
CHRONICLE

First Congress of Russian Mycologists

The First Congress of Russian Mycologists was held in Moscow on April 11–13. It was organized by the National Academy of Mycology, a country-wide public organization.

Taking into account the wide spectrum of scientific problems and issues considered during the Congress, it can be regarded as a major scientific conference that brought together all people involved with the research on fungi in Russia. Accordingly, the Congress was attended by specialists in various fields of science: biologists (primarily mycologists), medical doctors, agriculturists, veterinary surgeons, biotechnologists, personnel of sanitary institutions, and specialists in pharmacology (including the producers of antifungal drug preparations and fungicides). The participation of scientists who, despite their different backgrounds, were all involved with fungal research, provided for the achievement of the main goals of the Congress: to combine the efforts of the scientific community in order to promote Russian mycological research and to assess the current state of Russian mycology and to make predictions concerning future developments in this field.

The Opening Address was delivered by Yu.V. Sergeev, President of the National Academy of Mycology. He concentrated on the present and future developments in Russian mycology. The extensive Congress program included two plenary sessions with five presentations, nine symposia, 15 section meetings, a poster session, and Round Tables. In addition, an exhibition was staged during the Congress. It displayed modern antifungal agents, fungicides, designs of biotechnological processes involving fungi as producers, laboratory equipment, and purification systems used for environmental protection. An additional exhibition dealt with ecologically clean edible fungi from the Ivanchenkovo Open Joint-Stock Company. Of particular interest were various subspecies of *Pleurotus ostreatus* (oyster fungus), such as Rozovyi flamingo (Pink Flamingo), Veshenka zolotistaya (Goldish Oyster Fungus), and Veshenka korolevskaya (Royal Oyster Fungus), as well as the black sylvestral fungus shiitake, dubbed “the life elixir.”

The Congress of Russian Mycologists was a timely event. The beginning of the 21st century is characterized by an increase in the interest in biotechnology and in the importance of fungi as the main producers of biologically active substances. It has turned out that fungi are capable of producing over 80% of compounds (formerly obtained from plants, animals, and bacteria) that are necessary for humankind. Based on the practical experience acquired up to now, fungi are the most “bio-

technological” producers and, above all, they make it possible to obtain target products under environment-friendly conditions.

87 organizations and institutions of the Russian Federation participated in the Congress. About 2000 delegates registered and attended the Congress; over 700 presentation abstracts were accepted for publication.

The Congress covered the following subfields of modern mycology: the phylogeny and systematics of fungi; the ecology and conservation of fungi; biodiversity; collections and herbaria; the biochemistry and physiology of fungi; parasitism and symbiosis; fungicides and antifungal preparations; fungal medicines; fungal toxins; mycotoxicoses and fungi-caused food poisoning; cultured edible fungi; biotechnology and gene engineering; dermal and mucosal mycoses; opportunistic mycoses; treatment of human fungal infections; and veterinary mycology. The subfields listed above indicate that virtually all dimensions of modern mycology were considered during the Congress. For the first time, technical mycology was united with medical mycology.

The Congress participants stressed the rapid recent advances in fungal systematics that had yielded new data discussed in the Congress presentations in phylogenetic terms. In particular, L.N. Vasil'eva (Biology and Soil Science Institute, Far East Division, Russian Academy of Sciences) pointed out that the conceptual and methodological underpinnings of the methods of molecular genetics raise considerable doubts as to whether the fungal system based on them is really more natural. Of relevance was also the remark that a persistent trend towards splitting traditional kingdoms has recently emerged in macrosystematics; up to 18 kingdoms have been postulated by some taxonomists. A special presentation was concerned with a new kingdom comprising fungus-like organisms (*Mycomyxa*). The modern concepts on the origins of fungi and the trends in their macrosystematics were generalized in the plenary talk by I.V. Karatygin.

