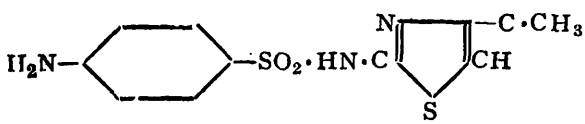
Heterocyclic and Other Derivatives of Sulphanilamide

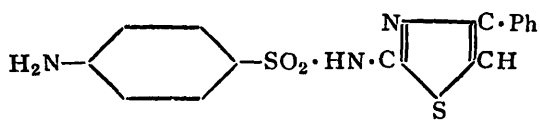
In continuation of our note,[1] a few other heterocyclic derivatives of sulphanilamide have been prepared. 2-Amino-4-methyl thiazole and 2-amino-4-phenyl thiazole have been condensed with para-acetamino benzene sulphochloride in acetone and pyridine and the products after hydrolysis with sodium hydroxide or hydrochloric acid, yielded respectively 2-N'-sulphanilamido-methyl thiazole (I) and 2-N'-sulphanilamido-phenyl thiazole (II).

Also 2-amino-anthraquinone has been condensed with para-acetamino benzene sulphochloride in a similar way and hydrolysis yielded 2-N'-sulphanilamido anthraquinone (III).

Amino-thiodiazines are also being condensed with para-acetamino benzene sulphochloride. One compound 2-N'-sulphanilamido 5-hydroxy-1 : 3 : 4-thiodiazine (IV) has been obtained by condensing 2-amino-5-hydroxy-1 : 3 : 4-thiodiazine[2] with para-acetamino benzene sulphochloride and subsequent hydrolysis.



(I)



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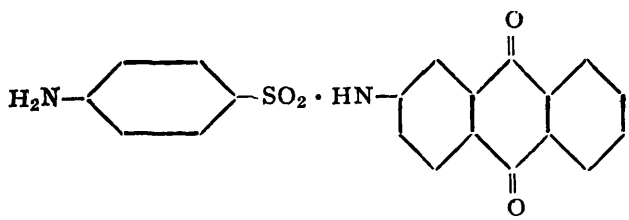

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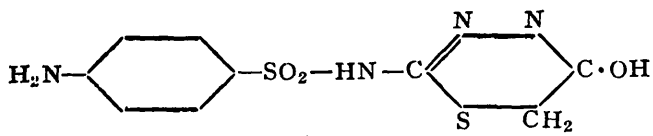


(IV)

Attempts are also being made to condense substituted thiodiazines[3,4] with para-acetamino benzene sulpho-chloride.

Detailed experiments and reports of their therapeutic value against bacterial infections will be published elsewhere.

B. K. Nandi.
K. Ganapathi.

Haffkine Institute,
Parel, Bombay,
March 20, 1940.

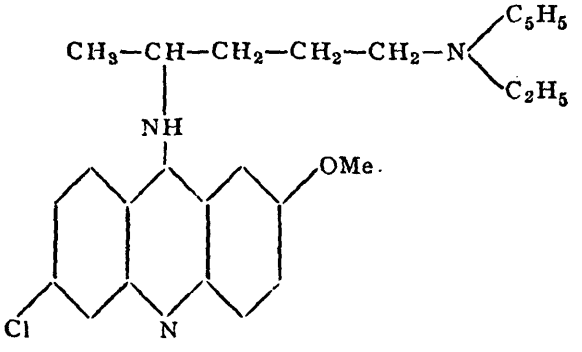
[1] Ganapathi and Nandi, *Curr. Sci.*, 1940, **9**, 67.
[2] Bose and Nandi, *Jour. Ind. Chem. Soc.*, 1930, **7**, 961.
[3] ——, *ibid.*, 1930, **7**, 733.
[4] ——, *ibid.*, 1931, **8**, 311.

Synthesis of Anti-Malarial Drugs in Acridine Series

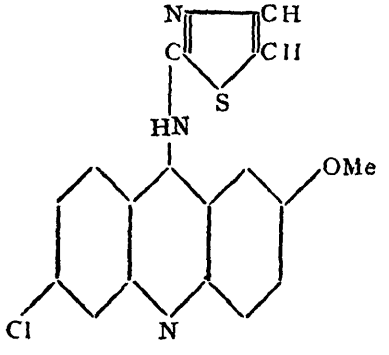
Since the synthesis of the remarkable anti-malarial drug atebrin[1] (I) various side chains have been attached to the acridine nucleus.[2] In all cases, however, the anti-malarial activity has been found to be decidedly inferior to atebrin. So far no heterocyclic or carbocyclic derivatives of 2-methoxy-6 : 9-dichloro acridine[3] seem to have been reported. Some heterocyclic and carbocyclic derivatives of 2-methoxy-6 : 9-dichloro acridine have now been prepared and their anti-malarial property is being studied in monkey malaria in this laboratory.

