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NEW WAYS TO ADDRESS THE PROBLEM OF CHRONIC NON-COMMUNICABLE DISEASES

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Abstract. The review is devoted to the search for new directions for solving the problem of chronic non-communicable diseases in the future.

The term «Non-communicable diseases» (NCDs) refers to chronic diseases of internal human organs that are not transmitted from one person to another. This term was first used by the medical academic community and the World Health Organization at the end of the 20th century after the understanding of the common pathogenesis of all non-communicable diseases deepened. All non-communicable diseases have a long duration of course/catamnesis and are the result of a combination of genetic, physiological, environmental, and behavioral factors.

Results. As a result of the theoretical study, the following promising scientific directions for solving the problem of NCDs in the future were identified:

- Mitochondrial dysfunction as a new trend in the pathogenesis of NCDs and a new therapeutic target;
- Continuum of NCDs is a new model for their catamnesis;
- The Theory of Complex Systems of the human body is a new approach to the systemic study of NCDs;
- The promising role of Magnetobiology in the search for new mechanisms of the pathogenesis of NCDs;
- Frequency-wave model of the human body structure is a promising direction in the search for new methods of diagnosis and treatment of NCDs;
- Kinesiotherapy and regular exercise are scientifically based ways to overcome mitochondrial dysfunction and NCDs.

The purpose of this perspective review was to identify new promising directions in solving the problem of chronic non-communicable diseases from the standpoint of modern biophysical knowledge. Materials and methods: general scientific and theoretical methods were used in the theoretical study. The results of the system analysis of existing new scientific knowledge, which can form the basis for new approaches to solving the problem of chronic non-communicable

diseases, are presented in the review.

Conclusions. The most promising areas were identified as areas related to deepening knowledge of the pathogenesis of chronic non-communicable diseases as the basis of pathology. These are studies devoted to the role of mitochondria, the creation of new ideas about the continuum of chronic non-communicable diseases, the search for new mechanisms of pathogenesis of chronic non-communicable diseases based on new knowledge of magnetobiology, and deepening knowledge about the role of the myofascial system in the energy supply of the human body. Of fundamental importance is the development of ideas of the theory of the human body as a complex system by the professor. A. Vainoras. A promising direction is the study of the possibilities of instrumental diagnostic complexes based on the Vega test and bioresonance therapy in the complex management and treatment of patients with chronic non-communicable diseases.

Keywords: chronic non-communicable diseases, mitochondrial dysfunction, chronic non-communicable disease continuum, complex systems theory, kinesiotherapy, biophoton signaling, myofascial system.

Introduction. The term “Non-communicable diseases” (NCDs) refers to chronic diseases of internal human organs that are not transmitted from one person to another. This term was first used by the medical academic community and the World Health Organization at the end of the 20th century after the understanding of the common pathogenesis of all NCDs deepened. All NCDs have a long duration of course/catamnesis and are the result of a combination of genetic, physiological, environmental, and behavioral factors. Behavioral factors are determined by the degree of a person’s commitment to a healthy lifestyle. Recognized risk factors for NCDs include poor nutrition, tobacco smoking, alcohol abuse, and physical inactivity. The main types of NCDs are cardiovascular diseases (such as heart attacks and strokes), cancer, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), and diabetes [1].

Modern medicine cannot completely cure any NCDs. Despite significant advances in the strategy of NCD patient management and control, the epidemiological rates of NCDs prevalence and incidence remain high worldwide. The medical community has recognized the fact that NCDs have reached the level of a pandemic [2] and pose a threat to the social and economic development of humanity [1, 3]. NCDs, primarily cardiovascular diseases, are the leading cause of death and disability in people, including those under 70 years of age. The global academic community and the World Health Organization have been paying great attention to solving the problem of NCDs in recent decades [3-9]. However, success has not yet been achieved. Therefore, the search for new approaches and ways to solve the problem of NCDs is a pressing scientific issue. If a problem remains unresolved for a long time, it is advisable to look at it from a different angle and look for new approaches. Therefore, the purpose of this perspective review was to outline new promising directions in solving the problem of NCDs from the standpoint of modern biophysical knowledge. Fundamental science has made significant progress over the past few decades. All this marked the birth of new ideas, views, and upcoming changes in the paradigm of science. Many of these new ideas and knowledge have great potential to transform scientific paradigms. We have conducted a systematic analysis of existing new scientific knowledge that can potentially become the basis for new approaches to solving the problem of NCDs. This review presents the results of this

