



Relevance, strategic objectives and prospects for the development of the institute of nutrition and biotechnology of the I.K. Akhunbaev Kyrgyz State Medical Academy

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Abstract. In the Kyrgyz Republic, issues of healthy nutrition and food security have gained strategic importance due to the persistent “double burden” of nutritional disorders, the high prevalence of micronutrient deficiencies, and diet-related non-communicable diseases, especially among children and vulnerable population groups. The absence of a specialised institute of nutrition limits the scientific support of state policy in this area. The aim of this work was to justify the need to establish an Institute of Nutrition and Biotechnology at the I.K. Akhunbaev Kyrgyz State Medical Academy as a comprehensive scientific, educational, and clinical-production centre in the field of healthy nutrition and biotechnology. An analytical and systematic review was conducted using official statistical data from the Ministry of Health of the Kyrgyz Republic, results of the national study on micronutrient status, regulatory and legal documents, and reports from international organisations. A comparative analysis of international experience in the functioning of nutrition institutes and a content analysis of scientific publications were also employed. It was found that integrating the potential of the Kyrgyz

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State Medical Academy with the dietetics department of the National Centre for Maternal and Child Health would enable the creation of an institutionally sustainable model for the scientific support of nutrition policy. The goals, mission, main areas of activity, tasks, and organisational structure of the Institute of Nutrition and Biotechnology were defined, focusing on the prevention of diet-related diseases, the development of clinical nutrition and dietetics, biotechnology, and the training of qualified personnel. It was demonstrated that the establishment of the Institute of Nutrition and Biotechnology is a strategically justified and timely step that will contribute to strengthening the healthcare system, improving food security, and enhancing the quality and length of life of the population of the Kyrgyz Republic

Keywords: nutritional security; clinical nutrition; dietetics; biotechnology; diet-related diseases; functional foods; food security

Introduction

In the Kyrgyz Republic (KR), issues of healthy nutrition, food security and strengthening public health are becoming strategically important. This is due to both internal public health challenges and the country's international commitments under the UN Sustainable Development Goals (SDGs) – in particular, SDG 2 (zero hunger) and SDG 3 (good health and well-being for all at any age) [1]. Kyrgyzstan is a member of the global Scaling Up Nutrition (SUN) movement [2] and is actively implementing the National Multisectoral Strategy for the Prevention of Micronutrient Deficiencies (2026-2030) [3], as well as the state programme “Healthy People – Prosperous Country” (2019-2030) [4].

However, despite the efforts being made, in order to achieve sustainable and large-scale results, it is necessary to move from isolated initiatives to a systematic, institutionalised approach based on a scientific foundation and intersectoral cooperation. The current situation requires not only the improvement of state policy in the field of nutrition, but also the creation of an effective system for its scientific support, regular monitoring and the implementation of preventive measures. Only a comprehensive and scientifically based approach will ensure long-term improvement in the nutrition of the population and the strengthening of the nation's health [5,6].

One of the key factors in health is nutrition, which has a direct impact on the incidence of disease, life expectancy and quality of life of the population [7-10]. In Kyrgyzstan, the so-called “double burden” of malnutrition is a pressing issue [11]:

■ on the one hand, a deficiency of essential nutrients (animal proteins, polyunsaturated fatty acids, dietary fibre, iron, iodine, folic acid, vitamins D and A), which leads to anaemia, stunted growth in children, cognitive impairment and reduced reproductive health in women;

■ On the other hand, there is an irrational excess of food with high consumption of salt, sugar, trans fats and a lack of dietary fibre, which provokes an increase in non-communicable diet-related diseases such as cardiovascular disease, cancer, obesity and type 2 diabetes.

According to data from the Ministry of Health (MoH) of the Kyrgyz Republic (KR), cardiovascular diseases

are the leading cause of death among the population, accounting for 50.5% of all cases. Malignant neoplasms are in second place, accounting for 11% of deaths. The situation with the nutrition of children and adolescents remains particularly alarming, requiring urgent attention and comprehensive measures [12,13].