2-Amino thiazole has been condensed with 2-methoxy-6 : 9-dichloro acridine in phenol medium giving 2-methoxy-6-chloro-9-N-2'-thiazole-amino acridine (II) in good yield. Similarly 2-amino-4-methyl thiazole and 2-amino-4-phenyl thiazole yielded respectively 2-methoxy-6-chloro-9-N-2'-(4'-methyl thiazole)-amino acridine (III) and 2-methoxy-6-chloro-9-N-2'(4'-phenyl thiazole)-amino acridine (IV). Also 2-amino-pyridine and 2-amino anthraquinone gave respectively 2-methoxy-6-chloro-9-N-2'-pyridyl-amino acridine (V) and 2-methoxy-6-chloro-9-N-2'- anthraquinone - amino acridine (VI). In a similar way, 6-methoxy-8-amino quinoline and 2-amino-5-hydroxy-1 : 3 : 4-thiodiazine[4] were condensed in phenol medium respectively giving rise to 2-methoxy-6-chloro-9-N-8'(6- methoxy - quinoline) - amino

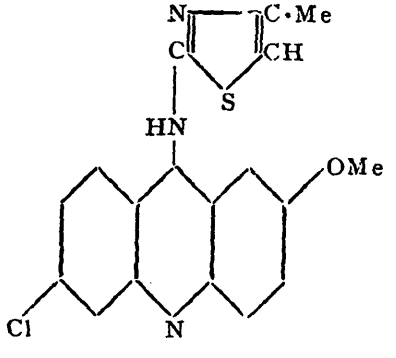
acridine (VII) and 2-methoxy-6-chloro-9-N-2'-(5-hydroxy-1 : 3 : 4-thiodiazine)-amino acridine (VIII).



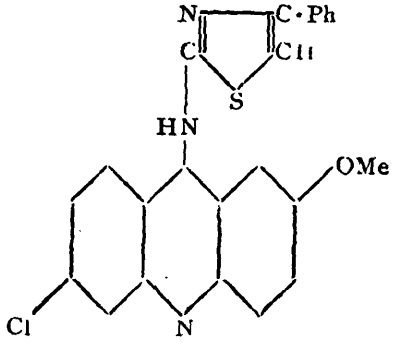
(I)



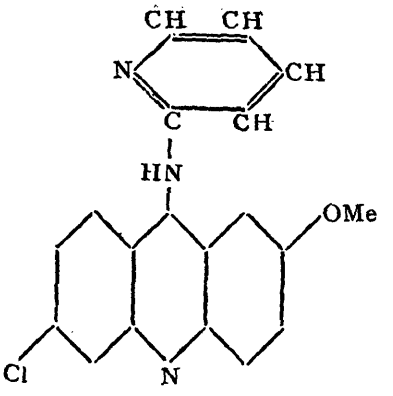
(II)



(III)



(IV)



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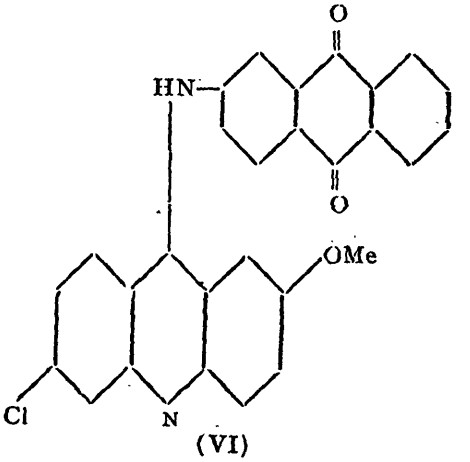

