**Project topic name:** “Pharmaceutical development and pharmacological research of dental films for use in dental practice”.

**Relevance:** As part of the National Project "Healthy Nation" for 2021-2025, the main task of the domestic pharmaceutical industry is import substitution, which consists in the development and creation of domestic medicines of full cycle production in the country and to bring the share of domestic pharmaceutical products from 17% to 50%.

One of the main directions for the development of the pharmaceutical industry is the creation of drugs that are close to nature, relatively safe, sufficiently useful for human health and affordable.

For realization of the purposes and tasks in this direction it is necessary to carry out complex researches on rational use of local natural raw materials. In the Republic of Kazakhstan there are such state programs as Strategy "Kazakhstan - 2050", "Conception on entering of Kazakhstan into the number of 30 most developed countries of the world", "Message of the President of the Republic of Kazakhstan "Kazakhstan way - 2050: single purpose, single interests, single future", one of which target problems is increase of number of names of medicines from domestic vegetative raw materials, development of domestic pharmaceutical industry, building of new production sites, as well as making of new pharmaceutical production facilities.

Thus, at this time effective use of domestic herbal raw material resources in order to systematically reduce the import dependence of the Republic of Kazakhstan on foreign medicines is relevant.

In the process of development of new pharmacologically active compounds natural resources of plant origin are the main source of medicines. However, it is worth emphasizing the importance of defining criteria when selecting material for scientific research. Literature data have shown that ethnopharmacological applications provide important approaches to evaluate the effectiveness and safety of plant resources used by the population for therapeutic purposes.

In recent years, studies have been conducted in the global scientific community to evaluate the popular use of plants in dentistry, allowing the identification of plant species with potential biological activity.

One such plant is the Asian mint (Mentha asiatica Boriss), a representative of the Lamiaceae family, which contains biologically active substances with a wide range of pharmacological actions (antimicrobial, anti-inflammatory, anticarcinogenic, etc.).

The International National Institutes of Tumor Diseases use non-traditional complementary and alternative medicine (CAM) products and methods and support global research investigating the properties of plant extracts for potential antitumor drugs. The frequency of patients using CAM in addition to standard therapy is 40-90%. Plant-based products prevent oral complications and promote recovery.

Numerous in vitro, in vivo and clinical studies have proven the benefits of various plant-based products for oral cancer patients.

Therefore, the development of plant-based Asian mint dental films and the study of their pharmacological properties, including anti-tumor properties, is a promising area of pharmaceutical science in solving the important problem of prevention of anti-inflammatory and anti-tumor diseases of the population of the Republic of Kazakhstan.

**The aim** of the project is to develop the composition, technology and evaluation of the quality of dental films based on the extract of Asian mint with antimicrobial, anti-inflammatory and anticarcinogenic properties.

**Project objectives:**

- To develop an optimal technique for extracting raw materials of the domestic plant of mint *(Mentha asiatica* Boriss*)*;

- To study the profile of the pharmacological activity (antibacterial, anti-inflammatory and anticarcinogenic) of the extract;

- To standardize the developed pharmaceutical substance based on raw materials of Asian mint *(Mentha asiatica* Boriss*)*;

- To develop a rational composition and optimal technology of production of dental film with an extract of peppermint *(Mentha asiatica* Boriss*)*;

- To carry out standardization of the developed medicinal preparation with an extract of peppermint *(Mentha asiatica* Boriss*)*.

**Expected results**

- On the basis of mathematical calculations and experimental data on the selection optimum extractant, solvent concentration and extraction conditions will be developed a pharmaceutical substance based on raw materials of Asian mint *(Mentha asiatica* Boriss*)*;

- Methods In Vivo and In Vitro will be studied antimicrobial, anti-inflammatory and anticarcinogenic activity of the extract of Asian mint;

- With use of pharmacopoeial methods quality parameters of a substance of a mint Asian will be studied and its standardization is spent;

- On the basis of theoretical data and experimental approaches rational structure of a stomatological film with an extract of mint of Asian mint will be developed and optimum technology of manufacture of a medical preparation with an extract of mint of Asian mint to its standardization is offered;

- On the basis of the lead physicochemical, chemical and technological researches the standard documentation on pharmaceutical substance and a medicinal preparation of a mint of Asian will be developed;

- Together with LLP "Shansharov-Pharm" the pilot regulations of manufacture of a stomatological film with an extract of mint Asiatic will be developed;

- By results of researches will be published 2 articles in the journal indexed in database Web of Science, 1 article in the journal recommended by CQAE ME of RK;

- By results of researches on development of structure of the dosage form with an extract of mint of Asian mint will be received the patent on a useful model.

