CVII. ESTIMATION OF ALLANTOIN IN PRESENCE OF URIC ACID, CREATININE AND AMINO-ACIDS.

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IN a study of the excretion of uric acid and allantoin in normal and diabetic dogs we found it of importance to know if higher values than usual of uric acid, creatinine and amino-acids were of any influence on the results of the allantoin estimations.

The method used for the estimation of allantoin was that of Wiechowski [1908, 1910, 1913]. The principle of the method is as follows: the urine is precipitated with phosphotungstic acid and basic lead acetate; HCl is removed and the heavy metals precipitated; in the last filtrate the allantoin is precipitated at neutral reaction by 1 % mercuric acetate solution in 20 % sodium acetate.

The estimation of allantoin is then accomplished either by estimating the nitrogen in the precipitate, or by treating the precipitate with H₂S, whereby the allantoin is set free; after crystallisation the allantoin is weighed.

The following estimations have been made:

	Allantoin estimated by the N in the Hg- precipitate (g.)	Allantoin weighed after crystallisa- tion (g.)
(1) 0.1 g. allantoin 50 cc. of urine containing 0.02 g. uric acid	0.099	0.089
(2) 0.1 g. allantoin 0.1 g. creatinine 50 cc. human urine con- taining 0.02 g. uric acid	0.098	0.091
(3) 0.1 g. allantoin 0.1 g. alanine 0.1 g. leucine 50 cc. human urine con- taining 0.02 g. uric acid	0.161	0.091
(4) 0.1 g. allantoin 50 cc. distilled water	0.092	0.087
(5) 0.1 g. allantoin 0.1 g. alanine 0.1 g. leucine 50 cc. distilled water	0.133	0.089
(6) 0.1 g. allantoin 0.01 g. alanine 0.05 g. leucine 50 cc. distilled water	0.099	0.090

In each case the solution also contained 50 cc. of distilled water, 5 cc. 1 % H_2SO_4 and 5 cc. 50 % acetic acid.

It appears from these results that the estimation of allantoin by Hg-precipitation gives lower values in water solution than in urine (4 and 1). In urine the whole amount of allantoin apparently is recovered (1). This result, however, must be due to precipitation of other nitrogenous constituents than allantoin, as appears from (3) and (5), where apparently more allantoin is recovered than the amount which was in the solution. Even when present in small amounts other nitrogenous substances have a marked influence as appears from a comparison between (6) and (4).

The results of estimation by weighing are constant, but about 10 % too low, which may be due to loss in crystallisation.

CONCLUSIONS.

It may be concluded from these results that the estimation of allantoin by Hg-precipitation gives figures for the amount of allantoin in aqueous solution, not more than 10 % below the real amount.

In presence of amino-acids in small quantities, and of creatinine and uric acid in quantities such as are contained in normal urine, the figures for allantoin by the same method are higher and closer to the real amount of allantoin.

When amino-acids are present in larger amounts (0.2 %) the figures for allantoin are too high.

REFERENCES.

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