

TABLE I.
Showing maximum dilutions of antigen at which complement fixation was observed.

Antigen	Serum of Rabbits Treated with:					Normal Rabbit Serum
	A.P.L. No. 1	A.P.L. No. 2	A.P.L. No. 3	Male urine Extract	Human Serum	
A.P.L. No. 1	100+	10+	10+	—	—	1+
A.P.L. No. 2	10+	100—	10+	10+	1+	1+
A.P.L. No. 3	0	10+	100—	10—	0	1+
Male urine extract	10—	100+	100+	100+	0	1+
Human serum	0	5000	25000	0	5000	1

of rabbits treated with male urine extract, and that of both groups immunized against human serum were assayed for A.P.L.-inhibiting substances by both the rat and rabbit technics described in our previous communications. In no instance was inhibitory activity observed.

We conclude that A.P.L.-treated rabbits yield sera which give weak immunity reactions *in vitro* with solutions of A.P.L and extracts of male urine, and stronger but less constant reactions with human serum proteins. At the present time, however, there appears to be no clear connection between these phenomena and the specific A.P.L.-inhibitory property demonstrable in such sera with biological methods.

7885 C

Cytological Responses of Rat Thyroid to Treatment with Anterior Pituitary and Potassium Iodide.

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Intensified mitotic proliferation and an increase of colloid in the thyroid gland of the normal guinea pig, following potassium iodide administration, have been reported by Loeb.¹ As colloid increased in the follicles, he noted that the follicular epithelium became distended and flattened.

Loeb and Bassett² reported that dried and powdered anterior pit-

¹ Loeb, Leo, *Am. J. Path.*, 1926, **2**, 19.

² Loeb, Leo, and Bassett, R. B., *Proc. Soc. Exp. Biol. and Med.*, 1930, **27**, 490.

uitary substance produced an intense thyroid hyperplasia, and stimulated mitosis in the cells of the guinea pig thyroid.

This apparently successful use of potassium iodide and anterior pituitary extracts in producing experimental modifications in thyroid activity suggested the possibility that similar methods might be applied to a study of the behavior of mitochondria and the Golgi apparatus.

Thirty-five healthy, albino rats of both sexes, ranging in age from 75 to 90 days, were used in this study. Sixteen received daily injections of 0.6 cc. of pituitary extract, per animal. This series was divided into 4 groups, as follows: Group I received injections for 3 days; Group II for 5 days; Group III for 7 days, and Group IV for 9 days. The pituitary extract used was prepared according to the method of Loeb and Bassett.² Four animals received injections of 0.05 gm. each, of potassium iodide in distilled water, daily for 7 days. All injections were made intraperitoneally. The animals were sacrificed 24 hours after the last injection, and the thyroids removed and fixed immediately. Twelve animals were sacrificed as controls, in the course of the study.

The general histological findings in all groups confirm the work of Loeb and Bassett, although the changes induced by the experimental procedure are less intense than those described by these workers.

In the control glands the mitochondria are in the form of minute and very delicate rods, abundantly scattered throughout the cytoplasm.

In the glands of animals which received potassium iodide injections the mitochondria show a marked decrease in number, and change in form. In addition to the rod-like forms seen in the controls, many of the mitochondria appear as coarse granules, of irregular size. The number of these granular forms in a given cell varies inversely with their size. While the rod-like forms are scattered evenly through the cytoplasm of the entire cell, the granules tend to segregate in the pole of the cell adjacent to the lumen of the alveolus.

Following pituitary treatment there is likewise a change of some of the rod-like mitochondria into granules. It is to be noted, however, that the granules which appear after pituitary treatment are small and of uniform size, in contrast to the coarse, irregular granules which appear following injections of potassium iodide.

