V. THE GUANIDINE CONTENT OF FAECES IN IDIOPATHIC TETANY.

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SINCE the condition of tetany has sometimes been ascribed to gastro-intestinal disturbances, and since the work done in this Laboratory has associated it with guanidine intoxication [Noël Paton and Findlay, 1917], the possibility that it may be due to absorption of guanidine from the intestinal tract has to be considered. Against this possibility is the fact observed by Findlay that large doses of guanidine may be administered by the mouth to kittens without producing symptoms. On the other hand it is possible that guanidine may be partly excreted from the intestine. The work of Burns indicates that it is not all eliminated in the urine [Burns, 1917].

I have therefore made some examinations of the faeces of normal children and of those suffering from tetany. The material was procured from The Royal Hospital for Sick Children, and I am indebted to Dr Leonard Findlay.

METHOD.

Entire specimens of daily excretion of faeces were collected from various normal and tetany cases and weighed. Aliquot parts were subjected to the following process for the extraction of bases, within an hour of being passed, to avoid any possible decomposition.

30 to 50 g. of the moist faeces were mixed thoroughly in a mortar with 100 cc. of water. A little chloroform and thymol were added and the whole placed in a dialyser with a parchment membrane. This was surrounded by 200 cc. of water, put in a cool place and dialysis continued for three days. The dialysate was then washed into a beaker, more water added to the first beaker and dialysis continued for a further two days. The two dialysates were united and evaporated down to a syrup. Ammonium, potassium and excess of sodium were taken out with chloroplatinic acid in the usual way, and the platinum removed by sulphuretted hydrogen. The sulphuretted hydrogen was then evaporated off and the bases precipitated in the filtrate with saturated alcoholic picric acid.

Almost immediate formation of crystals was observed. Small bunches of yellow needle-shaped crystals formed. These were very insoluble in water and gave long needle-shaped forms on recrystallisation from water.

The melting point of these crystals was 230° and the nitrogen content was 25 per cent. These figures agree closely with those for dimethylguanidine.

A loss of about 5 per cent. is incurred by this method, but by using the quantities above-mentioned this is constant and may be corrected for. This loss was determined by adding a weighed quantity of a guanidine salt to normal faeces and proceeding as above. The differences indicated in the tables below are far outside any loss in analysis. The process has the advantage in this case of easily eliminating all the suspended matter without the use of precipitants, which is very troublesome in faeces.

Tetany faeces. Age, from 1-2 years.

No.	Daily wt. of fresh faeces	Dimethylguanidine per cent.	Daily excretion of dimethylguanidine
1	25 g.	0.080	0.020 g.
2	30 „	0.074	0.022 „
3	22 „	0.070	0.015 „
4	20 „	0.078	0.016 „

Normal faeces. Age, from 1-2 years.

1	15 „	traces	—
2	12 „	0.028	0.003 „
3	13 „	0.018	0.002 „
4	16 „	minute traces	—
5	18 „	„ „	—
6	11 „	„ „	—

CONCLUSIONS.

The average percentage of this base in the four tetany cases examined was 0.075 per cent. of the moist faeces. In the six normals only faint traces were detected, averaging 0.007 per cent.

The average daily excretion of guanidine by the bowel in children suffering from tetany according to the present investigation is 0.018 g. as dimethylguanidine.

The work was done under The Medical Research Committee.

REFERENCES.

- Burns (1917). *Quart. J. Exp. Physiol.*, 10, 3 and 4, pt. 7.
 Noël Paton and Findlay (1917). *Quart. J. Exp. Physiol.*, 10, 3 and 4, pt. 4.