Antibodies organ-specific against the anterior body of the pituitary gland

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ANTIBODIES ORGAN-SPECIFIC AGAINST THE ANTERIOR BODY OF THE PITUITARY GLAND

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Last year I published an investigation on antibodies organ-specific against the thyroid gland [1937]. I treated sheep with intravenous injections of extracts of the thyroid glands of pigs and injected the serum of the sheep into rabbits. After some weeks the basal metabolic rate of these rabbits was lowered. I have observed that the metabolic rate stays at this lowered level for a year. In this paper similar experiments with organ antibodies specific against the anterior body of the pituitary gland are reported.

The literature is not discussed, because my method is a new one.

Observations in the physiological laboratory in Hamburg had shown, that specific dynamic action (s.d.a.) depends upon the anterior body [Kestner, 1928; Nothhaas & Never, 1930]. I have now determined the s.d.a. in rats before and after injection of an antipituitary serum. The anterior body of oxen was roughly minced and washed thoroughly with Ringer's solution, the residue frozen, finely ground with sand and dissolved in Ringer's solution. A milky solution containing about 60 p.c. of the nitrogen of the gland and only traces of blood was obtained.

Methods

Rabbits were injected several times with this extract, first intravenously, and later subcutaneously. Four rats were injected four times with 3·5–4 c.c. of the serum of these rabbits on 9, 11, 29 and 30 October. One of these four rats died by accident.

Basal metabolic rate of, the s.d.a. in, the three injected rats were determined before the first injection and at the beginning of December. For the basal metabolism the rats were starved about 24 hr.; for the s.d.a. they received 10 g. raw meat, and the metabolic rate was determined during the second and third hour after feeding; all experiments

were made only during the forenoon and the first hours of the afternoon. I used for the metabolism determinations my apparatus described in 1910 [see also Gröbbels, 1934], in which CO_2 is absorbed, but not determined. The temperature was 28–29° C. and the readings—every 10 min.—were made only during complete rest of the rats. In all experiments a series of readings was made. The surface area was reckoned by Benedict's method with $k = 9{\cdot}1$.

Results

Table I

		Before injection		After injection	
Rat no.	Wt. g.	Basal cal.	s.d.a. p.c.	Basal cal.	s.d.a. p.c.
0470	287	668	58	639	14
0404	280	678	38	674	12
0405	319	707	34	716	10

Two other rats had been injected at the same time with serum of another rabbit, not immunized against pituitary, and the metabolic rates were determined at the same time as those of the three rats. The results are given in Table II.

Table II

		After injection	
Rat no.	Wt. g.	Basal cal.	s.d.a. p.c.
0509	256	700	32
1320	241	696	38

Two rats were not injected, and the results in these are given in Table III.

Table III

Rat no.	Wt. g.	Basal cal.	s.d.a. p.c.
0472	255	683	40
0403	271	690	33

The differences in the basal metabolic rate before and after the injection were 0–1 c.c. as measured on the burette of the apparatus; the differences in the s.d.a. before and after injection were 10–15 c.c.

The number of the experiments is small, but I think that they are sufficient to show that the specific dynamic action is lowered by the treatment with the serum organ specific against the anterior body of the pituitary gland. The three rats are still living and the other functions that are dependent upon the pituitary gland will be investigated later.

SUMMARY

The specific dynamic action in rats is considerably lowered by a serum organ-specific against the anterior body of the pituitary gland.

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