In the glands of animals which received pituitary injections for 3 days, the rods and granules are about equal in number. Following 5 days of treatment, the granules are more numerous than the

rods. Their distribution in the cell is somewhat uneven, the greatest number being seen in the portion of the cell bordering the lumen of the alveolus. After 7 to 9 days' treatment, some of the mitochondria appear as filaments, in the form of a lacy network around the nucleus. The bodies and ends of these filaments show blebs, or swellings. It was impossible to determine whether the filaments were continuous strands, or merely lines of adjacent granules. Scattered granular mitochondria are also abundant in these cells, but no rod-like forms can be seen.

The Golgi material in the controls is mainly in the form of irregular particles, scattered throughout the cytoplasm, although it appeared as a reticulum in a few cells.

Following potassium iodide injections, the Golgi material shows no conspicuous variations from the controls.

In the glands of animals which received pituitary treatment from 3 to 7 days there is a marked decrease in the amount of Golgi material present within the follicle cells. Simultaneously Golgi material may be seen in the intercellular regions. After 9 days of treatment the follicle cells show a slight increase in Golgi material, as compared with the animals treated for a shorter period, but this increase is not sufficient to raise the Golgi content of the cells to the control level. Coincident with the increase in Golgi material within the cells, there is a proportionate decrease in the Golgi material in the intercellular regions. Three of the animals which received pituitary treatment did not show any response, but as these animals belonged to different groups, their failure to react may be attributed to individual variation.

The findings on the response of the mitochondria to potassium iodide injections confirm those of Nicholson³ and Seecoff.⁴

The uniform response of the mitochondria in all the animals which received pituitary injections, suggests that they are more sensitive to changes in cell activity than the Golgi material, which did not respond so consistently.

The fragmented appearance of the Golgi material in the controls is not in agreement with the findings of Ludford and Cramer,⁵ who described it as a reticulum in the normal mouse thyroid. In a subsequent paper⁶ on the rat gland, they seem to infer that the appear-

³ Nicholson, F. M., *J. Exp. Med.*, 1924, **39**, 63.

⁴ Seecoff, D. P., *Am. J. Path.*, 1925, **1**, 295.

⁵ Ludford, R. J., and Cramer, W., *J. Phys.*, 1926, **61**, 398.

⁶ Ludford, R. J., and Cramer, W., *Proc. of Roy. Soc., of London (B)*, 1928, **104**, 28.

ance is the same in the normal rat gland, although they do not definitely state that they ran controls on the rat studies. They believed that fragmentation of the Golgi apparatus was indicative of hypersecretion. The present study makes it difficult to accept this interpretation since in the controls, neither the appearance of the epithelium, nor the condition of the mitochondria in the cells, presented the characteristics usually associated with intensified activity.

Efforts were made to determine a possible cause of the fragmented appearance of the Golgi apparatus in the controls. The maintenance conditions and the technique employed in preservation and staining the material were carefully checked and additional animals, from different sources, were sacrificed. In all cases the Golgi material presented essentially the same appearance as that seen in the original controls.

7886 C

A Microörganism which Decomposes the Specific Carbohydrate of Pneumococcus Type VIII.

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From samples of uncultivated soil obtained in several localities, a microörganism has been isolated in pure culture, by methods previously described,¹ which decomposes the specific carbohydrate of pneumococcus type VIII. Although marked cross precipitation is obtained with pneumococcus type-VIII specific carbohydrate in type-III antiserum² and, conversely, with type-III carbohydrate in type-VIII antiserum, strains of soil bacteria (*B. palustris*)¹ which decompose the carbohydrate of pneumococcus type III do not act on that of type VIII.

The two microörganisms correspond closely in morphology, cultural characters, and in the production of a soluble enzyme; and the new culture should also be classified as *B. palustris*. The vegetative cells are Gram-negative motile rods with peritrichal flagella, usually 6 in number. They vary in width from 0.6 to 0.8 μ . and in length from 2.5 to 3 μ . Oval spores wider than the vegetative cells are

¹ Sickles, G. M., and Shaw, Myrtle, *J. Bact.*, 1934, **28**, 415.

² Brown, Rachel, to be published.