Table 1 – Composition of the research group for conducting scientific research, including foreign scientists, young scientists (postdoctoral, doctoral, master's and bachelor's students)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| №  п/п | Full name (if available), education, degree, academic title [[1]](#footnote-1) | Main place of work, position [[2]](#footnote-2) | Hirsch index, ResearcherID, ORCHID, Scopus Author ID identifiers (if available) | The role in the project or program, as well as the nature of the work performed | Brief rationale of participation |
| 1 | Datkhaev Ubaidilla Makhambetovich  Doctor of Pharmaceutical Sciences, Professor | Vice-Rector of S.D.Asfendiyarov Kazakh National Medical University | The h-index - 7 <https://orcid.org/0000-0002-2322-220X> | Scientific supervisor of the project, Project management, planning of all stages of the project implementation. | Scientific guidance on the implementation of a fundamental Project. Organization preparation of the work program, determination of methods and means of their implementation. Guidance in the formation of project plans, coordination of the activities of co-executors involved in the execution of works.  Laureate of the state scientific scholarships in 2021, head of the scientific project of the Ministry of Education and Science of the Republic of Kazakhstan "Development of new medicines, methods and technologies for their production on the basis of domestic raw materials", implementation period 2012-2014, head of intra-university scientific grants (2019-2023).  Expert of NC SSTE  Reviewer of articles on pharmacy (journal Bulletin of KazNMU) |
| 2 | Ustinova Gulbaram Omargazievna,  Doctor of Pharmaceutical Sciences, Professor | Head of the Department of Pharmaceutical Technology | The h-index - 4  <https://orcid.org/0000-0003-2961-5730> | Leading researcher,  executive in the development of medicines. | Development of optimal dental film technology. Selection of the optimal technology for obtaining the extract under different extraction modes.  Executor of several scientific research projects of the Ministry of Education and Science of the Republic of Kazakhstan (2012-2014) and head of scientific projects of the University (2020-2023) |
| 3 | Kozhanova Kaldanai Karzhauovna  Candidate of Pharmaceutical Sciences, Professor | Head of the Department of Engineering Disciplines and Good Practices | The h-index - 3  <https://orcid.org/0000-0003-1512-6442> | Leading researcher, responsible executor of the project, development of methodological and technical works, writing reports. | Development of the composition of the dental film model, development of methodological and technical works, writing reports.  Executor of several scientific research projects of the Ministry of Education and Science of the Republic of Kazakhstan (2012-2014) and the head of scientific projects of the University (2021-2023)  Expert of the NC SSTE |
| 4 | Kapsalyamova Elmira Nikolaevna  Candidate of Pharmaceutical Sciences, Professor | Associate Professor of the Department of Pharmaceutical Technology. | The h-index -1  <https://orcid.org/0000-0002-5371-8011> | Senior researcher, contractor for conducting stability tests and establishing the shelf life of drugs.  Provision of all necessary chemical and laboratory materials for obtaining a new dosage form with a plant extract. | Conducting stability tests and establishing the shelf life of drugs.  Conducts timely provision of all necessary chemical and laboratory materials according to the research schedule.  Executor of several scientific research projects of the Ministry of Education and Science of the Republic of Kazakhstan (2012-2014) and scientific projects of the University (2021-2023) |
| 5 | Kadyrbaeva Gulnara Mukhamedovna, PhD | Associate Professor of the Department of Engineering Disciplines and Good Practices | The h-index -1  <https://orcid.org/0000-0001-6929-7410> | Senior researcher, executive for conducting pharmacognostic studies of medicinal plant raw materials, writing articles. | Pharmacognostic study of plant objects for the creation of dental films. Performer of international (2018-2020) and university projects and university (2020-2023) |
| 6 | Amirkhanova Akerke Shiynkulovna, PhD | Lecturer of the Department of Pharmaceutical Technology | The h-index – 2  <https://orcid.org/0000-0003-1479-3171> | Researcher, contractor for the procurement of medicinal plant raw materials, standardization of the developed medicines. | Participates in the collection and procurement of raw materials. Standardization of the obtained dosage form. |
| 7 | Zoya Bakbergenovna Allambergenova, master's degree | Lecturer of the Department of Engineering Disciplines and Good Practices | <https://orcid.org/0000-0002-0801-0508> | Researcher, contractor for standardization of the developed drugs. | Standardization of the received medicines.  Performer of international (2018-2020) and university projects and university (2020-2023) |
| 8 | Kantureeva Aigerim Mamytzhanovna, PhD doctoral student | Lecturer of the Department of Pharmaceutical Technology. | <https://orcid.org/0000-0001-7080-6227> | Researcher,  performer for the development of methodological and technical works, writing articles. | Development of regulatory and technical documents on pharmaceutical development, writing articles. |
| 9 | Baydullayeva Ainash Kairatovna, master's degree | Assistant of the Department of Engineering Disciplines and Good Practices | - | Junior researcher, executive for the development of methodological and technical works, writing reports, statistical processing of research results. | Development of methodological and technical works, writing reports, statistical processing of research results |
| 10 | Gazizova Aida Arhatovna  master's degree | Assistant of the Department of Pharmaceutical Technology. | - | Engineer, contractor for laboratory work. | Performing laboratory and research work on the development of a new medicinal product with a plant extract. |

1. For members of the research group whose data are not known at the date of preparation of the application and whose involvement is planned in case of receiving a grant, the word "Vacancy" is indicated in the column "Full name (if available), education, degree, academic title". [↑](#footnote-ref-1)
2. For members of the research group who are not related to the main staff and who are not identified at the date of preparation of the application, a dash is indicated in the column "Main place of work, position". For postdoctoral, doctoral, master's and bachelor's students whose data are not known at the date of preparation of the application, the column "Main place of work, position" indicates the status (postdoctoral, doctoral, master's or bachelor's degree student, specialty and organization of higher and (or) postgraduate education, from which it is expected to attract relevant employees to the research groups). [↑](#footnote-ref-2)