Data on the state of child nutrition obtained during the National Micronutrient Status Assessment (NIMAS) [14] are cause for concern. According to the study results, iron deficiency was found in 47% of children under the age of 5, anaemia in 21%, vitamin A deficiency in 15%, and vitamin D deficiency in more than 25% of children. At the same time, there is an alarming trend of increasing overweight among children aged 5-9 years, which reaches 13.8%. In addition, there has been a decline in the proportion of exclusive breastfeeding up to 6 months of age, as well as an increase in the consumption of foods with low nutritional value, which further exacerbates the situation.

Despite the implementation of salt iodisation and flour fortification programmes, their coverage remains insufficient: only 75.6% of households use adequately iodised salt, and only 1.7% of the population receives iron-fortified flour. This significantly reduces the effectiveness of measures aimed at preventing micronutrient deficiencies in the country. Against the backdrop of these problems, there is an acute lack of an institution in the country dealing with issues of nutrition, nutrition science, clinical dietetics, food technology and biotechnology.

Meanwhile, similar institutions are actively operating in many countries around the world, including Russia – the Federal Research Centre for Nutrition, Biotechnology and Food Safety (FRCNBFS), the Institute of Ageing Physiology (Moscow); Kazakhstan – the Scientific Centre for Nutrition, the Centre for Food Hygiene at the National Centre for Public Health; India – National Institute of Nutrition, Central Food Technological Research Institute (CFTRI); USA – Office of Nutrition Research at the National Institutes of Health, USDA Human Nutrition Research Centres; Great Britain – British Nutrition Foundation, Quadram Institute; Germany – Deutsches Institut für Ernährungsforschung (DIfE), Max Rubner-Institut; Japan – National Institute of Health and Nutrition, NARO food science and

technology institutes; China – China National Institute of Nutrition and Health (CINH), Chinese Academy of Agricultural Sciences (CAAS); Republic of Korea – Korea Institute for Health and Social Affairs (KIHASA), Korea Food Research Institute (KFRI).

These institutions are recognised scientific and expert centres that provide scientifically based support for government policy, educational programmes and innovative solutions in the field of nutrition. They not only set national standards, but also promote the introduction of modern biotechnologies in the production of functional and specialised food products.

In many countries around the world, both near and far abroad, there are large specialised enterprises engaged in the production of children's dairy products – adapted formulas, milk, fermented milk and other products for infant nutrition. For example, ByHeart (USA), HiPP and Aptamil (Germany), Laboratoire Modilac and Danone (France), Nutricia (the Netherlands), Granarolo (Italy), Dana Sweden (Sweden) and Geo-Poland (Poland), Progress CJSC, Nutritech JSC and Unimilk LLC in Russia; Nutricia Kazakhstan LLP and Bayan Sulu Baby in Kazakhstan; Art Soft Impex LLC and UZBabyFood in Uzbekistan, etc.

These enterprises are important elements of national child health systems, contributing to the reduction of micronutrient deficiencies and the prevention of anaemia and nutrition-related diseases. In addition, they are actively involved in the development of innovative formulas, ensure the technological independence of countries and contribute to the implementation of international commitments to improve child nutrition (SDG-2 and SDG-3). Despite the urgent need, there are no specialised production enterprises of this kind in Kyrgyzstan, which makes the domestic market dependent on imports and limits the ability to provide high-quality and affordable baby food at the local level. The aim was to justify the need to establish an Institute of Nutrition and Biotechnology at the Kyrgyz State Medical Academy named after I.K. Akhunbaev (KSMA) as an important component of the Kyrgyz Republic's state policy in the field of healthy nutrition, food and food security, prevention of nutrition-related non-communicable diseases and training of qualified personnel.

