

buret, 5.7 per cent N, 2.4 per cent $\text{NH}_2\text{—N}$, 2.0 per cent P, 1 per cent S.

This is a preliminary report.

¹ Minot, G. R., and Murphy, W. P., *J. Am. Med. Assn.*, 1926, **lxxxvii**, 470.

² Dudley, H. W., Rosenheim, M. C., and Rosenheim, O., *Biochem. J.*, 1924, **xviii**, 1266.

³ Newton, E. B., Benedict, S. R., and Dakin, H. D., *J. Biol. Chem.*, 1927, **lxxii**, 367.

3511

The Metabolism of Acetic Acid in Phlorhizin Diabetes.

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Geelmuyden¹ has stated that acetic acid is convertible into glucose, as demonstrated by the production of extra sugar after the subcutaneous injection of the sodium salt into phlorhizinized dogs. He therefore assumes that it is an intermediary product in the hypothetical conversion of fat to carbohydrate. This investigator fails to call attention to an experiment of Ringer and Lusk² in which the oral administration of 10 grams of sodium acetate failed to elicit any additional sugar formation in a phlorhizinized dog.

The question was of sufficient interest to warrant the carrying out of additional experiments. We have been unable to give large doses of sodium acetate by mouth on account of its non-absorption, due to the violent catharsis which it produces, although in the experiment of Ringer and Lusk absorption was evidently complete. Three experiments have been made in which the substance was introduced intraperitoneally in amounts as great as 27 grams, and six tests in which it was injected subcutaneously. There was no indication from these results on completely phlorhizinized animals of any tendency of this substance to form glucose.

The excretion of volatile acids in the urine increases somewhat after the administration of the sodium acetate, but not sufficiently to account for any considerable percentage of the acetic acid injected. The conclusion is that acetic acid is not convertible into glucose nor largely excreted as such by a phlorhizinized dog. It

must be largely oxidized. The hypothesis that fat may be transformed into glucose based on such evidence is, therefore, not valid. This is a preliminary report.

¹ Geelmuyden, H. C., *Ergeb. d. Physiol.*, 1923, xxii, 51.

² Ringer, A. I., and Lusk, G., *Z. f. physiol. Chem.*, 1910, lxi, 106.

3512

pH Concentration of Intestinal Contents of Dog, with Special Reference to Inorganic Metabolism.

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(Introduced by Wm. J. Gies.)

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Ten dogs were fed a normal diet (125 gm. meat, 100 gm. cracker meal, 30 gm. bone ash, 15 gm. lard, 300 cc. water); 3 dogs were fed a diet comparatively high in carbohydrate (25 gm. meat, 150 gm. cracker meal, 30 gm. bone ash, 30 gm. lard, 350 cc. water); 2 dogs were fed a high protein diet (300 gm. meat); and 2 a diet high in fat (50 gm. meat, 50 gm. cracker meal, 30 gm. bone ash, 180 gm. lard).

Fifteen dogs were fed a diet which has been shown by Mellanby³ to produce rickets in young dogs (175 cc. milk, 200 gm. white bread, 2 gm. NaCl). Of these, 4 were also fed 10 cc. of cod-liver oil daily; and 5 were irradiated with ultra-violet light for periods ranging from 40 min. to 3 exposures of 45 min. each on consecutive days. Four to six hours after the last feeding the dogs were killed by intravenous injection of amytal, and the alimentary canal removed. The contents of the stomach, duodenum, 2 ft. sections of the intestine, the caecum, and the colon were obtained and the pH determined.

112 determinations (15 dogs) were made both electrometrically and colorimetrically. In the other determinations the colorimetric method was used. Comparison of the two methods justifies reliance on comparative results as obtained colorimetrically. The average error of the colorimetric method, as compared with the electrometric, was 0.2 of a pH unit; the maximum difference was 0.39, and the minimum 0.1; in every case the error was minus.

The average acidities, in terms of pH, are shown in the table. The variations are indicated in the chart.