before and during pregnancy as well as during the period of lactation.

In the second part of the experiment each pituitary fed rat was taken from the same litter as its control. Whenever possible the two selected were the same weight when weaned. If there was a difference in weight the lighter animal was used as the experimental rat, the heavier as the control rat.

In tables 6, 7 and 8, each animal is designated by a capital letter thus, (A), (B), etc. Animals marked with the same letter were taken from the same litter.

OBSERVATIONS AND DISCUSSION .

Body Weight. The growth curves of the albino rat obtained by Donaldson, King, Jackson and others, are, in some instances, widely divergent.. Jackson ('13) has aptly remarked "it is evident that in general there is no such thing as a single 'normal' course of growth and variation for a given species." Such factors as ancestral strain, diet, temperature, exercise, etc. have sometimes a marked influence on the variation in growth. In this paper no comparison will be made between my curves and the other growth curves that have been reported.

From a study of tables 6, 7 and 8 it will be observed that, in general, the curves of growth of the animals fed on the richer diet takes a steeper ascent. However, in the calculation of averages, the animals marked (a)--those fed on a richer diet, as explained elsewhere - have been grouped with those marked (b), for, as can be seen from the individual data, the two groups show the same general tendency in their growth curve.

A slight percentage increase in body weight of the pituitary fed animals over their controls is shown in table 1, but, as the difference in the male group is so small (1%), probably this apparent increase is not significant. In all the other tables there is unquestionably a greater percentage increase in the weight of the experimental animals over their controls. The pituitary fed males of table 3 gained 38%, and the females 57% more than their controls. Table 5 gives similar results. The pituitary fed males made a 55%, and the females a 17% greater increase than their controls. In the averages given in tables 6, 7 and 8 which represent three distinct groups, there is an increase of the pituitary fed rats over their controls of 111%, 73% and 58% respectively. It will be observed that at 22 days of age, each of the eighteen experimental animals (each taken from the same litter as its control) weighed less than the control. At the end of the experiment all the pituitary fed animals in table 6 were heavier than their controls; all in table 7 except one, and this animal had a malformation of its upper teeth which interfered with its eating.

In table 8, in which two groups (a) and (b) are represented, the average percentage gain of the pituitary fed animals over their controls is quite pronounced. From a study of the individual data, however, it will be seen that there is a difference in the growth curves of the two groups (a) and (b) that does not occur in tables 6 and 7. In the first group (a) of table 8 the four experimental animals show a decided gain in body weight over their controls. In the second group (b) the average percent increase of the two experimental animals is 357%; that of the controls 326%. Whereas there is an increase of 31% in the pituitary fed rats over their controls, this increase is much less than the percent increase of the pituitary fed animals of tables 6 and 7 over their controls. Furthermore it should be noted that these rats were fed the pituitary ten days longer than those of tables 6 and 7.

From the records of the mothers of the rats in group (b) of table 8 we find that they received an unrestricted amount of milk whereas the mothers of the animals in tables 6 and 7 and of group (a) in table 8 were limited to 16 c.c.per day. The number of animals is too small to warrant any final conclusion, but the results suggest that possibly the effects of pituitary feeding are modified by the "resistance" of the animals, due to the vitamines fed the mother rats during lactation. Figure 4 is the growth curve of group (a) in table 8, figure 6 the curve of group (b). The curve of figure 4 is similar to that of figure 1, the growth curve of table 6, and also to that of figure 2, the curve of table 7. In the curve of figure 5 there is a marked difference. The curves of growth, Figs. 1 & 2, (experimental and control) begin to diverge in 15 days, but in figure 5 they follow along very close to each other for thirty days.

Brain.[1] The brain of the controls is heavier in eight of the nine groups than the brain of the pituitary fed rats. The average increase in percentage of body weight of the control over the experimental groups ranges from .08% to .64%. In table 1 the brain of the experimental rats shows a greater percentage of the body weight, but, since these animals were fed only 50 milligrams of the pituitary for 40 days, and, since in the corresponding female group the brain of the controls is heavier, in view of the fact that, in eight of the nine tables the brain of the pituitary fed rats is lighter than that of the controls, the different results obtained in table 1 can most probably be regarded as an accidental variation.

Heart. There is no variation between the heart of the experimental group and the heart of the controls, except in table 5. The marked hypertrophy in these cases is no doubt due to the congestion of the kidneys and liver.

Liver. There is no significant variation in the liver except in the three cases recorded in table 5. In these three animals, two males and one female, (each taken from the same litter as its control), the liver showed a marked hypertrophy and had a deep, blackish red color. The color of the liver in some of the experimental animals of tables 9, 10 and 11, also was a deeper red than that of the controls, but there was no marked difference in weight, as can be seen from the figures given in the tables.

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1. The autopsy technique of Hatai ('13) was employed in removing the organs with the exception that the dissections were not made under a glass hood.

Adrenals. Variations in the adrenals are not constant. The adrenals in table 5 of the experimental animals (both male and female) are relatively larger than those of the controls, but, owing to the variations in the other tables, the data of table 5 is insufficient for final conclusions.

Kidneys. The kidneys of the experimental animals in the first four tables are slightly heavier than those of the controls. In table 5 the difference in weight is unmistakable. There were also marked macroscopical differences in the appearance of these kidneys. Those of the pituitary fed rats, (both the two males and the female) were, like the liver, a deep blackish red color. In tables 9, 10 and 11, there is no constant variation between the weight of the kidneys in the experimental and control groups. Hoskins ('16), employing a much smaller dosage of the pituitary, observed that the kidneys of the hypophysis fed rats averaged 12 percent heavier than the controls.

Testes and Ovaries. The testes and ovaries of the controls in the first four tables are slightly heavier than those of the experimental groups. With a large dosage the testes and ovaries of the pituitary fed rats are slightly heavier than those of the controls. This observation agrees with that of Hoskins ('16) and also of Session and Broyles ('21) but differs with the observations of Goetsch ('16) who used a much smaller number of animals.

Thymus. No constant differences can be observed between the thymus of the experimental and the control groups.

Thyroid. The weighings of the thyroid are not given because of inaccuracies in the technique of removal discovered after a large number of the weighings had been made.

Spleen. In the first four tables the spleen of the experimental groups is slightly heavier than that of the controls. The spleen of the male pituitary fed rats in table 5 is almost twice as large as that of their controls. These large spleens did not have the grey patches observed in the "enlarged spleens" described by Hatai ('13). The difference in weight was not obtained in the two females of this table. In the remaining tables the spleen is slightly heavier in the experimental animals. Hatai observed that a heavy liver is generally associated with a heavy spleen. This observation is confirmed in the present paper, but it should be noted that a heavy kidney is also frequently associated with a heavy spleen.

