Since the "S" form reverts to the "R" during its adaptation on artificial media and the "S" variant can later be isolated from the "R" it must be assumed the "S" and "R" are reversible. The "S" being the typical and the "R" the mutant form.

8599 P

Enzymatic Digestion of Desiccated Thyroid.

SAMUEL B. NADLER AND WILLARD O. THOMPSON.

From the Department of Biochemistry, Tulane University School of Medicine, New Orleans, and the Department of Medicine, Rush Medical College. University of Chicago.

In the course of studies on the calorigenic activity of various fractions derived from the enzymatic digestion of desiccated thyroid,[1] we have observed that the organic iodine in the gland is rapidly split into acid soluble and acid insoluble iodine fractions. The 2 fractions are separated by adjusting the pH to 5.0.

A single large lot of desiccated thyroid was used for these experiments (Lot No. 2*). The desiccated thyroid was insoluble at pH 5 and contained 2% of the total iodine in the form of "preformed inorganic" iodine as determined by the method of Lawson.[2] When like volumes of enzyme digest were precipitated in dilutions of one, 2 and 4 volumes, the ratio of acid soluble iodine to total iodine was not increased, indicating that the acid insoluble iodine fraction has a negligible solubility at pH 5. The iodine soluble at pH 5 consisted of organic iodine digested off in the acid soluble form and a small amount of "preformed inorganic" iodine. It was thus possible to measure the rate of hydrolysis of desiccated thyroid into acid soluble and acid insoluble iodine fractions, by measuring the ratio of acid soluble to total iodine in the digest.

Incubation of the desiccated thyroid in one and 2% pepsin at pH 2 resulted in a liberation of 55% of the total iodine in an acid soluble form in 4 hours. (The acid soluble fraction is not increased after several months incubation in pepsin solutions.) In

[1] Thompson, W. O., Thompson, P. K., Taylor, S. G., Nadler, S. B., and Dickie, L. F., *J. A. M. A.*, 1935, **104**, 972.

* We are indebted to Dr. D. Klein of the Wilson Laboratories, Chicago, for the desiccated thyroid and enzyme preparations used in these experiments.

[2] Lawson, W., *Biochem. J.*, 1933, **27**, 112.

one and 2% trypsin at pH 8, 60% of the total iodine was rendered acid soluble in 4 hours. With each enzyme, about 70% of the total hydrolysis into acid soluble and acid insoluble iodine fractions occurred during the first 15 minutes of digestion. Incubation of the desiccated thyroid in human gastric and duodenal juice resulted in the liberation of the acid soluble iodine at the same rate as when concentrated solutions of potent enzymes were used.

Since the liberation of amino and carboxyl groups in such digests continues for a number of days,[3, 4] it would appear that one of the first steps in the digestion of desiccated thyroid is the severing of linkages binding the 2 iodine fractions.

The very rapid hydrolysis of desiccated thyroid in peptic and tryptic solutions and in human digestive juices would seem to indicate that therapeutically administered desiccated thyroid is rapidly hydrolysed into acid soluble and acid insoluble iodine fractions.

These data do not seem to support the suggestion of Lerman and Salter[5] that the whole thyroglobulin molecule "is probably absorbed" from the gastrointestinal tract "for the most part unchanged."

8600 C

Influence of Glycine on Depleted Creatine Reserves of Skeletal and Cardiac Muscle in Experimental Hyperthyroidism.*

M. BODANSKY AND VIRGINIA B. DUFF.

From the Department of Pathological Chemistry, School of Medicine, University of Texas, and the Laboratories of the John Sealy Hospital, Galveston.

The use of glycine in the treatment of muscle disease is based partly on the assumption that it is a precursor of creatine, a number of investigators sharing the view that the transformation of glycine into creatine is direct. In support of the contention that creatine is a product of exogenous protein, or amino acid metabolism, Beard and Boggess[1] have recently presented data to show that the creatine content of muscle of rats may be increased 20 to 56% from the low levels caused by restricted protein intake by refeeding these animals on 25% casein, or egg albumin, or 21%

[3] Harington, C. R., and Salter, W. T., *Biochem. J.*, 1930, **24**, 456.

[4] Barnes, B. O., Carlson, A. J., and Riskin, A. M., *Am. J. Physiol.*, 1931, **98**, 86.

[5] Lerman, J., and Salter, W. T., *Endocrinology*, 1934, **18**, 317.

* Aided by a grant from the National Research Council.

[1] Beard, H. H., and Boggess, T. S., *Am. J. Physiol.*, 1935, **113**, 647.