central nervous system immediately adjacent to the cerebro-spinal fluid.

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ATROPHY OF THE ADRENAL CORTEX OF THE RAT PRODUCED BY THE ADMINISTRATION OF LARGE AMOUNTS OF CORTIN

IT has been observed by Wyman and tum Suden[1] and by Ingle and Higgins[2] that transplants of adrenal glands do not regenerate in the presence of one intact gland. In unpublished studies Ingle and Higgins have noted that the regeneration of the enucleated adrenal does not take place in the presence of one intact adrenal, although the regeneration is consistently rapid when there is a "deficiency" in the activity of the adrenal cortex. Ingle and Kendall[3] found that the oral administration of large amounts of cortin suppressed the regeneration of enucleated adrenals. In addition to these results we have now found that the administration of large amounts of cortin to the normal rat will produce atrophy of the cortex of the adrenal and that this atrophy can be prevented by the simultaneous administration of a fraction of anterior pituitary extract which has high adrenotropic activity.

Male rats of the Wistar strain with body weight of 180 to 190 gm were matched in groups of three. One rat of each group received 10 cc of cortin daily in its drinking water; the second rat received 10 cc of cortin orally, and, in addition, 1 cc of an adrenotropic preparation[4] was given daily by intraperitoneal injection; the third rat was untreated. Six groups of rats were studied. At the end of seven days the adrenal glands were removed, weighed and examined histologically. The data on weights of the adrenals are summarized in Table 1.

TABLE 1
EFFECT OF ADMINISTRATION OF CORTIN ON ADRENAL WEIGHTS (BOTH GLANDS)

Treatment	Number of rats	Average, mg	Range, mg
Cortin only	6	14.7	14–16
Cortin plus adrenotropic preparation	6	25.3	24–29
Untreated	6	27.7	27–30

Our results indicate that the anterior pituitary or some mechanism which controls its activity is sensitive to variations in the amount of cortin in the body fluids or to physiologic functions influenced by cortin and that the changes in the adrenal cortex are mediated by changes in the output of the adrenotropic principle from the pituitary. When the physiologic requirements for cortin are increased there is an increase in the output of the adrenotropic principle, and when cortin is present in the body fluids in excess of physiologic requirements the output of adrenotropic secretions from the pituitary is suppressed. The experimental results and deductions of a number of other investigators support this hypothesis, and at the present time we are not aware of any contrary evidence.

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1 L. C. Wyman and Caroline tum Suden, *Endocrinology*, 21: 523, 1937.

2 D. J. Ingle and G. M. Higgins, *Proc. Staff Meet.* Mayo Clinic, 12: 204–205, March 31, 1937.

3 D. J. Ingle and E. C. Kendall, *Proc. Staff Meet.* Mayo Clinic 12: 505, Aug. 11, 1937.

4 This fraction was prepared by the method of Moon and was supplied to us through the courtesy of Dr. O. Kamm, Detroit, Michigan.

THE SPARING ACTION OF LACTOFLAVIN ON VITAMIN B_1

THE sparing of vitamin B_1 by feeding high levels of certain substances was demonstrated several years ago by Evans and Lepkovsky,[1] at which time they attributed the beneficial effect of autoclaved yeast to the presence of vitamin G or B_2. Since then vitamin B_2 has been identified as lactoflavin and its availability in crystalline form has revived interest in this important problem.

The data presented here were obtained from three groups of 28-day albino rats whose mothers had been reared from weaning on diets adequate in all respects for growth and reproduction and varying only in their content of lactoflavin. The 1E grade of lactoflavin of the Borden Company was used, and, while not in crystalline state, it had tested free of vitamin B_1 and other water-soluble vitamins. The lactoflavin was added to the basal diet in such quantities that the final three diets contained approximately 1, 2 and 3 Bourquin-Sherman[2] units per gram, which for convenience will be designated here as diets 1, 2 and 3. In the experience of the author 2.9 γ of crystalline lactoflavin has been equivalent to 1 Bourquin-Sherman unit.

The 28-day young, whose previous dietary had been similar except for the lactoflavin content of the maternal died, were placed upon the Chase and Sherman vitamin B_1 deficient diet[3] and their weight recorded weekly until death. Three males and three females of typical weight were selected from each of the three diets.

1 H. M. Evans, S. Lepkovsky and E. A. Murphy, *Jour. Biol. Chem.*, 108: 429, 1934.

2 A. Bourquin and H. C. Sherman, *Jour. Am. Chem. Soc.*, 53: 3501, 1931.

3 E. F. Chase and H. C. Sherman, *Jour. Am. Chem. Soc.*, 53: 3506, 1931.