Tibia, Gastrocnemius and Foot. No variation between experimentals and controls.

SUMMARY AND CONCLUSIONS

A study is offered in this paper of the effects produced in the body weight and in the various organs of the white rat by feeding the desiccated anterior lobe of the pituitary.

Although the data obtained is not large enough to establish final conclusions by statistical methods, yet it is sufficient to provide evidence on some important points with a considerable degree of probability.

The controls were not fed on muscle corresponding to the amount of pituitary substance given the experimental rats, since growth is accelerated by some of the amino acids and in a different degree according to the particular amino acid or combination of amino acids consumed.

A conspicuous gain in body weight was made by the pituitary fed animals over their controls.

Observations were made on the relationships of diet to the effects produced by pituitary feeding.

The animals fed on a rich diet not only grew more rapidly, but, in most cases, the pituitary fed rats in this group made a greater percent increase in body weight over their controls than the animals on a more restricted diet. One group of rats, whose mothers received a more plentiful supply of vitamines during pregnancy and lactation, were less affected in growth by the pituitary than the rats whose mothers did not receive as much vitamines. The number of animals in this group is not large enough to warrant definite conclusions, nevertheless the results are constant and therefore suggestive. More extensive experiments in feeding the endocrine glands should be undertaken and a comparative study made of the effects produced with definitely regulated diets. The same growth curves might be obtained by feeding a combination of the various amino acids.

Growth of the brain seems to be retarded by feeding the anterior lobe of the pituitary.

The ovaries and testes are probably not affected. No muscle, bone or skeletal enlargement follows upon the feeding of large doses of the pituitary, if the gastrocnemius, tibia, and foot are taken as representatives of these systems.

The heart is not affected, except indirectly in some cases, by congestion of the liver and kidneys.

Enlargement of the spleen seems to follow upon pituitary feeding.

The adrenals, kidney and liver are generally not affected, but in the only three animals of the first lot that were fed a larger dosage than the others of the same lot, there appeared a marked hypertrophy of the adrenals, kidneys and liver, and an apparent congestion of the two latter. Since each experimental animal was taken from the same litter as its control (three litters are represented) and both experimental and control animals were kept under indentical conditions, these effects can hardly be ascribed to extraneous factors but must bear a causal relation to pituitary feeding.

These marked changes in the kidneys and liver were not obtained in the animals of the second lot, although these latter received a larger dosage of the pituitary. In some instances, however, the kidneys and liver of the pituitary fed animals were a much deeper color than those of the controls, suggesting some congestion. These results seem to warrant the conclusion that the anterior lobe of the (commercial)desiccated pituitary, fed to white rats, has some specific effects on the kidneys and liver (and probably the adrenals), which may be modified, or probably prevented, by factors which have not been determined in this experiment. Further investigation should be made of the possible factors that might modify the effects of pituitary feeding. The "resistance" of the animals, due to the diet, and especially to the vitamines fed them and to their mothers during pregnancy and lactation, the age, strain and general physiological conditions of the cattle from which the pituitary gland is derived, are suggested as such possible factors.

TABLE No. 1

MALE - HYPOPHYSIS FED

40 DAYS OLD

	BODY WT. 22 DAYS	BODY WT. 40 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
	23.3	36.0	%	1.259	.166	2.331	.011	.523	.194
	27.8	41.5	Incr.	1.440	.228	1.851	.010	.655	.326
	17.4	26.8		1.197	.205	1.343	.010	.582	.
	27.3	33.7	'	1.358	.280	2.144	.012	.632	.174
	18.0	34.0		1.260	.246	1.835	.014	.749	.119
	20.9	41.7	'	1.343	.284	2.079	.016	.709	.149
:	22.5	35.6	58%	1.310	.235	1.931	.013	.642	.192
V.	3.7	4.3		0.071	.035	0.244	.002	.061	.058
D.	22.1	35.0		1.302	.237	1.965	.012	.643	.162
	-	-		-	-	-	-	-	-
B.W.				3.68	0.66	5.42	.036	1.80	0.54

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 40 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
	37.5	59.0	%	1.455	.298	3.066	.009	.752	.479
	33.7	47.5	Incr.	1.449	.289	2.922	.014	.608	X
	33.0	55.1		1.452	.262	2.434	.014	.672	.472
	30.2	48.4	'	1.332	.198	2.155	.011	.550	.459
	25.4	35.2		1.347	.193	2.181	.014	.480	.325
	23.1	42.1	'	1.568	.221	2.133	.014	.653	.373
G.	30.5	47.9	57%	1.424	.244	2.482	.013	.619	.422
.	4.3	6.3		0.056	.040	0.325	.002	.057	.058
D.	31.6	47.7		1.451	.247	2.295	.014	.631	.459
	-	-		-	-	-	-	-	-
B.W.				2.95	.51	5.18	.027	1.29	.88

TABLE No. 1 (c't'd)

MALE - HYPOPHYSIS FED

AGE - 40 DAYS

	BODY WT. 22 DAYS	BODY WT. 40 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	23.3	36.0	%	.114	.096	.077	.213	.324
	27.8	41.5	Incr.	.176	.109	.042	.217	.411
	17.4	26.8		.034	.091	.049	.117	.260
	27.3	33.7	'	.061	.123	.068	.146	.331
	18.0	34.0		.052	.097	.063	.163	.381
	20.9	41.7	'	.075	.119	.084	.180	.339
A'V.	22.5	35.6	58%	.085	.106	.064	.173	.341
M. V.	3.7	4.3		.039	.011	.012	.031	.036
M ED.	22.1	35.0		.068	.102	.065	.172	.335
% B. W.-		-		0.24	0.30	0.18	0.49	0.96

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 40 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	27.5	59.0	%	.218	.178	.115	.292	.629
	33.7	47.5	Incr.	.240	.149	.116	.260	.462
	33.0	55.1		.132	.128	.090		.458
	30.2	48.4	'	.141	.144	.081	.323	.385
	25.4	35.2		.124	.141	.069	.150	.341
	23.1	42.1	'	.130	.136	.105	.248	.424
A V.	30.5	47.9	57%	.164	.146	.096	.255	.450
M.V.	4.3	6.3		.045	.012	.016	.044	.067
MED.	31.6	47.7		.137	.143	.098	.260	.441
% B.W. -		-		0.34	0.31	0.20	0.54	0.94