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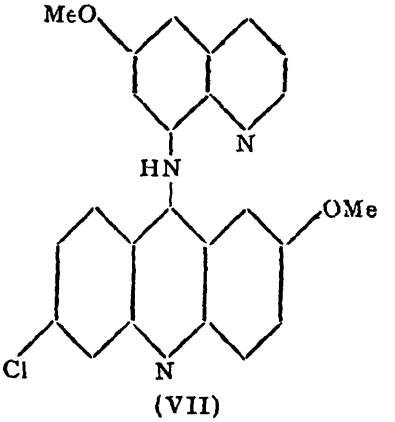
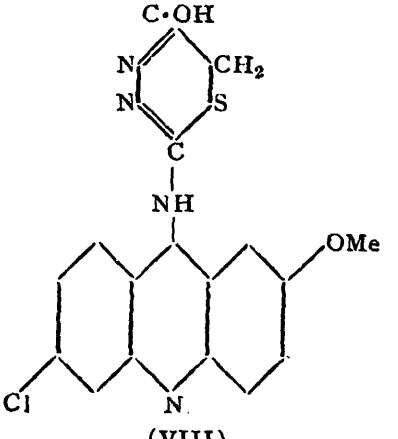


(VII)



(VIII)

The condensation of sulphanilamide with 2-methoxy-6 : 9-dichloro acridine has already been reported.[5] Acridine derivatives of other amino-thiazoles and amino-thiodiazines are being prepared.

The detailed experiments and the results of their action against malaria and bacterial infections will be reported elsewhere.

B. K. NANDI.

Haffkine Institute,
Parel, Bombay,
March 26, 1940.

[1] Mietsch and Mauss, *Klin, wchschr.*, 1933, No. 33, 12760.

[2] Magidson and Grigorowsky, *Ber.*, 1936, **69**, 396.

[3] Magidson *et al*, *Chem. Pharmaz. Ind.* (U.S.S.R.) 1935, No. 1.

[4] Bose and Nandi, *Jour. Ind. Chem. Soc.*, 1930, **7**, 961.

[5] Ganapathi and Nandi, *Curr. Sci.*, 1940, **9**, 67.

Pongamol, A New Crystalline Compound from Pongamia Oil

CRUDE karanjin extracted from the pongamia oil with alcohol[1] gave certain prominent colour reactions which were not produced by the purified compound. With concentrated sulphuric acid it gave a yellow solution which turned emerald green in the course of five minutes and when a drop of ferric chloride was added to an alcoholic solution an intense red colour was produced. This was obviously due to the existence of a second chemical entity to some extent in crude karanjin. The occurrence of this compound in pongamia seed oil and cake was investigated by means of the strong ferric chloride colour. Samples of oil and cake were extracted with alcohol and the alcoholic extracts tested with ferric chloride. Oil obtained by expression or by solvent extraction, fresh as well as old, gave positive tests. The seed cake left after pressing gave positive reaction, but not the one obtained by solvent extraction. The capacity to give the colour test is therefore closely associated with the presence of the oil, whose complete removal is the cause of the negative test with solvent-extracted cake.

The chemical compound responsible for the above bright colour reactions has now been isolated in a crystalline condition and is named "pongamol" indicating its origin and phenolic nature. It crystallises from alcohol in the form of big rhombic prisms and melts at 128–29°. It contains no nitrogen, sulphur and halogen and has the formula $C_{18}H_{14}O_4$. It possesses a methoxyl group, produces a red anthocyanin by reduction with magnesium and hydrochloric acid, gives a derivative with *p*-nitrobenzoyl chloride and yields benzoic acid on oxidation or hydrolytic fission. It therefore seems to belong to the important naturally occurring group of hydroxyflavones.

Details regarding the preparation, properties and constitution of pongamol will soon be published.

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T. R. SESHADRI.

Department of Chemistry,
Andhra University,
Waltair,
March 23, 1940.

[1] Subba Rao, Veerabhadra Rao and Seshadri, *Proc. Ind. Acad. Sci.*, 1939, **10A**, 65.

A New Disease of Wheat in India

ON March 7th, 1939, the author visited the Botanical Sub-station of the *Imperial Agricultural Research Institute* at Pusa. It was found that several varieties of wheat were suffering from foot-rot, the symptoms being suggestive of *Fusarium*. One variety, Pusa 12, had different symptoms. The plants were bleached and prematurely ripened and the ears contained only shrivelled grains. The sub-coronal internodes were found to be shiny black, and the roots were black and rotten. The symptoms were suggestive of "take-all".

Isolations were made from these plants a month later. Ten pieces of diseased tissue yielded in all seven cultures of *Fusarium* and one culture which in its mycelial characters resembled *Ophiobolus graminis* Sacc. It had the two kinds of hyphæ typical of the fungus,