

*Master's program*

## **Pharmacology**

### **I. THEORETICAL BASIS**

The current stage of development of Russian Federation is characterized by dramatic changes in the system of development, registration and use of drugs, accompanied by a profound transformation moving towards innovative development.

Recently there has been a significant increase in consumption of pharmaceutical products by the Russian population, along with intensive technical re-equipment of health facilities, mainly due to economical growth in general and to implementation of the national project "Health" in particular.

The Federal Targeted Program "Development of the Pharmaceutical and Medical Industry of the Russian Federation for the period up to 2020 and beyond" and the "Strategy of development of pharmaceutical industry of the Russian Federation for the period up to 2020" were put forward and are being implemented to overcome current dependence on imported health products and to ensure public safety through equitable access to medicines, facilitated by modern systems of drug supply and supply chain management. The utmost goal of the strategy is to ensure adequate provision of essential medicines of domestic origin to Russian population.

The current status of social and economic development in Russia imposes new requirements for education and training of specialists in pharmacology, who have to be prepared to work in stressful conditions of increased requirements for professional capabilities and mobility, be able to think out of the box and come up with new ideas and solutions.

This new level of pharmaceutical and medical industry development sets new requirements and priorities for the strategy of training in pharmacology of qualified personnel. This goes in line with the on-going globalization process, removing inter-country boundaries and setting global agenda in pharmacology training and its provision in various languages (Russian and English languages).

Currently, at the Kazan Federal University (KFU) extensive work on the practical and scientific understanding of the problems of quality in education has been initiated; it has been accepted that professional consciousness, focused on quality, on development of the methodology of thinking, which would enable formulating and solving professional problems, plays a crucial role. This becomes the basis for matching the content of education to the needs of the current and future perspectives of health system development, including its pharmaceutical component.

Staffing of the modern pharmacology & pharmaceuticals is consistent with the objective of the above mentioned state strategic targeted programs of the federal level: education and

training of future professionals in research, administration and pedagogies, for them to become the new generation capable of innovative development of the pharmaceutical sector.

Currently in Tatarstan, as well as in other regions of the Russian Federation and other post-soviet countries, there is an acute shortage of highly qualified personnel capable of carrying out professional activities in accordance with the requirements of the current stage of pharmaceutical development, at a certain level of efficiency and professional success, with ultimate understanding of social responsibility for the results of professional activities. Without solving this problem the successful development of the pharmaceutical sector, including its innovative framework, is not possible.

This is particularly important with the rapidly growing Eurasian economical integration and professional exchanges and population mobility in general.

A set of requirements for the knowledge level of experts in pharmacology determines the need for in-depth professional education at the Masters level in pharmacology.

Kazan Federal University has all the required resources to organise and deliver high quality training programs, including Masters in "Pharmacology" program.

### **Intellectual and scientific resources**

At the KFU considerable experience has accumulated in synthesis, development and assessment of biological activity of new original products of chemical synthesis origin (Chemical Institute named after A.M. Butlerov) and products of microbial synthesis (Institute of Basic Medicine and Biology). Department of Pharmacology (basic and clinical) was established in 2011. Since 2000 at the Department of Biochemistry, with our participation, and later at the Department of Pharmacology training programs in pharmacology for biology specialists have been established. These are lecture courses and practical sessions on the basics of pharmacology, molecular pharmacology, biologically active agents of microbial origin, the molecular basis of biotransformation of xenobiotics, receptors etc. To date, the staff of the Department of Pharmacology has accumulated extensive experience in the field of training of highly qualified personnel in Pharmacology and Clinical Pharmacology. Over the last five years 7 PhD students have successfully delivered and defended their research thesis. The growing research potential of the KFU as a whole and of the Department of Pharmacology is confirmed by active participation in Russian and international conferences on pharmacology and related subjects, by publishing of monographic studies, medicine guides, textbooks and research papers. KFU has established strong research and educational contacts with leading educational research centres and schools in Russia, such as Moscow State University, the First Moscow State Medical University named after Sechenov, Russian State Medical University, Moscow State University of Medicine and Dentistry, Russian Peoples' Friendship University (Faculty of Medicine), St. Petersburg State University (Faculty of Medicine), Novosibirsk State University (Faculty of Medicine), and others; and abroad – Liverpool University, School of tropical medicine (United Kingdom), University of Copenhagen (Denmark), Groningen University (the Netherlands), University of Edinburgh (United Kingdom), Waikato Medical School (New Zealand).

## **II. Conditions of implementation of the Master Programme**

### **2.1. Staffing of the educational process**

The interdisciplinary nature of Pharmacology predetermines the need for close interdepartmental cooperation of medical professionals, specialists in biology and chemistry in particular.

Implementation of master program in Pharmacology is provided by highly qualified teaching staff with basic education, corresponding to the profile of the discipline and systematically engaged in research, methodological and clinical practical activities.

The proportion of full-time and part-time lecturers of the Masters in Pharmacology program, employed at the KFU, is 63%.

The proportion of guest lecturers from the Kazan Medical University and from University of Copenhagen is 37%.

Qualified teaching staff provides implementation of the Master in Pharmacology program, with 100% of the teachers holding doctorate (DSci) or PhD degrees.

General supervision and management of research content and educational part of the Masters program is provided by Professor Liliya Eugenevna Ziganshina, MD, PhD, DSci, Cochrane author and collaborator, the WHO (World Health Organization) advisory panel member on Selection and Use of medicines.