TABLE No. 2

FEMALE - HYP?PHYSIS FED

40 DAYS OLD

	BODY WT. 22 DAYS	40 DAYS BODY WT.	% Incr.	BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
	29.7	41.5		1.384	.220	2.100	.015	.615	.030
	20.6	47.2		1.369	.258	2.533	.017	.636	.028
	32.6	51.8		1.433	.317	3.460	.022	1.119	.039
	18.3	40.9	'	1.314	.235	1.856	.014	.615	.024
	19.3	34.5		1.352	.190	1.545	.014	.485	.019
	27.8	41.5	'	1.422	.228	2.111	.009	.687	.022
	27.6	43.9		1.450	.263	2.112	.012	.697	
	28.9	50.5	'	1.515	.285	2.472	.011	.720	.019
	17.7	29.2		1.116	.256	1.659	.011	.540	.010
	20.6	32.6	'	1.323	.280	1.980	.010	.691	.026
'G	23.4	41.4	77%	1.368	.253	2.183	.014	.681	.024
V.	4.7	5.6		.073	.028	.331	.003	.123	.006
D.	20.7	41.5		1.377	.257	2.100	.014	.662	.027
B.W.				3.3	0.61	5.27	.034	1.64	.058

FEMALE-CONTROL

	BODY WT. 22 DAYS	40 DAYS BODY WT.	% Incr	BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
	18.1	42.4		1.290	.265	2.099	.016	.603	
	25.8	51.6		1.431	.329	2.740		.744	.037
	35.1	60.9		1.641	.370	3.938	.020	.987	.037
	37.0	57.1	'	1.504	.318	2.682	.018	.817	.030
	11.7	20.5		1.132	.113	1.352	.009	.308	.014
	21.6	31.7	'	1.289	.203	1.910	.017	.501	.018
	22.5	27.8		1.295	.166	1.423	.018	.449	.022
	21.7	27.8	'	1.250	.171	1.282	.017	.430	.022
'G	23.1	36.0		1.365	.192	2.226	.018	.535	.024
V.	24.1	39.5	64%	1.355	.236	2.184	.016	.597	.026
D.	5.7	10.8		.105	.075	.523	.003	.169	.006
	22.5	36.0		1.365	.203	2.099	.017	.535	.023
B.W.				3.43	0.60	5.52	.041	1.51	.065

TABLE NO. 2 (c't'd)

FEMALE - HYPOPHYSIS FED

40 DAYS OLD

	BODY WT. 22 DAYS	BODY WT. 40 DAYS		THYMUS	SPLEEN	TIBIA	GASTROCNEMIUS	FOOT
	20.7	41.5	%	.169	.215	.086	.201	.309
	20.6	47.2	Incr.	.185	.390	.086	.203	.362
	32.6	51.8		.151	.278	.113	.217	.480
	18.3	40.9	'	.147	.078	.069	.157	.351
	19.3	34.5		.128	.150	.069	.146	.323
	27.8	41.5	'	.150	.133	.077	.194	.395
	27.6	43.9		.196	.139	.093	.258	.370
	28.9	50.5	'	.156	.144	.118	.243	.391
	17.7	29.2		.044	.082	.080	.113	.044
	20.6	32.6	'	.059	.095	.065	.149	.284
AV'G.	23.4	41.4	77%	.138	.170	.086	.188	.331
M.V.	4.7	5.6		.037	.074	.014	.038	.073
MED.	20.7	41.5		.154	.137	.083	.202	.357
% B.W.	-	-		0.33	0.41	0.21	0.45	0.80

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 40 DAYS		THYMUS	SPLEEN	TIBIA	GASTROCNEMIUS	FOOT
	18.1	42.4	%	.168	.122	.078	.172	.336
	25.8	51.6	Incr.	.188	.154	.109	.206	.388
	35.1	60.9		.191	.221	.128	.269	
	37.0	57.1	'	.221	.047	.103	.270	.505
	11.7	20.5		.036	.065	.038	.079	.201
	21.6	31.7	'	.081	.121	.077	.164	.323
	22.5	27.8		.064	.084	.065	.125	.314
	21.7	27.8	'	.071	.091	.064	.132	.309
	23.1	36.0		.069	.105	.068	.167	.296
AV'G.	24.1	39.5	64%	.121	.112	.081	.176	.334
M.V.	5.7	10.6		.058	.038	.021	.048	.057
MED.	22.5	36.0		.081	.105	.077	.167	.319
% B.W.	-	-		0.31	0.28	0.21	0.45	0.85

TABLE NO. 3

MALE - HYPOPHYSIS FED

50 DAYS OLD

	B.W. 22 DAYS	B. W. 50 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
	19.0	60.3	%	1.408	.304	3.045	.019	0.840	.622
	26.3	78.2	Incr.	1.550	.398	3.747	.017	1.044	.913
	20.0	65.8		1.506	.333	3.303	.017	0.838	.599
	15.3	44.8	'	1.365	.273	2.275	.013	0.570	.438
	30.9	75.7		1.557	.382	3.823	.021	1.046	1.229
	26.3	67.2	'	1.458	.369	2.734	.017	0.892	.937
	25.6	62.7		1.541	.343	3.095	.016	0.947	.607
	30.6	51.2	'	1.581	.339	3.175	.019	0.908	.418
	30.4	51.1		1.568	.346	3.559	.020	0.990	.515
	21.1	44.6	'	1.374	.312	3.026	.015	0.854	.190
'G	24.6	60.2	145%	1.491	.340	3.178	.017	0.893	.647
V.	4.6	9.8		0.616	.028	0.336	.002	0.093	.214
D.	25.9	61.5		1.524	.342	3.135	.017	0.900	.603
	--	-		-	-	-	-	-	-
B.W.				2.48	0.56	5.28	.028	1.48	1.07

MALE - CONTROL

50 DAYS OLD

	28.5	57.7	%	1.592	.297	3.194	.017	.763	.689
	30.1	63.2	Incr.	1.553	.285	3.241	.014	.753	.642
	26.0	42.3		1.578	.408	3.468	.019	.970	.962
	21.4	58.5	'	1.415	.329	2.921	.013	.661	.580
	26.4	66.8		1.535	.392	3.029	.021	.887	.701
	16.7	51.2	'	1.402	.314	2.520	.016	.618	.397
	30.5	45.5		1.416	.223	2.067	.014	.570	.661
	26.1	41.5	'	1.480	.229	1.976	.017	.598	.226
'G.	25.7	53.3	107%	1.496	.309	2.802	.016	.727	.607
V.	3.3	8.2		.068	.051	.461	.002	.091	.206
D.	26.2	54.5		1.508	.301	2.975	.017	.707	.652
	-	-		-	-	-	-	-	-
B.W.				2.8	0.58	5.26	.030	1.37	1.14

