

It follows from these facts that in involucrin the 3,4,5-trimethoxybenzoic acid occupies the same position as in ugaferin, and the acetic acid is bound to the second hydroxyl of ugamdiol at C₈; consequently, (I) has the structure of 8-acetoxy-6-(3',4',5'-trimethoxybenzoyloxy)ugamdiol.

Substance (II), an oily product with the composition C₃₀H₄₂O₈, $[\alpha]_D^{24} - 28.2^\circ$ (c 0.55; chloroform), M⁺ 530, is readily soluble in organic solvents and insoluble in water. On mild hydrolysis (3% NaHCO₃) it undergoes cleavage, forming ugaferin and angelic acid, and on severe hydrolysis (10% KOH) it gives ugamdiol, C₁₅H₂₆O₃, mp 82-83°C, $[\alpha]_D^{24} + 45.5^\circ$ (c 1.05; chloroform), 3,4,5-trimethoxybenzoic acid, C₁₀H₁₂O₅, mp 166-168°C, and angelic acid. The formation of ugaferin on mild hydrolysis shows that (II) has the structure of 8-angeloyloxy-6-(3',4',5'-trimethoxybenzoyloxy)ugamdiol.

In addition to the substances mentioned above, we also isolated two monoesters of ugamdiol, (III) and (IV). On saponification, (III) formed ugamdiol and 3,4,5-trimethoxybenzoic acid, and (IV) formed ugamdiol and 2-hydroxy-2-methylbut-3-enecarboxylic acid.

LITERATURE CITED

1. N. P. Kir'yalov, Abstracts of the Third Indo-Soviet Symposium on the Chemistry of Natural Compounds [in Russian], Tashkent (1973), p. 87.

MEDICOBIOLOGICAL ASPECTS OF THE PROBLEM OF FOOD PROTEIN (ALL-UNION SYMPOSIUM)

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The coordination of investigations in the field of the search for additional and new sources of protein which could eliminate the protein shortage in the feeding of the population was the aim of the First All-Union Symposium on the Chemistry, Biology, Isolation, and Technology of the production of Food Protein and Its Medicobiological Evaluation held in Tashkent in November, 1975. It was organized by the State Committee for Science and Technology at the Council of Ministers of the USSR, the Academy of Sciences of the Uzbek SSR, and the Academy of Medical Sciences of the USSR.

Doctors, chemists, biologists, and technologists from Moscow, Leningrad, Kiev, Kaunas, Vladivostok, Odessa, Murmansk, Krasnoyarsk, Minsk, Voronezh, Tbilisi, Tallin, Alma-Ata, and Samarkand took part in the symposium.

A greeting to the participants in the symposium was given by Academician A. S. Sadykov, who observed that the holding of the symposium in Tashkent was due to the fact that this is where there is a large scientific center - the Institute of the Chemistry of Plant Substances of the Academy of Sciences of the Uzbek SSR, where, under the direction of Corresponding Member of the Academy of Sciences of the USSR S. Yu. Yunusov, urgent problems of the chemistry and technology of producing natural compounds are being solved. At the symposium 50 lectures were delivered, six of them in plenary sessions.

Academician A. A. Pokrovskii gave a lecture devoted to the medicobiological aspects of the problem of food protein. He observed that the main role in covering the world shortage of protein must be played by the intensification of agricultural production in order to obtain traditional food products; the development of fisheries and fish farming; the fight against losses of protein during storage; the creation of products of increased biological value; the use of food protein from soybean, sunflower seed, and cottonseed meals; the stimulation of investigations in the field of protein by unicellular organisms; and investigations in the field of the possibility of producing synthetic protein.

In his lecture, the Deputy Head of the Division of the Light and Food Industries of the State Committee for

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Science and Technology at the Council of Ministers of the USSR Yu. S. Kharin gave a deep analysis of the real possibilities of the production of food products.

Great interest was caused by the lecture of Professor T. T. Shakirov where the main attention was devoted to a comprehensive technology for the processing of cotton seeds developed by scientists of the Institute of the Chemistry of Plant Substances of the Academy of Sciences of the Uzbek SSR with the isolation, not only of food protein, but also of phytin, carbohydrates, and other valuable components. It was considered that from the meal obtained in Uzbekistan (of the order of one million tons) it is possible to extract about 180-200 thousand tons of food protein.

Candidate of Technical Sciences V. P. Bykov reported on investigations being performed in the Institute of the Fishing Industry and Oceanography on the use of fish and fish products to provide the population with fish articles.

The interesting lecture of V. Yu. Rakitin from the All-Union Scientific-Research Institute of Protein Synthesis was devoted to investigations in the field of the microbiological synthesis of proteins by unicellular organisms, including yeasts, bacteria, fungi, and algae, as a source of the industrial production of protein substances for nutritional purposes. The ever-increasing interest in this source of protein in many countries of the world was caused by the high synthetic capacity of microorganisms, the great diversity and accessibility of the media for their growth, and the economic profitability of production.

There was an interesting report from Candidate of Biological Sciences I. F. Osadchaya from the Ukrainian Scientific-Research Institute of the Meat and Dairy Industry on methods for the rational utilization of a secondary raw material - blood and skim milk - for the production of food protein. Blood contains 18% of protein, and the presence in it of all the essential amino acids is responsible for its full biological value. Ukrainian scientists have suggested an effective method of clarifying blood, have investigated the food value of the product obtained, and have developed a technology for using it in the production of sausages.

Doctor of Biological Sciences É. P. Vagane reported on animal protein resources and their use in the Estonian SSR. For balancing nutrition it is possible to increase the consumption of fish by reducing the amount of fat pork to 35 kg per inhabitant per year; 78% of bakers' and confectionary articles are enriched with milk protein.

In his address, Doctor of Technical Sciences G. S. Korobkina (Institute of Nutrition of the Academy of Medical Sciences of the USSR) gave the results of investigations connected with questions of the production of soluble proteins - kazetsits - and their use for the preparation of special dietetic products - énpits.

The lecture of Doctor of Medical Sciences M. G. Kerimova was devoted to investigations of the possibility of using the autolysin of yeast biomass as a promising enrichment of grain products deficient in lysine and threonine.

Candidate of Technical Sciences R. V. Kuz'minskii reported on investigations performed in the All-Union Scientific-Research Institute of the Bakery Industry. Together with the Institute of Nutrition of the Academy of Medical Sciences of the USSR, scientists have developed a technology for producing bakers' articles of improved quality and increased food value with the addition of 5% of protein enrichments to them. A taste panel has given a favorable evaluation of experimental samples of bread.

All the other communications were also made at a high scientific level and caused great interest.

Noting the definite advances and importance of the investigations considered, the symposium adopted a number of resolutions on the production and testing of promising samples of protein of food value from unusual sources, for the improvement in technological processes for obtaining isolates of high-quality protein from plant raw material and the products of microbiological synthesis, on the introduction into nutritional practice of already approved food proteins and protein enrichments, and on the development of new types of food products with a high protein content balanced with respect to the presence of essential amino acids.

The participants in the symposium visited the Institute of the Chemistry of Plant Substances, museums, and theatres. Excursions to Tashkent and Samarkand were organized for them.