phate which in turn is split into 2 triose-molecules; probably methylglyoxal results. Part of the methylglyoxal is then oxidized to acetic acid and CO_2 by dehydrogenation as suggested by van Niel[10] and Wood and Werkman.[3] Hydrogen arising from this oxidation serves in the reduction of methylglyoxal to α-hydroxy-propionaldehyde and its reduction to propionaldehyde. The conversion of this latter compound to propionic acid occurs as described above. It is of course not proven that propionaldehyde does occur normally in the propionic acid fermentation. It may be formed only under abnormal conditions. For example, fixation of α-hydroxy-propionaldehyde might lead to the formation of propionaldehyde by blocking the production of lactic acid.

Although α-hydroxy-propionaldehyde has not been identified in the propionic acid fermentation, the occurrence of an α-hydroxy intermediate compound is supported by the fact that under certain conditions the authors have been able to demonstrate considerable quantities of lactic acid in glucose fermentations. It is acceptable that lactic acid is formed by hydration and subsequent dehydrogenation of α-hydroxy propionaldehyde. It is reasonable to assume, since lactic acid is fermented by the propionic acid bacteria, that it may also be intermediate in the formation of propionic and acetic acids. This conversion of α-hydroxypropionic acid or lactic acid to propionic acid also lends direct support to the proposed dissimilation of α-hydroxypropionaldehyde to propionaldehyde.

It is reasonable to accept that propionic acid is formed by more than one series of reactions, namely, through the intermediates lactic acid and propionaldehyde, and possibly according to van Niel's scheme.[10]

7383 C

The "Fat-Metabolism" Hormone and Hyperglycemia.

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The finding of Anselmino and Hoffman,[1, 2] that a fraction from the anterior pituitary, when injected into rats, markedly increases

10 Van Niel, C. B., *Dissertation*, Delft, 1928.

1 Anselmino and Hoffman, *Klin. Woch.*, 1931, **10**, 2380.

2 Anselmino and Hoffman, *Klin. Woch.*, 1931, **10**, 2383.

the acetone bodies in the blood, received support from the work of Funk,[3,4] who, using rats as test animals, showed that this peculiar "fat-metabolism" hormone is present in the urine of pregnancy and in normal urine. Funk records large increases in urinary acetone bodies. Katzman and Doisy,[5] using their method for getting the gonadotropic factor of pregnancy urine, find that hyperglycemia is produced by these extracts. They worked with rabbits.

Believing that Funk, on the one hand, and Katzman and Doisy, on the other, were working with an extract which contained the same active material, we prepared our extracts according to Funk's method and tested them on rabbits for blood-sugar, according to Katzman and Doisy. In addition, we also determined acetone bodies in the blood. The results are presented in Tables I and II.

TABLE I.
Glucose.

Preparation No.	Urine equivalent of extract injected (Liters)	Initial blood sugar (Mg. %)	Maximum blood sugar (Mg. %)	% Increase	Time elapsed before maximum value (Hrs.)
1	3	126	353	180	3
2	1.95	94	144	53	6
3	1.8	144	180	25	3
4	3	98	155	58	3
5	3	84	140	67	2
6	3	105	322	207	3
7	2.4	112	133*	19	½
8	3	90	165	83	1

*Rabbit died at the end of the first hour after injection.

TABLE II.
Acetone.

Preparation No.	Urine equivalent of extract injected (Liters)	Initial blood acetone (Mg. %)	Maximum blood acetone (Mg. %)	% Increase	Time elapsed before maximum value (Hrs.)
3	1.8	35.42	135.24	282	2
4	3	9.66	16.9	75	¼
5	3	8.1	16.1	99	2
6	3	12.9	27.4	112	2
7	2.4	32.2	61.18*	90	½
8	3	19.32	74.06	283	1

*Rabbit died at the end of the first hour after injection.

[3] Funk, C., *Biochem. J.*, 1932, **26**, 619.

[4] Funk, C., *Proc. Am. Soc. Biol. Chem.*, 1933, **8**, 43.

[5] Katzman, P. A., and Doisy, E. A., PROC. SOC. EXP. BIOL. AND MED., 1933, **31**, 315.

Not only do we get hyperglycemia comparable to that obtained by Katzman and Doisy, but we also get a very definite increase in the acetone in the blood. We also get a decrease in CO_2-combining power and an increase in lactic acid. We may add that, aside from one result which appears anomalous, all attempts so far to obtain appreciable increases in urinary glucose and acetone have failed.

It is, perhaps, somewhat premature to interpret the significance of these results. However, as a tentative hypothesis, we may regard this anterior pituitary-like substance eliminated in the urine as being involved in carbohydrate metabolism, primarily, and in fat metabolism, secondarily.

The method of preparing the extract is as follows: To 3 liters of urine (we have used the urine of males from the ages 18-22) are added, very slowly, and with violent stirring, 90 gm. of benzoic acid dissolved in a minimum quantity of alcohol. The product is filtered and the precipitate is suspended in a volume of alcohol equal to the amount used for dissolving the benzoic acid. After considerable stirring at room temperature, the material is centrifuged, the supernatant liquid poured off, and the residue again suspended in alcohol —this time using one-half the original volume. The product is centrifuged. The supernatant liquid is poured off and ammonia is added to the residue until the suspension reacts just pink to phenolphthalein. The suspension is centrifuged and the supernatant liquid, which is the required extract, is poured off. The final extract should not be used unless it is at a pH 8-9. Our extracts are so prepared that 10 cc. of the final product is equivalent to 3 liters of urine.

7384 P

The Velocity of Blood Flow in Part of the Pulmonary Circulation.

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It is possible to time the velocity of the blood current in man, starting, for example, from the median basilic vein in the elbow and ending at the alveoli of the lungs. The intervening distance may be considered as a constant circuit, part of the pulmonary circulation. The time needed for blood to traverse this intervening distance was carefully noted in conditions of health and disease. This report, based on studies in man, describes the technique of the method em-