TABLE No. 3 (c't'd)

MALE - HYPOPHYSIS FED

AGE - 50 DAYS

	BODY WT. 22 DAYS	BODY WT. 50 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	19.0	60.3	%	.186	.651	.115	.268	.468
	26.3	78.2	Incr.	.222	.246	.145	.368	.538
	20.0	65.8		.225	.195	.119	.302	.447
	15.3	44.8	'	.070	.115	.086	.181	.390
	30.9	75.7		.170	.186	.142	.381	.582
	26.3	67.2	'	.233	.196	.108	.342	.536
	25.6	62.7		.224	.185	.130	.526	.903
	30.6	51.2	'	.095	.172	.118	.241	.486
	30.4	51.1		.097	.426	.118	.270	.461
	21.0	44.6	'	.092	.146	.100	.171	.308
AV'G.	24.6	60.2	145%	.161	.252	.118	.305	.552
M.V.	4.6	9.8		.058	.050	.013	.079	.146
MED.	25.9	61.5		.183	.195	.118	.286	.477
% B.W.	-	-		0.27	0.42	0.20	0.51	0.90

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 50 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	28.5	57.7	%	.228	.143	.122	.287	.451
	30.1	63.2	Incr.	.184	.174	.135	.304	.518
	26.0	42.3		.228	.202	.134	.323	.578
	21.4	58.5	'	.193	.158	.106	.267	.490
	26.4	66.8		.203	.189	.141	.327	.453
	16.7	51.2	'	.139	.127	.099	.223	
	30.5	45.5		.105	.131	.119	.242	.427
	26.1	41.5	'	.093	.123	.088	.215	.415
AV'G.	25.7	53.3	107%	.172	.156	.118	.274	.476
M.V.	3.3	8.2		.044	.025	.017	.036	.045
MED.	26.2	54.5		.189	.151	.121	.277	.453
% B.W.	-	-		0.32	0.29	0.21	0.51	0.89

TABLE No. 4

FEMALE - HYPOPHYSIS FED

50 DAYS OLD

	BODY WT. 22 DAYS	BODY WT. 50 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
	27.0	65.9	%	1.436	.327	3.847	.019	0.823	.034
	19.8	49.5	Incr.	1.423	.274	2.457	.017	0.722	.027
	17.1	48.3		1.358	.238	2.201	.014	0.615	.024
	20.6	60.8		1.460	.318	2.605	.019	0.728	.030
	21.4	65.8	'	1.480	.353	3.766	.017	0.832	.031
	21.8	52.5		1.457	.281	3.608	.018	0.734	.039
	30.8	90.0	'	1.585	.467	4.635	.028	1.136	.038
	19.8	48.8		1.305	.372	2.282	.017	0.644	.030
	29.3	49.3	'	1.477	.450	2.948	.	0.928	.014
'G	23.1	59.0	155%	1.442	.342	3.150	.019	0.796	.030
V.	3.5	10.3		0.044	.061	0.724	.003	0.117	.005
D.	21.4	52.5		1.457	.327	2.948	.017	0.734	.030
	--	-		-	-	-	-	-	-
B.W.				2.44	0.58	5.34	.032	1.35	.051

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 50 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
	27.6	48.4	%	1.486	.250	2.415	.017	0.421	.026
	27.2	63.0	Incr.	1.648	.315	2.816	.014	0.769	.031
	20.9	60.2		1.619	.321	2.599	.017	0.741	.031
	27.6	73.2		1.606	.418	3.432	.022	0.983	.039
	24.4	41.4	'	1.330	.210	1.918	.010	0.512	.021
	21.2	41.2		1.307	.205	1.864	.025	0.436	.025
	24.7	34.8	'	1.400	.173	1.594	.014	0.468	.021
	29.7	51.1		1.445	.220	2.552	.018	0.622	.025
'G	25.4	38.7	'	1.368	.203	2.675	.015	0.661	.036
V.	25.4	50.2	98%	1.468	.257	2.429	.017	0.624	.028
D.	2.3	10.6		.120	.063	.400	.003	0.149	.006
	25.4	48.4		1.445	.220	2.552	.017	0.622	.026
	-	-		-	-	-	-	-	-
B.W.				2.92	0.51	4.84	.034	1.24	.056

TABLE No. 4 (c't'd)

FEMALE - HYPOPHYSIS FED

AGE - 50 DAYS

	BODY WT. 22 DAYS	BODY WT. 50 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	27.0	65.9	%	.230	.303	.120	.299	.537
	19.8	49.5	Incr.	.197	.380	.095	.259	.432
	17.1	48.3		.185	.155	.102	.240	.386
	20.6	60.8	'	.194	.184	.123	.212	.492
	21.4	65.8		.316	.236	.106	.317	.586
	21.8	52.5	'	.227	.221	.100	.270	.514
	30.8	90.0		.321	.180	.138	.410	.592
	19.8	48.8	'	.181	.144	.080	.267	
	29.3	49.3		.120	.152	.120	.273	.422
AV'G.	23.1	59.1	155%	.219	.217	.109	.283	.495
M.V.	3.5	10.3		.048	.060	.014	.039	.055
MED.	21.4	52.5		.197	.184	.106	.270	.503
% B.W.	-	-		0.37	0.36	0.18	0.48	0.84

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 50 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	27.6	48.4	%	.205	.130	.114	.238	.448
	27.2	63.0	Incr.	.240	.162	.128	.315	.500
	20.9	60.2		.209	.129	.130	.280	.516
	27.6	73.2	'	.224	.202	.111	.322	.607
	24.4	41.4		.096	.120	.089	.185	.350
	21.2	41.2	'	.130	.142	.070	.177	.336
	24.7	34.8		.063	.122	.071	.161	.340
	29.7	51.1	'	.134	.142	.101	.252	.377
	25.4	38.7		.087	.120	.076	.157	.356
AV'G.	25.4	50.2	98%	.154	.141	.099	.232	.426
M.V.	12.3	10.4		.056	.018	.019	.055	.082
MED.	25.4	48.4		.134	.130	.101	.238	.377
% B.W.	-	-		0.31	0.28	0.20	0.46	0.85

