LXXVII. STUDIES IN THE SULPHUR METABOLISM OF THE DOG.

X. THE EFFECT OF ISOBARBITURIC ACID ON THE EXCRETION OF NEUTRAL SULPHUR AND ETHEREAL SULPHATE.

BY NORMAN RISBOROUGH LAWRIE AND
NORMAN WINGATE PIRIE.

From the Biochemical Laboratory, Cambridge.

(Received March 31st, 1932.)

IN the course of some work on the metabolism of pyrimidines Stekol and Cerecedo [1931] observed that a dog did not excrete any neutral sulphur in its urine after the administration of *isobarbituric acid*. They found that *isodialuric acid* and *formylloxaluric acid* had a similar effect. We have two reasons for distrusting these conclusions. Firstly, the complete elimination of neutral sulphur from the urine could only occur if the pyrimidine were altering the course of metabolism of a large number of different substances. It seems to us that such an effect is very unlikely. Secondly, Cerecedo himself [1930], in some earlier work on the metabolism of *isobarbituric acid*, did not find any such effect.

We have fed *isobarbituric acid*, in quantities similar to those used by Cerecedo, on six occasions and have been quite unable to verify the conclusions of Stekol and Cerecedo. These experiments were the first that had been carried out on one of the dogs (Ann) while the other dog (Patsy) had been used previously for metabolic work. It is possible that the effect observed by Stekol and Cerecedo was due to some abnormality in their dogs, the result of earlier metabolic work with other pyrimidines.

EXPERIMENTAL.

The technique used and the diet fed were the same as those described already from this laboratory [Hele, 1924; Hele and Pirie, 1931].

The results of the experiment on Patsy are shown graphically (Fig. 1). The two experiments on Ann (11 kg.) gave similar results. In the first of these a crude sample of *isobarbituric acid* was used, since it was possible that some impurity was the cause of the effect observed by Stekol and Cerecedo. In the second experiment with Ann, and in the four experiments with Patsy, pure *isobarbituric acid*, prepared by the method of Davidson and Baudisch [1925], was used.

It is clear from the figure that there is no diminution in the neutral sulphur after feeding *isobarbituric acid*. There is in fact a tendency for the neutral sulphur to rise, this may be due to the toxicity of the substance although it never seemed to cause any vomiting or loss of appetite. Our results are in

Fig. 1. Patsy, 8.2 kg. 2.5, 2.3, 2.2 and 3.5 g. of *isobarbituric acid* given orally on the 4th, 9th, 11th and 13th day.

agreement with those of Stekol and Cerecedo in showing that *isobarbituric acid* is very readily conjugated with sulphate by the dog.

SUMMARY.

isoBarbituric acid does not cause the disappearance of the neutral sulphur fraction from a dog's urine.

It is readily conjugated with sulphate.

The expenses of this work were in part covered by a grant to Dr T. S. Hele from the Government Grant Committee of the Royal Society.

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