Materials and Methods

The article presents an analytical review of studies aimed at assessing the nutrition system and nutrition policy in the KR. It justifies the feasibility of establishing an Institute of Nutrition and Biotechnology at the KSMA, which would have special status. The research materials used include official statistical data from the Ministry of Health of the Kyrgyz Republic, the results of a national study on the micronutrient status of the population (NIMAS, 2021), regulatory and policy documents in the field of health and nutrition, reports from international organisations (World Health Organisation

(WHO), United Nations (UN), the Food and Agriculture Organisation of the United Nations (FAO), the United Nations Children's Fund (UNICEF)), as well as published scientific sources on nutrition, dietetics and food biotechnology.

Methods of analytical and systematic analysis, comparative analysis of international experience in the functioning of nutrition institutes, as well as content analysis of scientific publications in this field were used. The creation of the institute is based on the practical and scientific experience of specialists from the Department of Hygiene Disciplines of the KSMA and the Department of Dietetics of the National Centre for Maternal and Child Health (NCMCH). Descriptive statistics methods were used in the preparation of the article. The study did not involve the processing of personal data and did not require ethical approval.

Previous experience of the KSMA in implementing nutrition projects

For many years, the staff of the Department of Hygiene Disciplines of the KSMA have effectively performed the functions of the Institute of Nutrition, taking an active part in the development of scientifically based regulatory documents on healthy and therapeutic nutrition. Their work covered a wide range of areas, including nutrition for different age and professional groups of the population, as well as people with special needs, which made a significant contribution to the formation of state policy in the field of health protection and disease prevention.

In 2014, within the framework of the Japanese Embassy's grant programme in the KR, "The Roots of Grass and Human Security", the KSMA implemented a project to strengthen capacity in the field of child nutrition safety assessment in Bishkek. As part of this project, a specialised laboratory for food quality control was established at the Department of Hygiene. In 2023, in accordance with the priorities of state policy in the field of public health and taking into account the relevance of healthy eating issues, the Academic Council (extract No. 7 of 26 April 2024) of the KSMA decided to establish the Institute of Healthy Eating. The creation of the institute was a logical continuation of the academy's many years of scientific, educational and clinical work in the field of food hygiene, dietetics and nutrition. The creation of the Institute of Nutrition and Biotechnology at the KSMA, which is the country's leading medical university, is a strategically important step, as:

1. KSMA is a recognised leader in medical education in Kyrgyzstan, enjoying high credibility in the country and playing a key role in training qualified medical specialists;
2. The human resources of KSMA consist of highly qualified specialists – professors, associate professors and young researchers in the fields of physiology, biochemistry, microbiology, hygiene and dietetics. This lays the foundation for the training of specialists in

food hygiene, nutritionists and dieticians for practical healthcare in the Kyrgyz Republic;

3. KSMA operates a Central Research Laboratory (CRL), which ensures a high level of scientific achievement, access to information technology and fruitful cooperation in conducting multifactorial research in the field of medicine and biotechnology;

4. KSMA has significant research experience. The operation of specialised laboratories for hygiene, microbiology and biochemistry on its premises allows it to conduct scientific work related to food quality and safety control;

5. The presence at KSMA of a modern clinical base and leading clinicians who provide diagnostic, consultative, therapeutic and preventive care to the population creates a solid platform for the integration of the institute's scientific developments into practical healthcare;

6. The expansion of the KSMA food quality control laboratory and the creation of new modern laboratories that meet international standards is a strategically important initiative that contributes to the implementation of food safety programmes and the promotion of healthy lifestyles.

7. The institute will become an effective platform for the integration of science and practical healthcare. The use of the powerful scientific and clinical base of the KSMA will ensure the effective implementation of scientific achievements in the clinical and industrial environment, as well as increase their demand in the real sector of healthcare and the food industry;

8. KSMA is already actively involved in international scientific exchanges and projects. The creation of the institute will open up new opportunities to attract grants and support from leading international organisations such as WHO, FAO, UNICEF and others, which will expand scientific research activities and improve the quality of training specialists at the global level.