TABLE No. 5

MALE - HYPOPHYSIS FED

AGE 62 DAYS

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
	27.6	64.7	%	1.460	.954	3.733	.022	1.145	1.005
	27.1	76.8	Incr.	1.591	.515	5.399	.027	1.311	.703
Av'e.	27.4	70.8	158%	1.526	.735	4.566	.025	1.288	.854
% B.W.	-	-		2.15	1.04	6.45	0.35	1.82	1.21

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
	27.6	50.4	%	1.489	.258	2.776	.014	.640	.661
	24.7	55.8	Incr.	1.473	.275	2.392	.018	.703	.413
Av'e.	26.2	53.1	103%	1.481	.267	2.584	.016	.672	.537
% B.W.	-	-		2.79	0.50	4.87	0.40	1.27	1.01

FEMALE - HYPOPHYSIS FED

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
	36.4	68.5	% Incr. 88%	1.500	.475	4.478	.034	1.375	.031
% B.W.	-	-		2.19	0.69	6.53	0.49	2.01	0.45

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
	36.5	62.7	% Incr. 71%	1.531	.302	2.396	.024	.740	.030
% B.W.	-	-		2.44	0.48	3.82	0.35	1.18	0.48

TABLE No. 5

MALE - HYPOPHYSIS FED

AGE - 62 DAYS

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	27.6	64.7	%	.099	.332	.125	.295	.462
	27.1	76.8	Incr.	.118	.306	.144	.351	.562
V'e.	27.4	70.8	158%	.109	.319	.135	.323	.512
B.W.	-	-		0.15	0.45	0.19	0.46	0.72

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	27.6	50.4	%	.124	.138	.116	.276	.408
	24.7	55.8	Incr.	.120	.155	.142	.277	.411
V'e.	26.2	53.1	103%	.122	.147	.129	.277	.400
B.W.	-	-		0.23	0.28	0.22	0.52	0.75

FEMALE - HYPOPHYSIS FED

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	36.4	68.5	% Incr. 88%	.114	.203	.175	.376	.632
% B.W.	-	-		0.17	0.30	0.26	0.55	0.92

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
	36.5	62.7	% Incr. 71%	.140	.212	.137	.350	.532
% B.W.	-	-		0.22	0.34	0.20	0.56	0.85

TABLE NO. 6

MALE - HYPOPHYSIS FED

	22 days old	5ds.	10	15	20	25	30	35	40	%Incr.
A (a)	20	23	26	31	31	35	41	46	60	202%
B (a)	27	31	31	34	40	50	55	65	80	196%
C (a)	30	36	38	43	52	59	70	77	90	200%
D (b)	32	43	50	58	75	86	99	121	148	364%
E (b)	19	25	29	42	48	59	63	72	91.5	382%
Av'e	25.6	32	35	42	49	58	66	76	96	275%

CONTROL

A (a)	23	26	30	34	37	38	43	46	57	148%
B (a)	28	34	34	35	39	44	48	55	64	129%
C (a)	30	36	40	41	46	49	55	62	69	130%
D (b)	34	41	46	51	60	66	79	82	102	200%
E (b)	19	27	31	38	41	47	47	54	61	213%
Av'e.	26.8	33	36	40	45	49	54	60	71	164%

DOSAGE

10 days 50 mgs.
20 " 100 "
10 " 200 "

- -

TABLE No. 7

FEMALE - HYPOPHYSIS FED

	22 days old	5	10	15	20	25	30	35	40	%Incr.	
A (a)	19	25	26	32	36	41	44	47	56	195%	
B (a)	21	25	27	33	43	47	50	54	64	207%	
C (a)	33	39	40	45	53	62	69	76	90	173%	
D (a)	23	28	29	34	38	44	49	54	62	170%	
E (b)	29	36	46	55	67	77	95	103	110	279%	*
F (b)	17	23	29	42	53	66	79	98	112	559%	
Av'e.	23.7	29.4	33	40	48	56	64	72	82	246%	

CONTROL

A (a)	19	24	25	32	35	39	42	45	50	162%
B (a)	23	26	27	32	37	39	44	45	50	117%
C (a)	38	42	48	50	58	63	68	69	75	97%
D (a)	23	28	29	31	33	38	42	45	50	117%
E (b)	30	39	47	53	64	75	89	98	120	300%
F (b)	21	23	30	37	42	47	53	65	75	219%
Av'e	25.6	30	34	39	45	50	56	61	70	173%

DOSAGE

10 days 50 mgs.
20 " 100 mgs.
10 " 200 mgs.

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TABLE No.8

FEMALE - HYPOPHYSIS FED

	22 days old	5	10	15	20	25	30	35	40	45	50	55	60	%Incr.
A (a)	20.5	25	29	39	42	48	53	59	66	77	87	95	102	398%
A (a)	21.5	26	29	34	37	41	46	49	57	67	74	83	92	327%
B (a)	25.5	32	32	33	38	43	50	60	71	76	82	95	102	300%
B (a)	24.5	30	30	32	34	39	45	54	60	67	70	80	87	255%
C (b)	28.5	35	39	46	54	66	77	97	110	118	129	133	133	366%
C (b)	30.5	39.5	45	55	67	79	92	110	114	123	123	134	134	339%
Ave.	25.1	31.2	34	40	45	53	60	71	80	88	94	103	108	330%

CONTROL

A (a)	20.5	24	26	34	36	39	44	47	49	55	63	66	71	246%
A (a)	22.0	25	30	35	35	39	43	47	49	56	69	63	70	218%
B (a)	28.0	30	30	34	37	42	46	49	58	60	65	73	73	161%
C (b)	28.0	34	37	42	48	57	66	73	83	88	100	105	114	307%
C (b)	30.5	38	47	58	73	86	98	116	128	133	133	141	143	368%
C.(b)	30.5	37	45	49	60	71	79	89	97	107	114	122	123	303%
Ave.	26.6	31	36	42	48	56	62	70	77	83	91	95	99	272%

DOSAGE

10 days 50 mgs.
20 " 100 "
10 " 200 "
10 " 300 "
10 " 400 "

TABLE No. 9

MALE - HYPOPHYSIS FED

AGE 62 DAYS

	BODT WT. 22 DAYS	BODY WT. 62 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
A)	20.0	60.5	%	1.700	.380	3.810	.015	0.715	0.965
B)	27.0	80.0	Incr.	1.646	.396	3.854	.022	0.746	1.269
C)	30.0	90.0	'	1.592	.473	4.534	.024	0.967	1.787
D)	32.0	148.5		1.841	.782	7.677	.023	1.590	2.059
E)	19.5	91.5	'	1.687	.463	5.536	.016	1.033	1.360
N'E.	25.7	94.1	266%	1.693	.498	5.082	.020	1.010	1.488
B.W. -		-		1.80	0.53	5.40	.021	1.07	1.58