Most presentations were included in the fungal ecology and conservation section. They covered the peculiarities of the seasonal dynamics of fungal populations in the ecosystems of forests (L.L. Velikanov and I.I. Sidorova, Moscow State University), saline soils, alpine areas, caves, and natural preserves. In addition, a talk was presented on the representatives of micro-mycetes inhabiting resource plants in the preserves of the Crimea (I.A. Dudka, T.V. Andrianova, and

V.V. Kuzub, Kholodnyi Institute of Botany, National Academy of Sciences of Ukraine). Much attention was also given to the fungi growing in the fourth module of the Chernobyl Nuclear Power Station and in the dwelling houses of Moscow and other cities. The Congress proceedings dealt with the relationship between fungi and air quality (S.N. Elanskii, D.V. Ryzhkin, and A.N. Likhachev, Moscow State University), which is currently considered an important issue, and with the micromycetes of the permafrosts of the Arctic and the Antarctic Regions (I.E. Ivanushkina, G.A. Kochkina, and S.M. Ozerskaya, Institute of Biochemistry and Biochemistry of Microorganisms, Russian Academy of Sciences). Other Congress presentations were concerned with rare species of fungi and lichens (Yu.A. Bolotskaya, Altai State University; O.V. Fedorenko, A.Yu. Akulov, and D.V. Leontiev, Karazin Kharkov State University). The data on myxomycetoid fungi (D.V. Leontiev and A.Yu. Akulov, V.N. Karazin Kharkov State University) were presented at the Congress for the first time. One of the presentations summed up the data concerning the current situation in mycology and its prospects for the future in the Baikal Region (A.I. Petrov, Siberian Institute of Plant Physiology and Biochemistry, Siberian Division, Russian Academy of Sciences). A.E. Kovalenko presented a plenary talk on the diversity of fungi and their regional distribution pattern in Russia.

Since the sections on fungal physiology and biochemistry, technical biotechnology, cultured fungi, cytology, and genetics actually dealt with similar topics, it seems expedient to cover all of them in the same part of this chronicle. Dehydrin-like polypeptides of the mycelium and fruiting bodies of basidiomycetes were compared with those of plants in the light of the new data obtained (A.Yu. Yakovlev and G.B. Borovskii, Siberian Institute of Plant Biochemistry and Physiology). Other presentations concentrated on recent findings concerning lipid peroxidation in the mycelia of wood-degrading fungi (A.N. Kapich and L.N. Shishkina, Institute of Biochemical Physics, Russian Academy of Sciences and International Environment University, Belarus), the mechanism of stressor effects on *Neurospora crassa* differentiation (T.A. Belozerskaya and V.Yu. Sokolovskii, Bach Institute of Biochemistry, Russian Academy of Sciences), research on the culture properties and growth patterns of edible fungi, and the production of *Agaricus bisporus* mycelium (to be used as inoculum) in submerged culture (L.M. Krasnopol'skaya and I.V. Belitsky, Institute for New Antibiotics, Russian Academy of Medical Sciences). Of considerable interest were the presentations dealing with the cultivation of fungi in Russia and the CIS, including South Ukraine (A.V. Bogdanov and N.N. Malakhov, Ivanchenkovo Open Joint Stock Company, and V.M. Sokolov with his associates, Selection and Genetics Institute). Most presentations in the biotechnology section dealt with new producers of fungal biologically active substances and the methods and techniques to be

used. The talk by R.P. Evstigneeva (Moscow State Academy for Fine Chemical Technologies), which concerned itself with oleobiotechnology and the employment of mycelial fungi for the purpose of producing polyunsaturated fatty acids, received special attention at the Congress. A number of talks dealt with waste bioconversion by fungi (V.V. Shutova *et al.*, Mordovia State University; R.N. Varnaite, Institute of Botany, Lithuania). The recently increased interest in the employment of methods of molecular genetics in fungal research manifested itself in the presentations concerning transposons (A.V. Shnyreva, Moscow State University), the SINE marker that is of considerable potential in respect to population studies with *P. infestans* (S.F. Bagirova, Moscow State University), and the meiosis prophase in flattened protoplasts of *A. bisporus* basidia (O.L. Kolomiets, Vavilov Institute of General Genetics, Russian Academy of Sciences, etc.). The current problems and issues relating to biotechnological developments that use mycelial fungi as producers were summed up at a plenary session (E.P. Feofilova, Institute of Microbiology, Russian Academy of Sciences).

