Thus these results obtained by the method of Stewart and White[1] indicate the utilization of the fat of the blood by the muscles of diabetic dogs.

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The So-called Hyperglycemic Action of Insulin.

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Collens and Murlin[1] have recently reported that the portal injection of insulin into dogs, in dosage of 0.05 to 0.1 unit per kilo weight, results in an immediate sharp rise of blood sugar of 20 to 80 mg. The rise occurs within 5 minutes and is then followed by a rapid decline. No such rise occurs following the systemic injection of the same dose of insulin. Bürger and Kramer[2] at about the same time reported that the injection of 10 to 20 units of insulin into the cubital vein of human beings produces a rise of blood sugar averaging 11.5%; intrajugular injection of 40 units into dogs of about 20 kilograms causes a rise averaging 28%; intraportal injection results in a rise averaging 46%. The rises occur within 5 minutes and are followed in 10 to 30 minutes by a rapid fall. In both of these reports, the results are interpreted as showing that insulin has a glycogenolytic action on the liver and that the hyperglycemia is a physiological or normal response to this action. Since such an action of insulin would have a bearing on work we were carrying out, we have gone into the matter in order to have a clearer understanding of its significance.

We have carried out experiments on dogs, corresponding to those described in the reports cited. We employed the Lilly insulin, as did Collens and Murlin, whereas the Burroughs Wellcome product was used by Bürger and Kramer. Using small doses, 0.1 unit per kilo, we obtained no rise in blood sugar on intrajugular injection, but a rise followed intraportal injection. Our maximum rise, however, was 15 mg. as compared to the 20 to 80 mg. rise of Collens and Murlin. With the larger dosage, 2 to 3 units per kilo (40 units total), we obtained a rise on intrajugular injection of 5 to 10%, and

[1] Collens, W. S., and Murlin, J. R., PROC. SOC. EXP. BIOL. AND MED., 1929 xxxvi, 485.

[2] Bürger, M., and Kramer, H., *Ztschr. f. d. ges. exp. Med.*, 1929, lxv, 487.

on intraportal injection of 15%, as compared to the 28% and 46% averages of Bürger and Kramer. Our results, however, are confirmatory of the ones reported in regard to the occurrence of a rise.

Through the kindness of Doctor Geiling we were able to secure some crystalline insulin prepared in the Johns Hopkins laboratory, and we have repeated our experiments, using instead of the Lilly insulin, the crystalline product in corresponding dosages.

When this crystalline insulin is injected intrajugularly, or intraportally in dosages of 0.1 unit or 2 to 3.5 units per kilo a fall of blood sugar comes on within 6 to 10 minutes with no rise at 3 to 6 minute intervals after the injection. Since the only difference in procedure here is in the form in which the insulin is administered, it appears that the hyperglycemia when obtained, is not a true insulin action, but is due to some substance in the commercial products, which acts particularly on the liver. Fisher's[3] experiments in which he showed that there could be obtained from the pancreas and other tissues, a toxic substance which among other actions, caused a rise in blood sugar, are of interest in this connection.

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Influence of Acid and Base-Forming Feeding on Growth.

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Lack of accord between infant feeding practice and metabolic principles has led to the present investigation. The effects of natural acid- and base-forming diets on the growth and metabolism of young rats have been studied from the physical, chemical and pathological standpoints.

Comparative studies were made on 2 groups of 22 and 25 young albino rats weighing between 30 and 35 gm. Litters of the same stock and age were maintained on acid- and base-forming dietaries, in sunlight and in darkness, during all the seasons.

At the end of 28 weeks the dietary acidity and alkalinity showed marked effect on the animals. The acid-forming diet depressed on the average the serum phosphorus from 6.1 to 5.7, the alkaline reserve from 48 to 44 vol. per cent, and total base from 148 to 137

[3] Fisher, N. F., *Am. J. Physiol.*, 1923, lxvii, 57.