

Adikhodjayeva K.B., Sarypbekova N.K.,* Dzholdasova S.A.

Candidate of Chemical Sciences, associate Professor, M.Auezov SKU, Shymkent. Kazakhstan

Candidate of Chemical Sciences, associate Professor, M.Auezov *SKU*, Shymkent. Kazakhstan

Candidate of Chemical Sciences, associate Professor, M.Auezov SKU, Shymkent. Kazakhstan

THE PAST, PRESENT, AND FUTURE OF PHARMACY IN KAZAKHSTAN

Author correspondence: nurislam_kaz@mail.ru

Abstract: The article reflects the past, present and future of pharmacy in Kazakhstan, where old enterprises operate and develop and new ones are created. On the basis of the Santonin plant, which was opened in 1883 and produced its first medicinal products, the Santo plant «Khimpharm» currently exists and is developing. It provides medicinal products in accordance with international GMP standards not only to Kazakhstan consumers, but also to near and far abroad, participates in the creation of a drug cluster in South Kazakhstan. In the future, they are faced with the task of reducing the volume of imported medicines and entering the markets of other countries. An important task facing pharmacy today is personnel training. For this purpose, on the basis of M. Auezov SKU, a new specialty has been opened at the Department of Chemistry and Foundations of Chemical Technology - bachelor's and master's degrees "Technology of pharmaceutical production".

Key words: pharmacy, chempharm, plant of santa, production of drugs, chemist-technologist, marketer of pharmaceutical production, medicine, dual education.

Introduction. The pharmaceutical industry in Kazakhstan has a deep historical foundation, which gave a good impetus for reaching impressive peaks at the present time. We were one of the first in the post-Soviet space to receive the GMP world quality standard - the strictest pharmacovigilance. During the years of independence, the pharmaceutical industry began to develop intensively in Kazakhstan. About 112 enterprises producing medicines and medical devices appeared on the market. But not a single domestic enterprise produces its own substances. Over the past 10 years, the volume of production of pharmaceuticals has increased 7 times. Despite all the economic difficulties, the pharmaceutical industry in Kazakhstan continues to develop. However, the production of drugs in Kazakhstan is only 20%, the rest of drugs and medical supplies are imported from abroad. More than a third of domestic medicines are produced by the pharmaceutical plant Santo (SANTO), located in the city of Shymkent. The plant has introduced state-of-the-art technologies; about a thousand people are provided with jobs[1].

But it all started back in 1883 on the outskirts of the southern city of Chimkent, near the Tashkent highway, merchants Nikolai Ivanov and Nikifor Savinkov began building the first pharmaceutical enterprise in Central Asia - the Santonin plant. And already in the fall of 1885, the Santonin partnership, or the Santonin plant of Savinkov and Nikitin, produced the first 189 tons of products.

In this area, the most valuable raw material grows - citrine wormwood, which contains the substance santonin. The antiparasitic agent santonin was made from it. It is noteworthy that citrine wormwood grows only in several points of the world, which can be counted on the fingers of one hand, including in the vicinity of Shymkent. The valuable antiparasitic agent Santonin was also exported, and after the nationalization carried out by the Bolsheviks, it was the first gold and foreign exchange earnings of the young Soviet state. The plant was of great strategic importance and was nationalized by one of the first five Lenin decrees. In the second half of the 19th century, the Santonin plant became a city-forming enterprise, which is known today as «Khimpharm». This is the oldest manufacturing pharmaceutical enterprise not only in the CIS, but also one of the oldest in the world. Currently, the enterprise is part of the Polpharma group of companies (Poland). Until 1993, the pharmaceutical plant in Shymkent did not produce finished dosage forms and was not known to the general public. The enterprise was one of the largest suppliers of the so-called «substances» - active pharmaceutical ingredients that serve as the basis for medicines. In addition, the Shymkent plant was the main supplier of morphine during the

Great Patriotic War. It was only in 1993 that the enterprise switched to the production of finished dosage forms. Today the plant is equipped with new production workshops built according to international GMP quality standards, there is a workshop for the production of sterile dosage forms (ampoules and infusion), a new workshop line for aseptic loosening of antibiotic powders.

The plant is the flagship of the domestic pharmaceutical industry, provides a significant amount of the domestic pharmaceutical market, but also exports products to Russia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan [2].

Also, as in any field, there is a shortage of professional personnel capable of competing in the global market. In order to provide highly qualified, competitive personnel in the Turkestan region, the South Kazakhstan State University named by M. Auezov is successfully functioning, capable of ensuring close interaction between educational and scientific activities. The University supports the policy of continuous education throughout a person's life and the continuity of levels and stages of education, the consistent formation of the abilities and creative potential of specialists who are ready to work with packages of modern technologies in changing external conditions, who are able to independently assess the situation and make responsible decisions. As part of the implementation of Kazakhstan's entry into the European educational space, the opening of the specialty «Technology of pharmaceutical production» at SKSU named by M.Auezov is an urgent task. The demand for this specialty is determined by its goal, which is to train personnel with advanced knowledge, a creative approach to professional activity, capable of working in a national and international team and mastering the strategy of lifelong learning [3].

In this regard, a new specialty "Technology of pharmaceutical production" was opened at the university in the last academic year on the basis of the department "Chemistry and the basics of chemical technology". The department is staffed with highly qualified teaching staff and high-tech laboratories capable of conducting research.



Photo 1: Conveyor production of drugs.