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	TESTES
A)	23.0	57.0	%	1.620	.347	3.655	.012	0.783	0.633
B)	28.0	64.0	Incr.	1.579	.328	3.743	.021	0.737	0.749
C)	30.0	69.0	'	1.690	.412	4.137	.020	0.768	0.859
D)	34.0	102.0		1.705	.558	5.195	.020	1.093	1.533
E)	19.5	61.0	'	1.605	.359	4.204	.016	0.743	0.795
N'E.	26.9	71.	164%	1.640	.401	4.187	.018	0.825	0.914
W. -		-		2.31	0.56	5.88	.025	1.16	1.29

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MALE HYPOPHYSIS FED

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
A)	20.0	60.5	%	.170	.208	.095	.101	.459
B)	27.0	80.0	Incr.	.213	.227	.114	.176	.596
C)	30.0	90.0	'	.187	.266	.165	.175	.754
D)	32.0	148.5		.402	.550	.272	.253	.866
E)	19.5	91.5	'	.235	.356	.153	.153	.715
N'E.	25.7	94.1	266%	.241	.321	.160	.172	.678
B.W. -		-		0.26	0.34	0.17	0.18	0.72

MALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
A)	23.0	57.0	%	.105	.193	.079	.097	.435
B)	28.0	64.0	Incr.	.153	.184	.119	.139	.472
C)	30.0	69.0	'	.137	.219	.098	.115	.568
D)	34.0	102.0		.188	.374	.188	.187	.695
E)	19.5	61.0	'	.110	.208	.080	.092	.470
N'E.	26.9	71.0	164%	.139	.197	.094	.105	.528
B.W. -		-		0.20	0.28	0.13	0.15	0.74

TABLE No. 10

FEMALE - HYPOPHYSIS FED

AGE - 62 DAYS

	BODY WT. 22 DAYS	BODY WT. 62 DAYS	% Incr.	BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
)	19.0	56.0	%	1.445	.302	3.280	.018	0.586	.025
)	21.0	64.0	Incr.	1.510	.374	4.154	.019	0.667	.027
)	33.0	90.0		1.659	.588	4.542	.020	1.033	.060
)	23.0	62.0	'	1.477	.318	2.872	.017	0.626	.045
)	29.0	110.0		1.623	.481	5.771	.040	1.026	.086
)	17.0	112.0	'	1.657	.561	6.185	.032	1.138	.063
'G.	23.7	82.3	247%	1.562	.437	4.467	.024	0.846	.051
B.W.-		-		1.89	0.53	5.43	0.29	1.03	.062

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS	% Incr.	BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
A)	19.0	50.0	%	1.423	.259	2.762	.018	0.485	.023
B)	23.0	50.0	Incr.	1.490	.261	3.034	.017	0.523	.019
C)	38.0	75.0		1.650	.396	3.371	.020	0.731	.042
D)	23.0	50.0	'	1.341	.283	2.253	.013	0.538	.021
E)	30.0	120.0		1.640	.555	5.950	.033	1.037	.086
F)	21.0	75.0	'	1.661	.414	3.803	.019	0.842	.039
V'G.	25.7	70.0	172%	1.534	.361	3.529	.020	0.693	.038
B.W. -		-		2.19	0.52	5.04	.029	0.99	.054

FEMALE - HYPOPHYSIS FED

	BODY WT. 22 DAYS	BODY WT. 62 DAYS.	% Incr.	THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
A)	19.0	56.0	%	.163	.232	.075	.089	.457
B)	21.0	64.0	Incr.	.170	.232	.087	.107	.517
C)	33.0	90.0		.281	.412	.165	.195	.657
D)	23.0	62.0	'	.148	.151	.090	.118	.458
E)	29.0	110.0		.196	.435	.231	.211	.503
F)	17.0	112.0	'	.341	.363	.218	.242	.762
V'G.	23.7	82.3	247%	.217	.308	.144	.160	.592
B.W. -		-		0.26	0.37	0.17	0.19	0.72

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 62 DAYS.	% Incr.	THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
A)	19.0	50.0	%	.130	.158	.076	.085	.452
B)	23.0	50.0	Incr.	.141	.143	.083	.086	.386
C)	38.0	75.0		.149	.241	.168	.167	.605
D)	23.0	50.0	'	.092	.130	.075	.096	.382
E)	30.0	120.0		.235	.377	.243	.215	.820
F)	21.0	75.0	'	.237	.213	.151	.153	.577
V'G.	25.7	70.6	172%	.164	.210	.133	.134	.537
B.W. -		-		0.23	0.30	0.19	0.19	0.77

TABLE No. 11

FEMALE - HYPOPHYSIS FED

AGE - 82 DAYS

	BODY WT. 22 DAYS	BODY WT. 82 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
A)	20.5	102.0	%	1.724	.587	6.802	.034	1.125	.105
A)	21.5	92.0	Incr.	1.733	.487	5.777	.035	1.163	.084
B)	25.5	102.0		1.667	.507	4.777	.033	1.045	.061
B)	24.5	87.0	'	1.732	.446	3.954	.026	0.852	.051
C)	28.5	133.0		1.694	.602	5.206	.037	1.273	.107
C)	30.5	134.0	'	1.682	.608	5.267	.045	1.294	.115
V'G.	25.1	108.0	331%	1.705	.540	5.297	.035	1.125	.087
B.W.	-	-		1.58	0.50	4.90	.032	1.04	.081

