A SENSITIVE TEST FOR THE DETECTION OF ARGEMONE OIL

RECENT investigations, specially of R. B. Lal and co-workers, incriminating argemone oil as the factor responsible for the production of epidemic dropsy, have naturally aroused considerable interest. The present author pointed out some anomalies of this theory and also reported that a sample of mustard oil prepared in a special way from mustard seeds free from those of *Argemone mexicana* was positive to so-called physical and chemical tests for epidemiologically incriminated mustard oil. The nitric acid test which has been used so long for qualitative and quantitative purposes is far from satisfactory since it is not at all a specific test for argemone oil and is given by a large number of other substances.

It has now been possible to develop a very simple and sensitive test for argemone oil. This will enable us to detect the presence of argemone oil in mustard oil up to a concentration of 1 per cent. and can be conveniently used as a routine procedure.

The test may be carried out by heating in a water-bath 2 c.c. of the suspected oil with concentrated hydrochloric acid, ethyl alcohol and ferric chloride solution when an orange-red precipitate will be formed in the lower acid layer or may be collected at the acid-oil interface. If the conditions are favourable this precipitate may be converted into beautiful orange-red fibrous crystals.

The importance of this test lies in the fact that three proved potent (dropsy-positive) samples of mustard oil are negative to this test showing that *the samples do not contain argemone oil even in the concentration of* 1 *per cent.* There is another peculiarity of this test. In the case of the proved potent mustard oils, the oily layer turns deep black while it is faintly tinted, if at all, in the case of fresh and pure 'ghanni' mustard oil. There are indications that this test may be used to detect impure mustard oil. Full details will be presented elsewhere.

I may add that these tests have been kindly verified by Prof. S. N. Bose, F.N.I., to whom my best thanks are due.

S. N. SARKAR.

Biochemistry Section,
Chemical Laboratories,
The University, Dacca,
August 25, 1941.

AN IMPROVED VOLUMETRIC METHOD FOR THE ESTIMATION OF URIC ACID

Two disadvantages of the usual titrimetric procedure,[1] for the estimation of uric acid in urine are (*a*) the tedious necessity to wash the precipitate free from chlorides and (*b*) the absence of a clear end-point with permanganate. Ceric sulphate overcomes both these defects in that (*a*) the reagent can be used in high concentrations of chloride,[2,3] thus obviating the necessity for washing the precipitate chloride-free and (*b*) an exceedingly sharp end point is obtained with *o*-phenanthroline-ferrous complex indicator.[4,5]

Theoretical values having been obtained with pure solutions, and with synthetic urines containing known amounts of uric acid, the method finally adopted for the determination is as follows:—

A suitable aliquot is pipetted into a centrifuge tube, sufficient ammonium chloride added to make the salt concentration 20%, and dissolved by gentle stirring if necessary. Strong ammonia (1 c.c. of sp. gr. 0·88 for 10 c.c. liquid) is now added, the contents thoroughly mixed, and set aside for two hours. The precipitate is then centrifuged, the supernatant liquid decanted off and the sides of the tube well drained. It is then washed with a saturated solution of ammonium chloride containing ammonia (5 c.c. of sp. gr. 0·88 for 100 c.c.), and afterwards taken up in 1 : 1 HCl (10 c.c.) treated with sulphuric acid (5 c.c. 1 : 1), and an excess of 0·02 N ceric sulphate, as indicated by a persistent light yellow colour of the mixture. The contents are diluted to about 100 c.c. making the final concentration

0·5–1·0 N in sulphuric acid, and the excess of ceric sulphate titrated with 0·01 N ferrous ammonium sulphate (connected to a microburette over alkaline pyrogallol), using o-phenanthroline indicator. Just before use this indicator is oxidised to the neutral point (purple) with ceric sulphate, and two drops of the neutralised indicator are used for each titration.[6] The uric acid content is calculated from the quantity of ceric sulphate used up, 1 c.c. of 0·02 N ceric sulphate corresponding to 1·68 mgm. uric acid.

The recovery of added uric acid in 3 samples of urine by this method were as follows:—

Uric acid content of urine	Uric acid added	Uric acid found
mg.	mg.	mg.
19·59	5·00	24·53
20·73	10·00	30·52
21·91	25·00	45·94

The stability of ceric sulphate in dilute solutions considerably enhances the usefulness of the method. With slight modifications it can also be adapted to the estimation of uric acid in avian excrement and similar biological materials rich in uric acid. Full details of these procedures will be published elsewhere.

Y. V. Narayanayya.

Department of Biochemistry,
Indian Institute of Science,
Bangalore,
June 17, 1941.

1 *Practical Physiological Chemistry*, Cole, S. W., 1933, 9th Edn., p. 326.
2 *J. A. C. S.*, 1928, **50**, 1322.
3 *J. Chem. Educ.*, 1934, **11**, 466.
4 *J. A. C. S.*, 1931, **53**, 3908.
5 *Ibid.*, 1933, **55**, 3260.
6 *Jour. Biol. Chem.*, 1938, **123**, 199.

TOP-ROT ('TWISTED TOP' OR 'POKKAH BONG') OF SUGARCANE, SORGHUM AND CUMBU

Top-rot or 'pokkah bong' of sugarcane is prevalent in Java, Australia, Louisiana and Hawaii (Martin, 1938)[1] and has also been recorded from India (Subramaniam, 1936).[3] During the year 1940, the same disease was noticed in South India at Kulitalai in May and at Coimbatore in December. In both the places the disease broke out after the rains. The spindle was distorted and the shortened leaves were rolled into whiplike structures. Reddish brown patches were present on the sheaths and base of blades and the tissues were torn. The end of the whip had turned brown and rotted. In extreme cases the terminal portion of the stem also rotted. The discoloured portions on incubation produced growths of *Fusarium moniliforme* Sheld.

A 'twisted top' disease of sorghum was for the first time observed in October 1939, on the Central Agricultural Station, Coimbatore. The affected plants had the upper leaves linked together forming arches. The tips of the younger leaves were rolled inside those of the older ones. This process was repeated until most of the leaves of the plant formed a series of arches one over the other on one side of the plant. The upper nodes were shortened and usually the earheads were not produced (Fig. 1). The rolled tips were brown and in moist weather a growth of fungus was seen on the surface. The disease was again noted in November-December 1940. On all these occasions it was observed only after the rainy weather. The rolled tips produced on incubation growths of *F. moniliforme*.

In July 1940, a similar disease was noticed on cumbu (*Pennisetum typhoides*) at Coimbatore. The plants were stunted and the top leaves were shortened, twisted and rolled into one another. No earhead was developed (Fig. 2). The blade of some of the leaves had dwindled down and what was left was brown and split up. The rolled portions had partly