

only. The alkaloidal crystals obtained by Katti and Shintre, and also obtained by us by following their method, were not free berberine but salts of berberine and, therefore, naturally did not give the melting point of pure berberine. Presumably they were salts of two different acids, as they obtained crystals with two different melting points. It was not thought to be of sufficient importance to isolate and identify these acids.

EXPERIMENTAL

The drug was purchased from a local dealer and identified in the botanical department of the University College.

The powdered air-dried stem (180 gms.) was defatted with petrol and soxhleted with alcohol. From the alcoholic extract (9.2 gms.) warm water dissolved 6.2 gms. From the insoluble residue, the remaining alkaloids were dissolved out with warm 4 per cent. acetic acid and precipitated as nitrate with strong potassium nitrate solution (A).

The aqueous extract, on concentration and cooling, gave a crystalline alkaloidal material (.8 gm.; B), which was also converted to the nitrate. The aqueous filtrate, also gave a nitrate (2.6 gms.; C).

BERBERINE-ACETONE COMPOUND

0.1 gm. of the nitrate was dissolved in water (10 c.c.) and mixed with 2 c.c. of 10 per cent. aqueous sodium hydroxide, heated to 50° C. mixed with 5 c.c. of acetone and set aside. A lemon yellow powder separated. Melting point 167-169° C. (decomp.).

BERBERINE REGENERATED FROM ACETONE COMPOUND

The free base was liberated from the acetone compound by boiling 0.2 gm. of it with alcohol on a water-bath. The alcohol was driven off and the residue recrystallised from water. It melted at 145° C. both alone and after admixture with a sample of pure berberine.

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Central Research Institute, N. S. VARIER.
Trivandrum, P. P. PILLAI.
June 11, 1943.

1. Perrins, *Ann.*, **83**, 276 2. Chopra, *Indian Medicinal Plants*, p. 295. 3. Katti and Shintre, *Arch. Pharm.*, **1930**, **268**, 314-21.

CATALYSIS OF VANADATE-HYDRIODIC ACID REACTION BY THE OXALATE ION

In a previous publication¹ we reported the catalysis of the reaction between dichromate and hydriodic acid by the oxalate ion. We have carried out a survey of numerous reactions involving the oxidation of hydriodic acid by such substances as hydrogen peroxide, potassium persulphate, sodium arsenate, potassium chlorate, potassium bromate, and potassium iodate to ascertain the possible catalytic effect of oxalate ion. No catalytic effect was observed in these cases. It was, however, found that the oxalate ion has a profound accelerating action on the reaction between vanadic acid and hydriodic acid.

The reaction was followed by titration of the iodine liberated with sodium thiosulphate. The

concentration of sodium vanadate was varied from 0.025 N to 0.00025 N and that of sodium oxalate from 0.225 N to 0.0005 N. The reaction was studied in the presence of air, in vacuum, and in an atmosphere of carbon dioxide.

In seeking an explanation for the mechanism of the catalytic action of oxalate ion on these reactions, we have to take into account the numerous resemblances between chromates and vanadates. Both chromic acid and vanadic acid form poly-acids, and, possibly, complexes with oxalic acid. It seems, therefore, that in the reaction between chromate and hydriodic acid, the oxalate catalysis is more concerned with the chromate than with the hydriodic acid. This idea received further support from our recent observation² that the reaction between dichromate and hydrobromic acid is also catalysed by oxalate.

Full details will be published elsewhere.

Andhra University, C. R. VISWANADHAM.
July 6, 1943. G. GOPALA RAO.

1. Viswanadham, C. R., and Gopala Rao, G., *Curr. Sci.*, March 1942, **11**, No. 3, pp. 102-103. 2. *Ibid.*, June 1943, **12**, No. 6.

A NEW STEM-BASE DISEASE OF *ALTISSIMA* CAUSED BY A SPECIES OF *PHYTOPHTHORA*

For the first time during the year 1930 *Phytophthora* was reported¹ by this section to cause diseased lesions on the stem of *altissima* (*Hibiscus sabdariffa* Lin. var. *altissima*). *Altissima* supplies the Roselle Hemp of Commerce, and is noted for its good silky fibres, much stronger than jute and can be used in some proportion in the manufacture of ropes, cordage, etc.

The disease as observed since 1930 is characterised by the production of discoloured patches on the stem. If the stem is still green, the patch appears at first as a water-soaked, slightly yellow patch at the base of the stem; with time the lesion enlarges, darkens and becomes brown in colour and the infected tissues (the excambial layers) dry up resulting in shreds and cracks and thereby exposing the pith inside. Ultimately the leaves begin to wilt and the plants gradually dry up and die prematurely. In case they do not completely succumb, the fibres at the infected regions are damaged thereby depreciating greatly the quality of the yield.

The first infection usually takes place on the lower portion of the stem and more often near about the collar region; but the production of these lesions are confined within 2 to 3 feet from the ground level. The number of lesions in any single plant varies from a few to half a dozen and the size of the individual lesions from half an inch to many inches in length and may partially or completely girdle the stem. One or more lesions may coalesce together to form diseased surface of considerable length. If rain or very humid conditions prevail for a number of days gums are sometimes seen exuding from old and large lesions; such conditions also favour the growth of fungus mycelium from the margins of these spots.

The plant may be attacked at any stage of