A special session focused on fungal parasitism and symbiosis, and the principal speaker was M.M. Levitin (Botany Institute, St. Petersburg, Russian Academy of Sciences). The plenary talk by Yu.T. Dyakov (Moscow State University) concentrated on fungus-plant interactions.

Developments in biotechnology and fungal cultivation have considerably enhanced the importance of fungal collections in Russia. S.M. Ozerskaya *et al.* (All-Russia Collection of Microorganisms, Skryabin Institute of Biochemistry and Physiology of Microorganisms, Russian Academy of Sciences) gave a talk at the Congress in which they pointed to an increase in the overall stock of fungi contained in Russian collections (the fungal collections in Russia now total about 1700 species belonging to 489 genera). Currently, there are 14 fungal collections in Russia.

The novel subfield of biotechnology developing drug preparations on the basis of fungal biologically active substances has become especially popular recently, and this subfield has been named mycological pharmacology. Some Congress presentations dealt with the biotechnological methods of producing medicines from higher fungi (E.S. Gorshina *et al.*, State Research Institute of Protein Substances), including *Ganoderma lucidum* (L.M. Krasnopol'skaya *et al.*, Institute for New Antibiotics, Russian Academy of Medical Sciences) and *Cladosporium cladosporioides* (N.N. Zhdanova and M.I. Borschevskaya, Institute of Microbiology and Virology, National Academy of Sciences of Ukraine). Yu.V. Dudnik (Institute for New Antibiotics, Russian Academy of Medical Sciences) gave a talk on unusual fungal metabolites.

As mentioned above, pharmacological mycology, a new subfield of biotechnology, is closely related to

medical mycology, which aims at treating fungal pathogen-caused human diseases. The Congress included symposia that were concerned with mycoses in their general medical meaning; the pharmacological treatment of onychomycoses in patients suffering from concomitant diseases; combined therapeutic methods of treating onychomycoses; opportunistic mycoses; modern antifungal preparations and their clinical uses; fungicides; mycogenic allergy; and candidoses. The speakers emphasized the importance of new organic solvent- and water-soluble metal derivatives. They stressed that developing new structural models based on familiar compounds is prerequisite for further studies on their antifungal and antibiotic activities. The data on the fungicide activity of the glucans of the higher fungi *Basidiomycetes* (L.F. Gorovoi and I.A. Trutneva, Institute of Cell Biology and Genetic Engineering, National Academy of Sciences, Ukraine) received much attention at the Congress. Treating onychomycoses in patients with concomitant diseases and those belonging to various risk groups is stimulated by administering new systemic antimycotic agents, based on the considerable experience acquired by Russian researchers (Yu.V. Sergeev, National Academy of Mycology; V.M. Leshchenko, Moscow City Mycology Center). The results of large-scale etiological and epidemiological studies conducted in Russia were for the first time presented at the Congress. These studies included pioneering large-scale efforts aimed at detecting and treating fungal infections (A.Yu. Sergeev *et al.*, National Academy of Mycology). The companies Pfizer, Yamanouchi, Novartis, Galderma, Janssen-Gilag, and Fick-Medical

participated in the section sessions dealing with medical mycology.

The central issues of mycology were also discussed at round table sessions that were concerned with cultivating and protecting fungi in Russia; fungi in relation to plant protection; and important biotechnological problems. A meeting of an expert team concentrated on modern informational technologies and on the teaching of biotechnology.

The Congress participants stressed the high scientific level and the perfect organization of the whole event. The Congress Organizing Committee did its best to secure fruitful work of the scientists involved. The Congress highlighted the important role of scientific contacts not only among Russian mycologists, but also between them and CIS scientists. The presentation abstracts contained in the abstract book provide important information concerning the current developments in Russian mycology. The delegates emphasized that – to their satisfaction—the Congress organizers had succeeded in bringing together representatives of diverse mycology subfields as well as in evaluating the present state-of-the-art and the prospects for the future in respect to various branches of theoretical and applied mycology in the Russian Federation.

Hence, it can be hoped that the First Congress of Russian Mycologists will serve as an important milestone in the historical development of Russian mycology and biotechnology.

Information concerning the Congress is available at the Internet site <http://www.mycology.ru>

E.P. Feofilova