

CONFERENCE ON SYNTHETIC MEDICINALS

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A session devoted to the search for synthetic medicinals was held in Erevan September 16-20, 1974. The session was organized by the Division of Biochemistry, Biophysics, and Chemistry of Physiologically Active Compounds of the Academy of Sciences of the USSR (AS USSR), the Scientific Council on the problems of bioorganic chemistry affiliated with the AS USSR, the Division of Chemical Sciences of the Academy of Sciences of the Armenian SSR (AS ArmSSR), and the A. L. Mndzhoyan Institute of Fine Organic Chemistry. Approximately 250 individuals participated in the activities of the session. In his opening paper, Academician A. A. Baev directed the audience's attention to the urgency of the problem of the specific creation of effective medicinals and to the necessity for the simultaneous responsibility for the preservation of the biosphere in every possible way. He dwelt especially on the psychological aspect of the modern state of medicine, when, on the one hand, the widespread propagation of superficial knowledge leads to an increase in self-treatment, whereas, on the other, the fear of secondary effects during treatment with drugs leads to the naive idea among the ill (but professionally incompetent idea among doctors) that we must return to medieval treatment only with plant extracts. In this connection, the establishment of deep-rooted principles of the interaction of a chemical substance (natural or synthetic) with the living organism is an important trend in the research of chemists and biochemists.

Associate Member of the AS ArmSSR Professor S. A. Vartanyan gave a review of the research accomplished by his group on the synthesis and stereochemistry of biologically active compounds of the heterocyclic series on the basis of acetylene (tetrahydrothiopyrones, tetrahydropyrones, and piperidones). Associate Member of the Academy of Medical Sciences of the USSR (AMS USSR) Professor G. N. Pershin examined the problems involved in the chemotherapy of intestinal infections mainly within the framework of a study of sulfamide preparations with prolonged action. He noted the promising character of the further study of this class of substances, particularly when they are modified by diazotization and diazo coupling with compounds that are capable of forming chelate complexes with heavy metal ions. Professor N. N. Suvorov discussed a group of chemical and biological problems of pharmaceutical-chemical protection from ionizing radiation in the case of indolylalkylamines. Experimental data obtained during his participation in research on the chemistry and pharmacology of new 1,4-benzodioxane, β -carboline, and tetrahydroisoquinoline derivatives were correlated in a paper presented by É. A. Markaryan. The research was part of a plan to ascertain the structural relationship between heterocycles and the corresponding catechol amines or their synthetic analogs. Interesting substances with an antiarrhythmic effect were found among a number of tetrahydroisoquinoline derivatives. Academician of the Academy of Sciences of the Latvian SSR (AS LatvSSR) S. A. Giller presented the results of a search for fundamentally new medicinals by modeling the structure of nucleic acids. The synthesis of furanidylpyrimidines and their fluoro derivatives was worked out with the aid of modern methods of computation and physicochemical characteristics, and this made it possible to discover a new class of antitumorigenic agents capable of selective penetration through membranes. Phosphorylation of these models gave a group of substances with pronounced antisclerotic action. A large number of new preparations are now being produced industrially and exported to other countries. Problems in the chemistry and peculiarities of the biological action of quinuclidine derivatives, primarily with respect to the appearance of that specific action which determines the peculiarities of steric factors in such three-dimensional molecules, were examined in a paper presented by Professor L. N. Yakhontov (presented in his name jointly with Associate Member of the AMS USSR Professor M. D. Mashkovskii). The proper evaluation of this specificity made it possible to create five original medicinals, which have already been incorporated in medical practice.

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Not all of the papers delivered in this session had a direct relationship with the chemistry of heterocyclic compounds. Let us note, however, that interesting data on the synthesis of substituted pyrimidines and pteridines were reported in a paper presented by M. A. Kaldrikyan, and a communication presented by R. R. Safrazbekyan was devoted to derivatives of indole, indoloquinolizidine, naphthazepine, etc. Associate Member of the AS USSR Professor L. D. Bergel'son presented a paper of fundamental importance for medicinal chemistry on the mechanism of the operation of membranes.

Upon the whole, the session, in the unanimous opinion of the participants, was extremely pithy and interesting. A recommendation for more frequent cooperative discussions of problems whose solution requires the cooperative efforts of chemists, pharmacologists, physicists, and physicians was included in the resolutions of the session.