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SUBJECT OF INVESTIGATION

Exploration of new chemotherapeutics for infectious diseases

RESPONSIBLE INVESTIGATOR

Dr. Toju Hata, M.D.
President
Kitosato Institute for Infectious Diseases
Head of Antimicrobial Division of the said Institute

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EXPLORATION OF NEW CHEMOTHERAPEUTICS
FOR
INFECTIOUS DISEASES

Fundamental Studies on Protonymycin, an Antiamoebic
Antibiotic and Cephalomycin, an Antiviral Antibiotic

Toju Hata,
Ryozo Sugawara, Akihiro Matsumae
and
Hiroshi Yamamoto

Kitasato Institute
for
Infectious Diseases
Tokyo, Japan
We continued the studies on the degradation products of protomycin (I), of which physicochemical and biological characters has been described in the final report (2).

The main products may be summarized as follows:

Tetrahydroprotomycin (II), C_{19}H_{19}NO_{5}, was obtained by the catalytic hydrogenation with Pd-Carbon of protomycin (I) in glacial acetic acid.

3,5-dimethyl-3,5-heptadiene-2-one (III) and acetone (IV) were proved as volatile ketones arising from alkaline degradation of protomycin.

3,5-dimethyl-2-heptanone (V) and acetone (VI) were identified by alkaline degradation of tetrahydroprotomycin.

Formaldehyde (VII) and acetaldehyde (VIII) were proven by ozonolysis of protomycin.

Acetone (IX) and methylethylketone (X) were obtained from the residual aqueous solution of ozonolysis after alkaline degradation.

The oxime of tetrahydroprotomycin, although it remained oil, were treated with conc. H_{2}SO_{4} to induce Beckmann rearrangement and thereafter steam distilled from acidic solution. An acid with molecular formula of C_{10}H_{19}COOH was obtained as p-phenylazophenacyl ester (XI).

Tetrahydroprotomycin gave the benzylamine reaction product (XII), which was identified with the corresponding one from tetrahydroprotomycin.

These products from (I) through (XII) were found to be explained well by the chemical structure:

\[\text{CH}_3\text{CH}_2\text{CO}\]
\[\text{CH}_3\text{O}\]
\[\text{CH}_2\text{NH}\]
\[\text{CH}_2\text{CH}_2\text{CH}_2\text{O}\]

Tentative structure of protomycin
Cephalomycin, an antiviral antibiotic, was separated into two fractions as described in p. 17 of the final report (2). Each of these fractions gave a single spot when tested on electrophoretic paper chromatography.

The fraction A migrated as albumin and Fraction B as gamma globulin.

The activity was higher in the former than in the latter.

The result is to be made publish at the Symposium for the Antiviral substance, March 3, 1962.