In this regard, the proposal to establish an Institute of Nutrition and Biotechnology at KSMA, the country's leading medical university, is both relevant and timely. The academy possesses a special status, strong scientific and human resource potential, as well as the necessary infrastructure, making it an optimal platform for the creation of such an institute. KSMA's special status provides the institution with unique opportunities for dynamic development in key areas of healthcare, science, and education. Owing to this status, the academy can establish new structural units, including institutes and research centres in strategically important national fields, develop and implement its own educational and scientific programmes, set new standards for specialist training, and effectively attract external resources, including international grants and partnerships, thereby expanding the scope of cooperation. All of this makes it possible to create an innovative educational system integrated with the healthcare sector, turning KSMA into

a centre of innovation where science, education, and practice operate together.

The opening of the Institute will contribute to the development of a national research, educational and clinical-production base in the field of healthy and therapeutic nutrition and biotechnology, thereby ensuring a comprehensive approach to the prevention of chronic non-communicable diet-related diseases. The Institute will regularly analyse and assess the actual nutritional status of the population, develop and implement recommendations and standards for healthy and balanced nutrition, and evaluate the quality and safety of food products. It will be able to establish partnerships with international organisations (WHO, UNICEF, FAO) and leading research centres in other countries, introducing international experience and standards into national practice.

The integration of the Department of Child Nutrition of National Centre for Maternal and Child Health, which has been operating since 1963, into the newly created institute is of great significance. This department has become one of the key units dealing with issues of rational and therapeutic nutrition, and during its work it has developed numerous scientific and clinical areas: a nutrition and amino acid laboratory, a clinical department for early childhood nutrition, a scientific and clinical department for nutritional and metabolic disorders, a scientific and production department for paediatric and therapeutic nutrition, and, since 2010, a department of dietetics. The inclusion of these departments in the structure of the Institute of Nutrition and Biotechnology will allow for the combination of rich clinical experience and scientific research with educational and production activities, ensuring a comprehensive approach to improving nutrition and public health. Since 1988, the Institute has been producing starter cultures, probiotics and fermented milk products for therapeutic and prophylactic use, which has been an important step in providing nutritional support to children and patients with nutritional disorders.

For many years, specialists from the Department of Child Nutrition have been engaged in scientific, clinical, organisational, methodological, educational and production activities, effectively performing the functions of a nutrition institute aimed at developing and improving the system of child and therapeutic nutrition in the Kyrgyz Republic. Specialists from the Department of Dietetics of the NCMCH of Hygiene Disciplines of the KSMA have been actively involved in the development of regulatory and legal documents aimed at improving the system of healthy, paediatric, therapeutic and preventive nutrition, as well as ensuring food and nutritional security for the population of the Kyrgyz Republic.

Key areas of joint work include: participation in the development of legislative and regulatory acts (laws, government decrees, orders of the Ministry of Health of the Kyrgyz Republic) regulating issues related to nutrition for children, pregnant women, nursing mothers and patients

with chronic diseases; preparation of technical regulations and national standards in the field of production and use of baby food and therapeutic nutrition products, probiotics and food supplements; participation in the development of state and departmental programmes for the prevention of micronutrient deficiencies, anaemia, nutritional disorders and non-communicable diseases; creation of teaching aids, recommendations and information and educational materials for medical workers and the population on healthy eating and diet therapy.

Given the growing importance of rational nutrition as a key factor in disease prevention, health promotion and improving the quality of life of the Kyrgyz population, a systematic, scientifically sound and institutionally sustainable approach to nutrition is required. In this regard, the creation of the Institute of Nutrition and Biotechnology at the KSMA by combining the resources and competencies of the Department of Dietetics of the NCMCH and the Department of Hygiene Disciplines of the KSMA appears to be a reasonable and strategically important step.

Reasons and arguments in favour of integration

1. Complementarity of functions and tasks. The Department of Dietetics at the National Centre for Maternal and Child Health traditionally performs scientific, clinical, methodological and production functions, effectively acting as a practical nutrition institute.

The Department of Hygiene Disciplines at the KSMA is engaged in training specialists, scientific research and educational and methodological work in the field of nutrition, nutrition science and hygiene. The merger will allow for the integration of clinical and academic potential.

