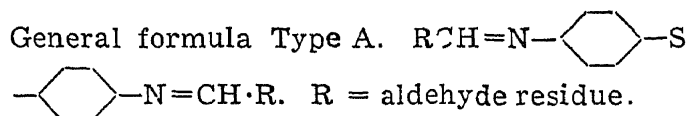


precluded their clinical use. The Schiff's bases of sulphanilamides and N'-substituted sulphanilamides have all been found to be very effective against bacterial infections.⁴

Considering the above facts it was thought worthwhile to synthesise a few typical Schiff's bases (Type A) of 4-4'-diaminodiphenyl sulphide for testing their antibacterial activity. The Schiff's bases (Table I) have been prepared by reacting 4-4'-diaminodiphenyl sulphide with appropriate aldehydes in alcoholic solution and in the presence of condensing agents like zinc chloride. The resulting compounds have been crystallised from alcohol. They have been characterised and listed in Table I.

TABLE I



No.	Aldehyde used	M.P. ° C.
1	Benzaldehyde	176-177
2	m-Nitrobenzaldehyde	159-160
3	p-Dimethylamino benzaldehyde	231-232
4	p-Diethylamino benzaldehyde	155-156
5	Salicylaldehyde	207-208
6	Anisaldehyde	204-205
7	Piperonal	175-176
8	Cinnamaldehyde	178-179
9	Furfural	103-104

Details will be published elsewhere.

Organic Chem. Laboratories, M. RAGHAVAN.
 Dept. of Pure & App. Chemistry, B. H. IYER.
 Ind. Inst. of Science, P. C. GUHA.
 Bangalore.
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OXIDATION OF CYSTINE BY NITRIC ACID

BLUMENTHAL AND CLARKE¹ found that nitric acid oxidises cystine sulphur to sulphuric acid. Evans² adopted this method for the estimation of cystine in food materials by conversion to sulphate and estimating the latter as barium sulphate. He, however, observed that with pure cystine only about 62% of the cystine could be recovered as sulphate. Addition of

dextrose, soya-bean meal or fish meal along with the cystine increased the recovery to 92-98%. The following note relates to some observations made on the above reaction.

It was first observed that however long the reaction mixture of cystine and nitric acid be heated on the water-bath, the percentage recovery of cystine as sulphate was incomplete. It varied from 62.1% to 66.3%. If after heating the reaction mixture for 24 hours as suggested by Evans, dextrose be added to the reaction mixture and it is further heated for 6-8 hours, 93.6% of the cystine sulphur could be oxidised to sulphate. This experiment showed that incomplete recovery of cystine as sulphate was due to incomplete oxidation and not due to loss of cystine sulphur as oxides of sulphur during the oxidation with nitric acid.

The following table shows the effect of addition of various substances to the cystine prior to oxidation on the conversion of cystine sulphur to sulphate sulphur.

From the results (see table) it can be postulated that during the oxidation of the (-S-S-) linkage of cystine by nitric acid about 1/3 of the cystine is converted to one or more intermediate oxidation products which resist complete oxidation to sulphate by nitric acid alone. Any type of organic matter which can reduce nitric acid to lower oxides of nitrogen if added to the reaction mixture in the beginning of the reaction or at any later stage of the reaction, can catalyse the complete oxidation of these intermediate products to the sulphate stage. The fact that even inorganic substances like copper, zinc or tin which reduce nitric acid to oxides of nitrogen are capable of acting in a way similar to organic materials has to be interpreted to mean that the further oxidation of the intermediate products is brought about by the intervention of the oxides of nitrogen. Further examination of the filtrate from the Barium sulphate precipitation mixture would reveal the nature of the intermediate oxidation products.

The author's thanks are due to Dr. V. Subrahmanyam and Dr. M. R. Aswathanarayana Rao for their interest in the work.

Dept. of Biochemistry, H. S. R. DESIKACHAR.
 Indian Institute of Science,
 Bangalore,
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Note.—0.1 g. samples of cystine were taken for each estimation 2g of lactose, glucose starch, and butter fat were added along with the cystine during the digestion. The amounts of carbon, zinc, copper, and tin added along with the cystine were 1.5 g. in each case.

	Substances added								
	Control	Glucose	Lactose	Starch	Butter fat	Pure carbon	Copper	Tin	Zinc
Cystine recovered as sulphate	63.8%	95.2%	94.5%	95.8%	95.7%	96.9%	95.2%	96.7%	97.1%