Serum Cholinesterase Activity in Thymectomized Rats. (23083)

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Hawkins *et al.*(1) found an inverse relation between thyroid and serum cholinesterase activities in the rat. Thyroidectomy produces regression of the thymus(2,3,4). Thyroid extract causes hypertrophy of the thymus, although an excess leads to atrophy(2). Then would thymectomy cause a change in esterase activity?

Methods. Fourteen young (50-60 g) female albino rats of the Wistar strain were thymectomized under light ether anesthesia according to the technic of Segaloff(5). Fourteen control rats were anesthetized and sham-operated; the incision was held open for the average time necessary to perform a thymectomy. Three weeks after the operations the animals were bled. Serum esterase activity was measured by a modification of the optical method developed by Kalow(6) (serum dilution, 1 to 100; temp. 40°C; substrate, 5 x 10^{-5}M benzoylcholine chloride; wavelength, 240 mμ; duration of measurement, 15 min.). Results were expressed as shift in absorbance x 1,000.

Results. In the control rats the mean esterase activity was 37.5 units, in the thymectomized, 37.6 units.

Summary Although the thyroid gland influences both the status of the thymus and serum cholinesterase activity, thymectomy alone has no influence on serum cholinesterase activity.

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Effect of Incubation upon Folic Acid Content of Eggs. (23084)

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The effect of incubation of eggs upon content of most of the B-vitamins has been determined. Snell and Quarles(1) found no change in the level of riboflavin or pantothenic acid in eggs throughout one period of incubation. Biotin concentration remained constant, or decreased slightly, while inositol and nicotinic acid were found to be synthesized by the embryo. Okamoto(2) found the concentration of thiamin to remain constant. Cielens(3) reports that 53-67% of choline is lost during incubation. Folic acid has apparently not been studied.

Since germfree rats have been found to synthesize vit. B_9 (folic acid and citrovorum factor) while they require biotin and other B-vitamins(4), it is of special interest to determine the change in folic acid content of the incubating egg (which is usually germfree). Evans *et al.*(5) studied the effect of cold storage on folic acid content of eggs and Ebert (6) reported on development and role of p-aminobenzoic acid (a component of folic acid) in the early chick embryo.

Methods. Four dozen eggs were procured

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TABLE I. Folic Acid Level of Eggs at Different Stages of Incubation.

Group	Incubation, wk	No. eggs	Mean folic acid/egg, μg (± stand. dev.)
I	0	12	6.5 ± 2.68
II	1	11	5.5 ± 2.02
III	2	9	5.1 ± 1.99
IV	3	7	5.6 ± 1.64

the same day from a flock of hens (White Vantress males crossed with White Rock hens from Smith Hatchery, Columbia, Mo.) receiving identical diet. The eggs were divided into 4 groups of one dozen each, they were numbered according to group and after formaldehyde treatment they were incubated 0, 1, 2 and 3 weeks respectively by a commercial hatcher. The eggs were then assayed by a microbiological method(7) employing *S. fecalis,* A.T.C.C. No. 8043. Powdered hog kidney† was used as a source of folic acid conjugase in view of data presented by Sreenivasan *et al.*(8), Olson *et al.*(9) and Bird *et al.*(10). Commercially‡ prepared growth agar and assay media were used.

Results. A high individual variation was found between eggs within each group despite the attempt to obtain relatively uniform eggs. As shown in Table I the mean folic acid level per egg for each group falls within one standard deviation of variation from the means of all the other groups. These data add to emerging metabolic patterns which show why a chick requires a dietary source of folic acid while a rat does not(11). Since there appears to be no increase in total quantity of folic acid in an egg, as the embryo develops, isotopic studies are needed to determine whether the nutritional requirement of the chick for folic acid is due to complete absence of a synthetic mechanism or simply the presence of a requirement greater than synthesis under a given set of conditions.

Conclusion. No change in concentration of folic acid was found in eggs during incubation for 3 weeks.

† Procured from Viobin Corp., Monticello, Ill.

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