2. Strengthening the research base. The synergy of the practical experience of the NCMCH and the scientific potential of the KSMA will create conditions for applied and fundamental research in the field of nutrition, biotechnology, disease prevention and the development of innovative food products.

3. Development of educational programmes. The combined institute will be able to implement modern educational programmes in dietetics, nutrition, food safety and biotechnology at all levels: internship, master's degree, residency and advanced training.

4. Implementation of state policy in the field of nutrition. The centralised structure will effectively participate in the development and implementation of regulatory and legal acts, technical regulations, strategic and programmatic documents in the field of nutrition and health care.

5. Production and applied potential. The institute will be able to maintain and scale up the production of therapeutic and preventive products (probiotics, starter cultures, food supplements), expanding access to high-quality nutritional support for the population.

6. Resource optimisation and efficiency improvement. The consolidation of human, material, technical

and intellectual resources will eliminate duplication of functions, improve the manageability and sustainability of activities, and strengthen positions in international partnership networks.

7. Cross-sectoral and international cooperation. The merged institute will become a full-fledged platform for participation in international grants, scientific projects, and cross-border initiatives on nutrition, food security, and sustainable development.

Summarising the above arguments and taking into account the current challenges in the field of nutrition, dietetics and food security, there is a clear need for a clear regulatory and scientific definition of the areas of work of the Institute being created. Consequently, its purpose and set of tasks ensuring the performance of its functions are presented below. Purpose: To ensure state policy in the field of healthy nutrition for the population in order to preserve and strengthen the health of citizens through the implementation of comprehensive research, educational and applied activities, the introduction of innovative approaches, the training of qualified personnel, and the assurance of food quality and safety. Mission: To promote the health of the population of the Kyrgyz Republic through scientific support and the introduction of modern technologies in the fields of nutrition, nutrition science, dietetics and biotechnology, as well as the training of highly qualified specialists. Vision: To become a leading research, educational, and clinical-production centre in the field of nutrition, healthy lifestyles, and biotechnology, combining scientific research, education, and production.

Main areas of activity of the institute

1. Research activities in the field of nutrition, nutrition science, dietetics and biotechnology.

2. Educational, methodological and consulting activities aimed at training, retraining and improving the qualifications of specialists in the field of nutrition, nutrition science, dietetics and biotechnology.

3. Production activities for the development and manufacture of functional, therapeutic and preventive food products.

4. Laboratory activities aimed at assessing the quality, safety and functional properties of food products in accordance with national and international standards.

5. Expert activities, participation in standardisation and certification. Participation in the development and implementation of standards, technical regulations and methodological documents, as well as in the certification and accreditation procedures for food and biotechnological products.

6. International cooperation. Participation in international and national scientific programmes and grants.

In accordance with the stated goals, mission and vision, as well as within the framework of the selected areas of activity, the following key tasks were identified for the functioning of the Institut:

1. Scientific research:

- Scientific support for the Kyrgyz Republic's state policy on healthy nutrition for the population;

- Conducting scientific research in the field of nutrition, dietetics, food safety and biotechnology with the aim of developing innovative approaches to nutrition, improving the quality of life of the population and preventing nutrition-related diseases;

- monitoring and assessment of the nutrition and food status of children and adults in the Kyrgyz Republic, taking into account regional characteristics and risk factors affecting health and quality of life;

- scientific justification and establishment of standards for physiological energy and nutrient requirements for different categories of the population, taking into account gender, age, level of physical activity and health status;

- Formulation of scientifically based principles and recommendations for healthy nutrition, taking into account modern nutritional requirements, physiological characteristics, culture and national dietary traditions;

- Development and implementation of methodological and scientific approaches to the organisation of nutrition in preschool and school educational institutions;

- Development of international cooperation and participation in grant projects aimed at exchanging experience, conducting joint research and introducing best practices in the field of nutrition, health care and related sciences.

