

every critical requirement, and strongly resemble those obtained by the subcutaneous injection of insulin.

Its clinical application is limited because this treatment produces a mild congestion in the mucous membrane of the nose, and symptoms of rhinitis. These symptoms usually last about one hour. Before this method is available for clinical use, one must establish the proper dosage. The authors are now investigating these problems.

6068

Antiurease Formation in the Hen.

STACEY F. HOWELL. (Introduced by James B. Sumner.)

From the Department of Physiology and Biochemistry, Medical College, Cornell University, Ithaca, N. Y.

Although urease is very toxic when injected into mammals it has very little effect upon the hen unless urea is injected simultaneously. This is to be accounted for by the low urea content of hen's blood, which has been found to be about 1 mg. per 100 cc., or even less, in the 8 hens tested. From 800 to 17,000 units of urease were injected at one time, into a wing vein or directly into the heart. The white leghorn hens were observed following the injection and samples of blood and feces were analyzed for ammonia, urea, uric acid and urease. The injected urease disappeared from the blood within 4 hours after the injection and did not appear in the feces. Following injection of urease the blood urea disappeared entirely, its place being taken by ammonia. The uric acid content of hens' blood (2.0-4.0 mg. per 100 cc.) was not apparently affected by destruction of the urea, as might be expected if urea were a necessary precursor of uric acid. Examination of the feces showed that the reaction becomes slightly alkaline after the injection of urease.

Antiurease was formed in 8 hens by 4 to 10 injections of urease (each injection containing from 500 to 5,000 units) over a period of 30 to 50 days. Antiurease could be demonstrated in the blood about 14 days after the first injection. There was an incubation period of 7 days after the last injection. The amount of antiurease found in the hens, as determined by the method of Kirk and Sumner,¹ varied between 5 and 24 antiunits per cc. of serum. The chicken

¹ Kirk, J. S., and Sumner, J. B., *J. Biol. Chem.*, 1931, **94**, 21.

antiurease which has been obtained is similar to rabbit antiurease. It protects rabbits from a fatal dose of urease, inhibits the action of urease on urea and can be recovered and purified by the method described by Sumner and Kirk.²

One of the most important points brought out by this work is that although urease does not cause visible poisoning in the hen, nevertheless antiurease is formed.

6069

Occurrence of a Silico-carbohydrate Derivative in Animal Tissue.

J. M. JOHLIN.

From the Department of Biochemistry, Vanderbilt University School of Medicine, Nashville.

Although silicic acid has long been known to occur in practically every tissue of the living organism there has been no evidence that it is in combination with organic matter as are, for example, sulphuric and phosphoric acids. Drechsel¹ long ago reported its occurrence as an ester of cholesterol in bird feathers but there has been no confirmation of his observation since.

Kraut² has recently reported that the silicic acid content of human blood is constant in any one individual at different times, that it varies considerably in different individuals and that a temporary variation can be brought about in any one individual by the administration of silicates.

By the electro-dialysis of gelatin, ox tendon, horse and ox-blood, and human urine, the writer has recovered, at the cathode, small amounts of a jelly-like substance, containing both silicic acid and organic matter, and giving a test for carbohydrates. This substance is insoluble* in water, in 5% hydrochloric acid and in dilute alkali. It chars when heated on platinum and discolors concentrated sulphuric acid when heated. A suspension in water slowly gives the Molisch test for carbohydrates. It is changed by heating with 10%

² Sumner, J. B., and Kirk, J. S., *Zeit. für Physiol. Chem.* in press.

¹ Drechsel, E., *Centrbl. Physiol.*, 1897, **11**, 361.

² Kraut, H., *Hoppe Seyler's Z. Physiol. Chem.*, 1931, **194**, 81.

* The substance carried by the electric current is soluble. It appears to become insoluble in the process of its recovery by evaporation following saturation with CO₂.