The specialty "Technology of pharmaceutical production" was opened taking into account integration and regionalization (taking into account the interests of specific employers, the characteristics and needs of the labor market, migration processes, social, professional and educational needs of the population).

Upon completion of this specialty, graduates can occupy the primary positions of a technologist, a chemist-technologist, a marketer of pharmaceutical production, a manager of a pharmaceutical production, a master technologist in the chemical-pharmaceutical and chemical industries, in research institutions without requiring the length of service in accordance with qualifications requirements [4].

The educational program for training specialists-technologists of pharmaceutical production is focused on professional and social order through the formation of professional competencies related to the necessary types of research, practical and entrepreneurial activities,

adjusted to meet the requirements of stakeholders [5].

The goals and mission of the EP "Technology of pharmaceutical production" are inextricably linked with the mission of the University SKSU named by M. Auezov. The University is actively implementing national and regional priorities in the field of education and science, positioning itself as an innovative university that provides quality services. The mission of the EP "Technology of pharmaceutical production" is to train specialists in the field of modern pharmaceutical technology based on the use of innovative teaching technologies while maintaining the values of classical education.

The educational program is aimed at achieving learning outcomes through the organization of the educational process using the principles of the Bologna Process, student-centered learning, accessibility and inclusion. As part of the educational program, the development of a dual education system for students is supported. This year, a magistracy was opened in these specialties [6-7].



Photo 2: Modern pharmaceutical production.

An increase in the volume of production of original domestic drugs requires close integration of science, production and education in the field of pharmaceutical production technology. In the future, it is the unique developments of Kazakhstan scientists that will contribute to solving urgent problems of the republic's health care [8]

Conclusion. Therefore, the opening of the specialty «Technology of pharmaceutical production» and the training of high-level specialists in the future will have a fruitful effect not only on the pharmaceutical industry, but also on the economy of Kazakhstan as a whole.

References list:

- 1 Pharmaceutical chemistry: a textbook / edited by A. P. Arzamastsev-M.: GEOTAR-Media, 2008. 640 p. Access mode: [http:// www.studmedlib. ru/book/](http://www.studmedlib.ru/book/)
- 2 Pharmaceutical chemistry: textbook. manual for universities / ed. by A. P. Arzamastsev; author: E.N. Aksenov, O.P. Andrianov, A.P. Arzamastsev and others. 2nd ed., ispr. Moscow: GEOTAR-Media, 2005. 635 p.: il.
- 3 Belikov V. G. Pharmaceutical chemistry: textbook.manual / Belikov V. G.-4th ed., reprint. Moscow: MED press-inform , 2007. 622 p.
- 4 Ramenskaya G.V. Pharmaceutical chemistry: textbook for universities / G. V. Ramenskaya. M.: Binom, 2015. 472 p.
- 5 Shchepetova e. v. pharmaceutical chemistry. Inorganic medicinal substances: educational and methodical manual / E. V. Shchepetov. - M.: Knorus, 2015. 97 p.
- 6 Belikov V. G. Pharmaceutical chemistry: textbook for students.pharm.
- 7 Belikov V. G.-3rd ed., reprint.and add. - Pyatigorsk: Pyatigorsky State Farm. akad., 2003. 713 p.: ill. bibliogr.: pp. 708-709.
- 8 Glushchenko N. N. Pharmaceutical chemistry: textbook / Glushchenko N. N., Pletneva T. V., Popkov V. A.; ed. by T. V. Pletneva. - M.: Akademiya, 2004. 382 p.: il. Secondary vocational education.

Аннотация: В статье отражены прошедшее, настоящее и будущее фармации в Казахстане, где работают и развиваются старые предприятия и создаются новые. На базе сантонинного завода, который был открыт в 1883 году и выпустил свою первую лекарственную продукцию, существует и развивается в настоящее время «Химфарм» завод Santo. Он обеспечивает лекарственной продукцией по международным стандартам GMP не только казахстанских потребителей, но и ближнее и дальнее зарубежье, участвует в создании лекарственного кластера Южного Казахстана. В будущем перед ними стоит задача снизить объемы импортных лекарственных средств и выход на рынки других стран. Важная задача стоит перед фармацией сегодня – это подготовка кадров. С этой целью на базе ЮКУ им.М.Ауэзова открыта новая специальность на кафедре «Химия и основы химической технологии» – бакалавриат и магистратура «Технология фармацевтического производства»

Түйін: Мақалада Қазақстанның оңтүстігінде ашылған байырғы кәсіпорынның бірі – 1883 жылы ашылған және өзінің алғашқы дәрілік өнімін шығарған сантонин зауытының негізінде қазіргі уақытта «Химфарм» – Santo зауыты жұмысы негізінде Қазақстандағы фармацияның өткені, бүгінгі және болашағы көрсетілген. Ол GMP халықаралық стандарттары бойынша дәрілік өнімдермен тек қазақстандық тұтынушыларды ғана емес, сонымен қатар жақын және алыс шетелдерді де қамтамасыз етеді. Оңтүстік Қазақстанның дәрілік кластерін құруға қатысады. Болашақта олардың алдында импорттық дәрілік заттардың көлемін азайту және басқа елдердің нарығына шығу міндеті тұр. Бүгінгі таңда фармация алдында маңызды міндет тұр - бұл кадрларды даярлау. Осы мақсатта М. Әуезов атындағы ОҚУ-ң «Химия және химиялық технология негіздері» кафедрасында бакалавриат және магистратура деңгейлерінде «Фармацевтикалық өндіріс технологиясы» атты жаңа мамандық ашылды.