2. Expert analytical and assessment:

- Assessment of the quality and safety of food products, followed by the preparation of conclusions on the advisability of their use for healthy, preventive, functional and therapeutic nutrition;

- Determination of the quality and control of the parameters of natural mineral, therapeutic-table and therapeutic-mineral water with mineralisation above 1 mg/dm³ or with lower mineralisation, containing biologically active substances in quantities not lower than balneological standards, followed by the issuance of a conclusion on compliance with the established requirements;

- assessment of the quality of biologically active supplements (BAS), including verification of their composition, safety and effectiveness in accordance with established requirements and standards, followed by the issuance of a conclusion on compliance with established quality and safety standards;

- patent activities and protection of intellectual property rights, as well as licensing of scientific and technical products.

3. Production and biotechnology:

- development and production of specialised healthy and therapeutic and prophylactic food products designed to meet the physiological needs and maintain the health of children, athletes, pregnant and lactating women, as well as elderly and senile people;

- production of food products intended for dietary, therapeutic and prophylactic nutrition, taking into account the specifics of various diseases, body conditions and modern requirements for diet therapy;

- development and organisation of the production of food products and drinking water intended for infant nutrition, taking into account their physiological characteristics and needs;

- development and organisation of the production of probiotics, functional food products and biologically active supplements with the aim of strengthening health and preventing diseases in various population groups.

4. Educational tasks:

- training and retraining of specialists in the fields of dietetics, nutrition science, food hygiene and biotechnologies;

- implementation of educational programmes for the training of medical and academic staff in the fields of nutrition and biotechnologies at the stages of internship, residency, postgraduate and doctoral studies;

- provision of continuing professional development programmes for nutritionists, dietitians, technologists and other specialists in order to enhance their professional competencies in accordance with modern requirements.

5. Advisory and educational tasks:

- provision of advisory support to the population on issues of healthy, balanced and therapeutic nutrition, taking into account physiological needs and aimed at the prevention of diet-related diseases;

- organisation of educational and awareness-raising activities among the population aimed at promoting a culture of healthy eating, informing about modern food technologies, biotechnological developments and principles of food safety.

For the effective implementation of the above-mentioned goals and tasks, a clear and functional organisational model is required, ensuring the execution of scientific, educational, clinical, expert and production-biotechnological activities. In this regard, the structure of the Institute is being formed, including specialised units, each responsible for a specific set of functions and priority areas of work.

The structure of the Institute includes three key organisational blocks:

1. a research and advisory block

2. a production and biotechnological nutrition department

3. a food quality and safety laboratory

The research and advisory block includes four specialised departments (Department of Healthy Nutrition and NCD Prevention, Department of Clinical Nutrition and Dietetics, Department of Child, Adolescent and School Nutrition, and Department of Professional Development and Retraining), each operating within its specific profile and carrying out the corresponding tasks:

1. Department of Healthy Nutrition and Prevention of Non-Communicable Diseases (NCDs) – research in the field of healthy and balanced nutrition; prevention of diet-related non-communicable diseases; development of preventive programmes and practical recommendations for different population groups.

2. Department of Clinical Nutrition and Dietetics – development and implementation of clinical guidelines and protocols on nutrition; conduct of scientific research on the effects of diet on health and the course of diseases; provision of advisory and methodological support to medical units; participation in clinical studies, evaluation of the effectiveness of dietary strategies, preparation of methodological materials and educational programmes.

3. Department of Child, Adolescent and School Nutrition – development of diets and menus for educational institutions, taking into account the age-related and medical characteristics of children and adolescents; quality control of nutrition and introduction of innovative, functional and preventive food products; research on optimisation of diets in educational organisations; development of methodological recommendations and educational programmes for specialists.

4. Department of Professional Development and Retraining – organisation and delivery of educational programmes, courses, seminars and training sessions on healthy and therapeutic nutrition; introduction of modern educational methods, including distance learning and practice-oriented approaches; planning and coordination of educational activities; development of curricula and methodological materials.