Direct student supervision is carried out by the staff of the Department of Pharmacology, holding a PhD degree and the title of associate professor and by guest lecturers.

### **2.2. Teaching methods and information support of educational process**

Implementation of the Masters in Pharmacology program is ensured by appropriate teaching materials: textbooks and manuals, reference books, calendar-thematic plan, methodological brochures for seminars and workshops.

In accordance with the approved working curricula the catalogue of teaching programs for academic disciplines is created. The competences are established in accordance with Federal State Basic Standard of the highest professional education (FSBS of HPE) of the third and third-plus generation.

Implementation of the Masters program is supported by establishing access of each and every student to databases and library collections, put together according to the full list of disciplines (modules) of the program.

Rapid information exchange with domestic and foreign universities, institutions and organizations is provided for Masters students.

### **2.3. Logistical support of the educational process**

KFU has the necessary and sufficient basis for theoretical, practical, laboratory and clinical teaching sessions.

Benefits of the KFU are obvious:

- One of the Russia's largest scientific library which hosts numerous educational and research publications in pharmacology, biology, chemistry, medicine, computer science, and others.
- Logistics base provides all the necessary resources to support the teaching - learning process with the modern multimedia projection and interactive equipment.

- Research and Education Centre for Pharmaceuticals (REC Pharm) has been established as the principal structural unit in the organizational structure of the KFU, the Department of Pharmacology of which is represented by the staff of the teaching Department of Basic and Clinical Pharmacology. REC Pharm was established in the framework of the Federal Targeted Program "Development of Pharmaceutical and Medical Industry of the Russian Federation for the period up to 2020 and beyond", approved by the Federal Government Decree of February 17, 2011 №91.
- KFU has strong connections with research institutes, enterprises, and organizations in Russia and abroad, providing the basis for effective scientific and practical training of masters students. The level of provision of students with educational literature complies with the State normative of 0.5 units per student in each discipline.

### III. EMPLOYMENT

Kazan (Volga Region) Federal University, Department of Pharmacology offers a complete comprehensive program in pharmacology, which allows obtaining Master's degree in pharmacology. Applicants for placement with Masters program are offered laboratory and non-laboratory options for studies and research to choose from, depending on their needs and prior qualifications.

Analysis of the labour market of the Republic of Tatarstan, shows that the demand for highly qualified personnel in the field of pharmacology significantly exceeds the offer. The demand for specialist holding Masters in Pharmacology degree, capable of working in the new economic environment, with pressing requirement for scientific thinking, professional mobility and knowledge of modern research methods is obvious.

Competence and qualification characteristics of a graduate of the Masters in Pharmacology program are based on the FSBS of HPE of the third generation.

Professional activities of a graduate of the masters in Pharmacology program require in-depth fundamental training, experience in research and teaching. The Master in Pharmacology is prepared to work in a variety of research, academic and educational institutions; in manufacturing pharmaceutical organizations; at various levels of pharmaceutical regulation, including government agencies and committees, laboratories; laboratories of pharmaceutical manufacturers and biotechnology companies, research institutes and educational and research universities, including teaching pharmacology at medical and pharmaceutical educational institutions.

A Master in Pharmacology degree holder is prepared to perform the following types of professional activities and tasks:

- 1) research activities;
- 2) educational activities;
- 3) analytical work at ministries and governmental and non-governmental departments/organisations;
- 4) regulatory (pharmaceutical regulation and policy) activities;
- 5) management activities in the pharmaceutical industry.

Graduates of the Masters in Pharmacology program possess the following professional competences: a) interpersonal professional; b) general professional; c) implementation-professional.

Graduates are trained in modern methods and techniques of teaching pharmacology at higher and secondary educational institutions.

Upon completion of Masters program, graduates can participate in the contest for the PhD program. Holding a master's degree in Pharmacology will undoubtedly be a starting advantage.

#### **IV. Applying for a Masters in Pharmacology Program (Admissions)**

Normative period of implementation of the basic educational training program for Master in Pharmacology degree is 2 years.

Budget funded places: up to 8 people a year. Tuition fee for the contract form of training is determined in accordance with the defined order of the KFU.

Admission to the Masters program is based on competitive selection procedure.

It is carried out in a form of examination in general biology and general chemistry with subsequent review of applicant's documentation.

The Admissions Committee, formed by the representatives of the Medicine-Biology Faculty and the Institute of Chemistry, carries out competitive selection procedure. Competition ensures admission to the Masters Program of the most capable students, prepared for their further development.

To enrol into the competitive selection procedure the applicants to the Masters in Pharmacology program should submit the following documents:

- A personal application form with statement indicating the area of training and the chosen masters program;
- The original or a copy of the state document about higher education (bachelors or specialist level), with the corresponding annex; or another recognized in the Russian Federation document confirming holding a graduate degree of higher education (state bachelor's diploma, or specialist, or master's diploma);
- A copy of the identity document.

List of additional documents:

- The diplomas, certificates of continuing professional development;
- Diplomas of winners and/or laureates of research projects, design work and student competitions at various levels;
- Scientific work of the applicant in electronic or/and paper form (published or handwritten);
- Documents, confirming awards: scholarships from ministries, agencies, funds, etc.
- In addition, applicants can provide a letter of recommendation from her/his supervisor (recognised expert in the field, lecturer of high school).

Head of the master's program in pharmacology, Liliya-Eugenevna Ziganshina  
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World Health Organization on selection and use of medicines,  
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