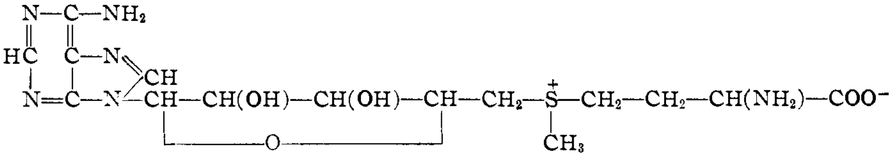
containing compound, presumably thiolribose or thiomethylribose.

On the basis of this evidence active methionine has been assigned the structure shown below.



Active methionine can be considered as an addition product of methionine and the adenosine portion of ATP, with the elimination of the inorganic tripolyphosphate chain. It should be noted also that the sulfur of methionine acquires an additional covalent bond and it is thought that formation of the positively charged sulfonium compound confers lability upon the methyl group. It is suggested that the compound formed from L-methionine and ATP by the action of the methionine-activating enzyme, which has been designated heretofore as active methionine, might more properly be referred to as S-adenosyl-methionine. On the basis of the data given above the preparation obtained by paper chromatography is at least 80% pure with relation to adenine compounds.

DEPARTMENT OF PHARMACOLOGY
SCHOOL OF MEDICINE
WESTERN RESERVE UNIVERSITY
CLEVELAND, OHIO
G. L. CANTONI

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IDENTIFICATION OF DROSOPHILIN A AS *p*-METHOXYTETRACHLOROPHENOL[1]

Sir:

Drosophilin A, an antibiotic compound recently isolated in this Laboratory[2] has been identified as *p*-methoxytetrachlorophenol.

Drosophilin A was isolated as previously described, and further purified by sublimation under reduced pressure. Analytical values[3] for a sample resublimed four times agreed with the expected for a compound of formula $C_7H_4O_2Cl_4$. Found: C, 32.19; H, 1.50; Cl, 54.05; OCH_3, 11.88. Calcd. for $C_7H_4O_2Cl_4$ (261.93) C, 32.10; H, 1.54; Cl, 54.15; OCH_3, 11.85.

Demethylation of Drosophilin A with boiling 70% hydriodic acid yielded a crystalline compound which melted at 232°,[4] and gave no melting point depression on admixture with an authentic sample of tetrachlorohydroquinone.

Methylation of Drosophilin A with ethereal diazomethane yielded a crystalline product which melted at 160° and gave no depression on admixture with an authentic sample of 1,4-dimethoxytetrachlorobenzene prepared by methylation of the Eastman-Kodak preparation of tetrachlorohydroquinone.

The melting point of the dimethyl ether agrees with that reported in the literature.[5] The monomethyl ether, as far as can be ascertained, has been described only once in the literature,[6] and the melting point reported is 103°, instead of 116° as found for Drosophilin A. Difference in the state of purity of the two samples may account for this discrepancy.

A sample of the monomethyl ether was prepared by removal of one methyl group from the dimethyl ether by treatment with warm concentrated sulfuric acid and melted at 114° alone or when mixed with Drosophilin A.

Drosophilin A is believed to be the first antibiotic compound isolated, which contains a halogenated benzene ring. The chlorine atoms of chloramphenicol, the first halogenated antibiotic compound reported, are in a side chain.

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[1] This investigation was supported in part by a research grant from the National Microbiological Institute of the National Institutes of Health, Public Health Service.

[2] F. Kavanagh, A. Hervey and W. J. Robbins, *Proc. Nat. Acad. Sci.*, in press.

[3] Microanalyses were performed by the Huffman Microanalytical Laboratories, Denver, Colorado.

[4] All melting points are uncorrected.

[5] A. Binz and C. Räth, *Ber.*, **58**, 309 (1925).

[6] E. Burěs and J. Hutter, *Časopis Československ. Lékárnictva*, **11**, 29, 57 (1931) (*C. A.*, **25**, 5153 (1931)).

THE NEW YORK BOTANICAL GARDEN
BRONX PARK
NEW YORK 58, N. Y.
MARJORIE ANCHEL

RECEIVED MAY 9, 1952

DISSOCIATION MECHANISM FOR THE AQUATION OF SOME COBALT(III) COMPLEX IONS[1]

Sir:

Based on the published observations on substitution reactions of complex ions, it has not been possible to designate whether any of these reactions proceed by a displacement (S_N2) or dissociation (S_N1) mechanism. It may appear that these reactions of cobalt(III) complexes should proceed by a dissociation mechanism since the complex has an invert gas configuration which means there are no low-lying orbitals available for attack by the incoming group. However displacement reactions are known to occur with carbon compounds which likewise have an inert gas configuration.

The aquation rates of several substituted ethylenediamine complexes of the type $[Co(AA)_2Cl_2]^{+1}$ have recently been determined by us and some preliminary results are shown in Table I. It is apparent that the complex ions which contain C-substituted ethylenediamine aquate more rapidly than the corresponding ethylenediamine ion. The fact that increased crowding around the central ion does not decrease the rate suggests that these reactions

TABLE I

RATES OF AQUATION OF SOME *trans*-$[Co(AA)_2Cl_2]^{+1}$ IONS

First chlorine only, temperature 25°, *p*H 1

(AA) Diamine	$k \times 10^3$ (min.$^{-1}$)
$NH_2—CH_2—CH_2—NH_2$	1.9
$NH_2—CH_2—CH(CH_3)NH_2$	3.7
dl-$NH_2—CH(CH_3)—CH(CH_3)—NH_2$	8.4
meso	250
$NH_2—C(CH_3)_2—C(CH_3)_2—NH_2$	Very rapid

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[1] This investigation was supported by a grant from the United States Atomic Energy Commission under contract AT(11-1)-89-Project No. 2.