5. Production and Biotechnological Nutrition Department – production of infant, therapeutic and functional food products; implementation of modern biotechnological methods; development and testing of new formulations of specialised infant and functional foods; control of technological processes to ensure compliance with regulatory requirements, sanitary standards and scientific recommendations.

6. Food Quality and Safety Laboratory – control of the quality and safety of food products; implementation of modern methods for quality and safety assessment; research on potential health risks; preparation of expert conclusions and recommendations.

Prospects for the institute's development

The institute's further development is aimed at strengthening its role as a key research, educational, clinical and production centre in the field of food hygiene, clinical nutrition and dietetics, and food biotechnology. Plans include expanding research activities, introducing new functional and therapeutic products, improving methods for assessing the quality and safety of food products, and expanding international partnerships. New educational programmes will be developed and implemented for the training, retraining and profes-

sional development of specialists. Particular attention will be paid to the integration of scientific developments with practical healthcare and production, which in the long term will contribute to improving and maintaining the health of the population, as well as increasing the efficiency of the nutrition system in the republic.

The Institute of Nutrition and Biotechnology aims to comprehensively improve the health of the population through scientific, educational, production and expert activities. The institute's scientific activities include the development and implementation of modern approaches to healthy nutrition, the prevention of nutrition-related and chronic diseases, the creation of clinical recommendations and diet therapy protocols, and the formation of a database on the nutrition of various population groups. The results of the research are actively integrated into practice and disseminated through publications, methodological materials and educational programmes.

The role of the Institute of Nutrition in the Kyrgyz Republic's healthcare system

The Institute of Nutrition and Biotechnology plays a key role in strengthening the healthcare system of the Kyrgyz Republic by ensuring scientifically based management of the population's nutrition and prevention of diet-related diseases. The institute's activities are aimed at reducing the incidence of chronic and non-communicable diseases, improving the quality of therapeutic and dietary nutrition, and introducing modern approaches to functional and preventive nutrition.

Through the integration of scientific research, educational programmes and industrial innovation, the institute contributes to the development of an effective system of clinical nutrition and dietetics, ensuring the quality and safety of food products and training qualified specialists in the field of nutrition and biotechnology. The institute's expert recommendations help medical institutions, educational organisations and health authorities make decisions based on modern scientific data, which ultimately improves the health and quality of life of the population of the Kyrgyz Republic.

Conclusions

The establishment of the Institute of Nutrition and Biotechnology at the KSMA will be a strategically important step towards achieving national and international goals in the field of health and well-being. The Institute will function as a leading scientific, educational, clinical and production centre, combining scientific research, educational programmes, expert and production-biotechnological activities in the field of nutrition and biotechnology, and will play a key role in the development of nutrition science, healthcare and food technology in the KR.

The formation of a comprehensive structure, including research, educational, production-biotechnological and expert departments, will enable the systematic solution of tasks related to the prevention of nutrition-related

diseases, the development of diets and functional, therapeutic and infant food products, as well as the training and professional development of specialists. The Institute's activities will ensure the effective integration of scientific data into healthcare practice, the introduction of modern biotechnologies and innovative products, and the expansion of international scientific and expert cooperation.

The expected results of the Institute's work will be an improvement in the quality and length of life of the population, a reduction in morbidity, an increase in the safety and functional value of food products, and a strengthening of the country's food and nutritional security. The Institute's development prospects are linked to the expansion of its research and educational activities, the introduction of advanced technologies, and the strengthening of its role as a national centre of expertise, coordination and scientific support for state policy in the field of nutrition and biosafety.

The combination of the scientific, educational and clinical potential of the KSMA and the Department of Dietetics of the National Centre for Maternal and Child Health creates a unique platform for the integration of

science, education, clinical practice and production. The implementation of the concept of the Institute of Nutrition and Biotechnology will enable a transition from fragmented initiatives to a systematic and sustainable state policy in the field of nutrition, ensure the development of domestic scientific and technological competencies, improve the quality of medical care and, in the long term, contribute to strengthening the health and well-being of the population of the Kyrgyz Republic.

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Conflict of Interest

The authors declare no conflict of interest.

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