FEMALE - CONTROL

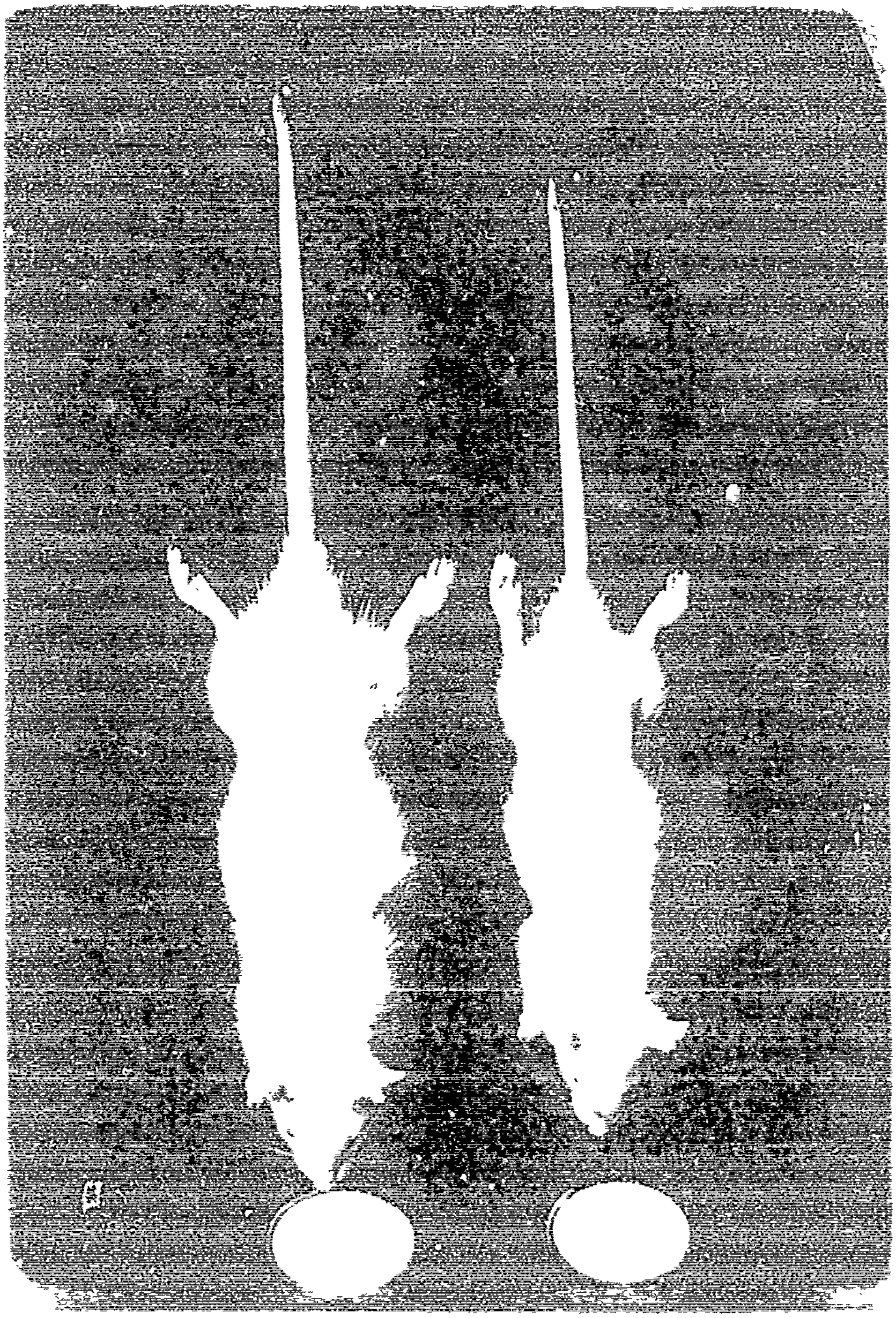
	BODY WT. 22 DAYS	BODY WT. 82 DAYS		BRAIN	HEART	LIVER	ADRENALS	KIDNEYS	OVARIES
A)	20.5	72.0	%	1.634	.408	4.057	.022	0.812	.048
A)	22.0	70.0	Incr.	1.664	.373	4.392	.018	0.810	.054
B)	28.0	73.0		1.574	.406	3.123	.021	0.764	.037
C)	28.0	114.0	'	1.563	.532	4.995	.036	1.125	.088
C)	30.5	143.0		1.723	.672	6.522	.038	1.292	.103
C)	30.5	123.0	'	1.742	.607	5.234	.036	1.185	.113
V'G.	26.6	97.5	229%	1.650	.500	4.721	.029	0.998	.074
B.W.	-	-		1.66	0.51	4.84	.030	1.02	.076

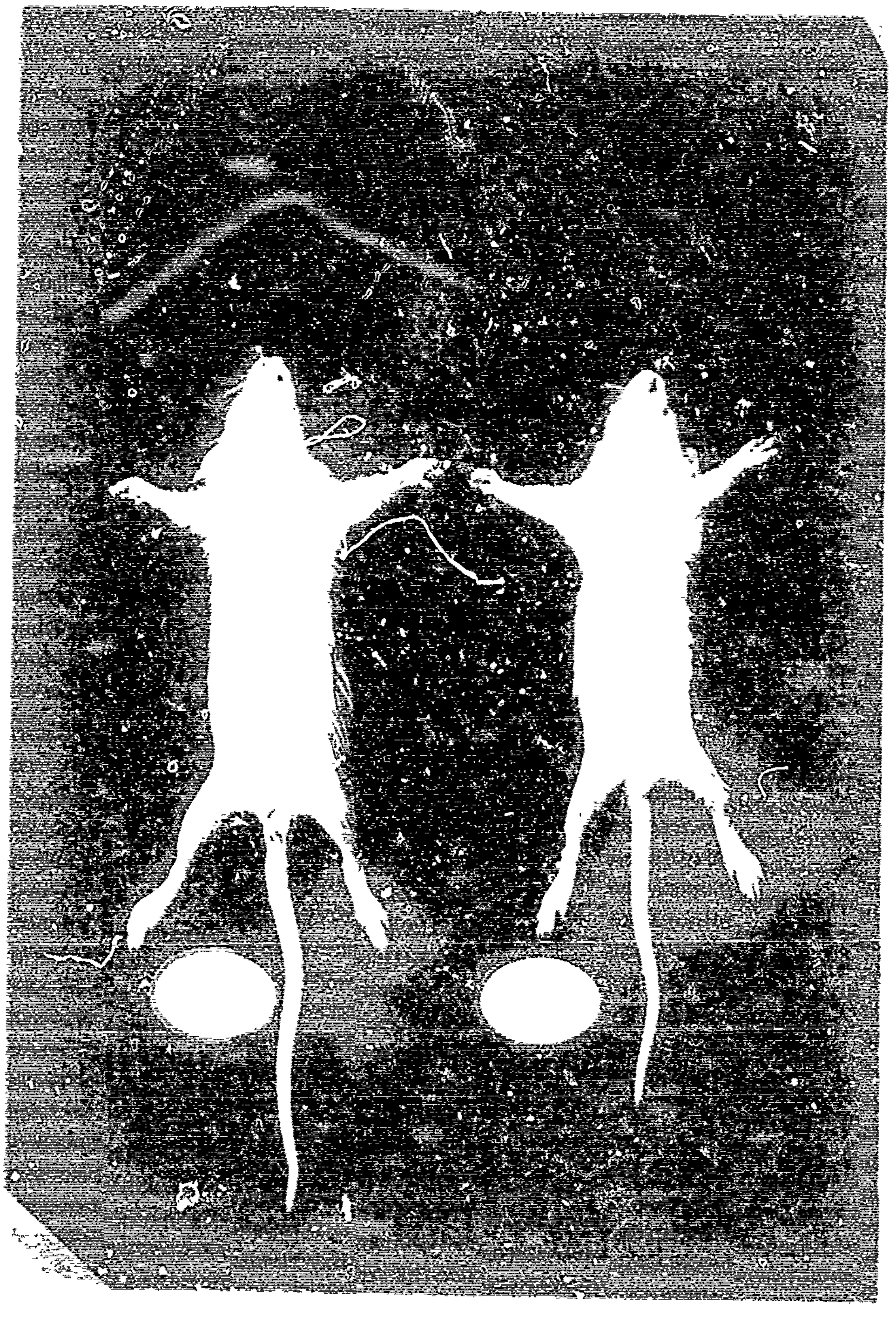
FEMALE - HYPOPHYSIS FED

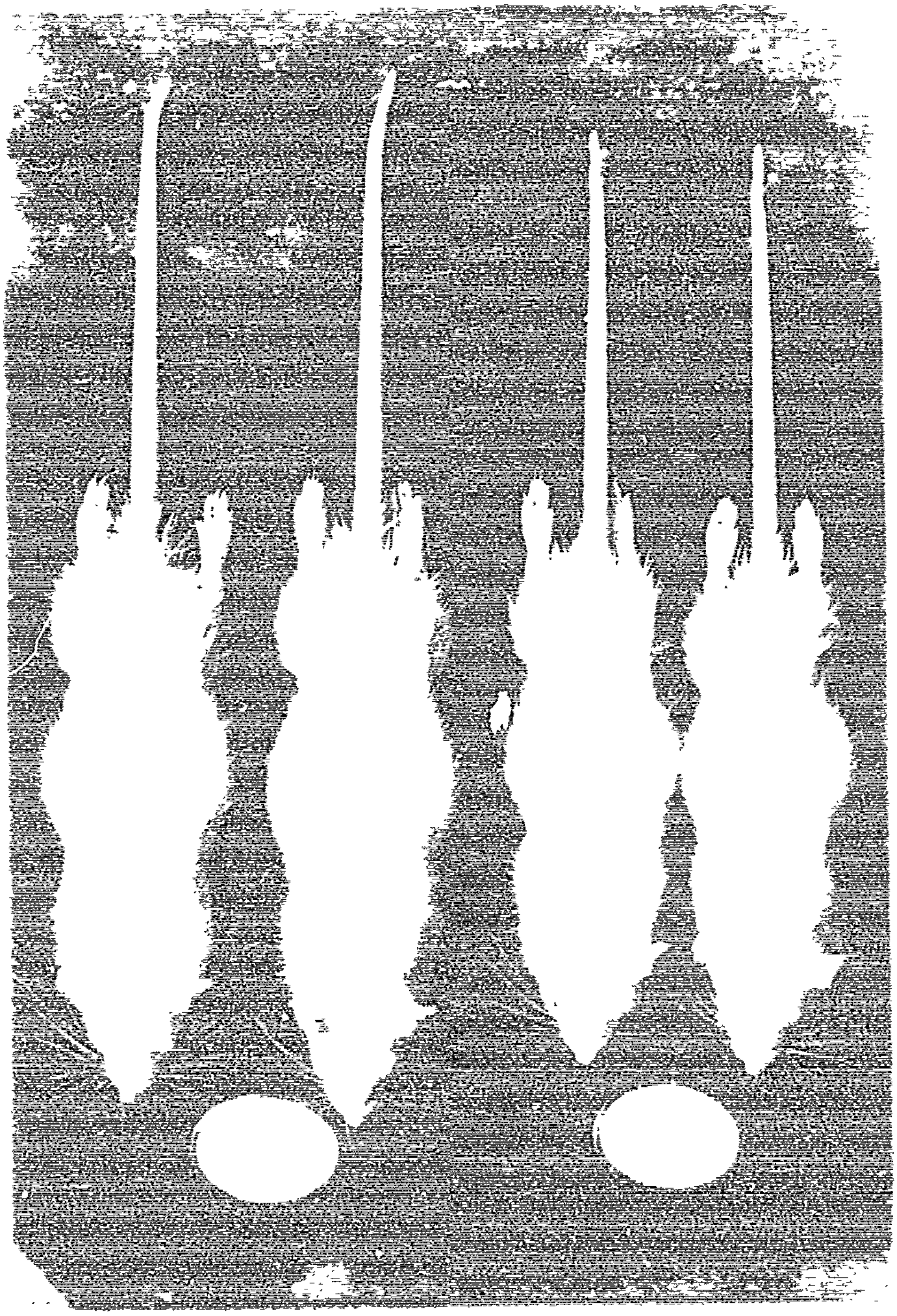
	BODY WT. 22 DAYS	BODY WT. 82 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
A)	20.5	102.0	%	.263	.403	.138	.203	.575
A)	21.5	92.0	Incr.	.248	.366	.186	.152	.558
B)	25.5	102.0		.278	.420	.163	.284	.497
B)	24.5	87.0	'	.241	.286	.167	.252	.572
C)	28.5	133.0		.313	.410	.278	.353	.788
C)	30.5	134.0	'	.420	.465	.252	.302	.772
V'G.	25.1	108.0	331%	.294	.392	.197	.258	.627
B.W.	-	-		0.27	0.36	0.18	0.24	.058

FEMALE - CONTROL

	BODY WT. 22 DAYS	BODY WT. 82 DAYS		THYMUS	SPLEEN	TIBIA	GASTROC NEMIUS	FOOT
A)	20.5	72.0	%	.207	.277	.103	.128	.487
A)	22.0	70.0	Incr.	.177	.284	.119	.154	.554
B)	28.0	73.0		.163	.301	.163	.173	.507
C)	28.0	114.0	'	.371	.443	.248	.302	.924
C)	30.5	143.0		.351	.461	.260	.305	.830
C)	30.5	123.0	'	.312	.478	.267	.315	.778
V'G.	26.6	97.5	229%	.264	.374	.193	.230	.680







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