theoretical study. Each section of the review is a brief description of a new promising direction for the future solution of the NCDs problem.

Materials and methods. This theoretical study is a fragment of research work of the Department of Internal Medicine and Emergency Medicine of Poltava State Medical University (23, Shevchenko St., 36011, Poltava, Ukraine) on “Development of algorithms and technologies for implementing a Healthy Lifestyle in patients with Non-communicable Diseases based on the study of functional status” (state registration number 0121U108237: UDC 613 616-056-06: 616.1/9-03).

Scientific work is carried out in conjunction with the following scientific institutions: 1) Lithuanian University of Health Sciences (9, A. Mickevičius St., LT-44307, Kaunas, Lithuania), the cooperation coordinator is the Senior Researcher of the Laboratory for Automatization of Cardiovascular Investigations, Cardiology Institute, Prof., DM A. Vainoras; 2) Lithuanian sports university (6, Sporto St., LT-44221, Kaunas, Lithuania), the cooperation coordinator is Associate Professor of the Department of Health and Rehabilitation of Institute of Sports Science and Innovation K. Poderiene; 3) Shupyk National Healthcare University of Ukraine (9, Dorogozhytska St., 04112, Kiev, Ukraine), the cooperation coordinator is the Head of the Department of Informatics, Information Technologies and Transdisciplinary Education, prof., DM O.P. Mintser; 4) Kherson State University (Legal Address: 27 Universytetska St., Kherson, 730034; Actual Address: 14 Shevchenka St., Ivano-Frankivsk, Ukraine, 76018), the cooperation coordinator is Associate Professor of the Department of Department of Physical Therapy, Occupational Therapy S. Danylchenko.

General scientific methods (dismemberment and integration of elements of the studied system, imaginary experiment, logical, historical research, analysis, induction, deduction, and synthesis of knowledge) and theoretical methods (method of constructing theory, logical methods, and rules of normative nature) were used in this theoretical study.

Results. As a result of the theoretical study, the following promising scientific directions for solving the problem of NCDs in the future were identified:

- Mitochondrial dysfunction as a new trend in the pathogenesis of NCDs and a new therapeutic target;
- Continuum of NCDs is a new model for their cat-

amnesia;

- The Theory of Complex Systems of the human body is a new approach to the systemic study of NCDs;
- The promising role of Magnetobiology in the search for new mechanisms of the pathogenesis of NCDs;
- Frequency-wave model of the human body structure is a promising direction in the search for new methods of diagnosis and treatment of NCDs;
- Kinesiotherapy and regular exercise are scientifically based ways to overcome mitochondrial dysfunction and NCDs.

Mitochondrial dysfunction is a new trend in the pathogenesis of NCDs and a new therapeutic target.

Molecular biologists have devoted the last few decades to studying the functions of mitochondria in health and disease. Significant advances have been made, and the paradigm of mitochondria has undergone considerable changes. Thanks to advances in molecular biology and modern knowledge of mitochondriology, it has become clear that mitochondria play a key role in regulating metabolism, the cell cycle, and cell death. Mitochondria are the “energy centers” of the cell. They metabolize food substrates and are the centers for the synthesis of a universal chemical energy carrier, adenosine triphosphate [10]. Mitochondria are the “synthetic centers” of the cell. All metabolic and synthetic processes of the cell occur on the mitochondrial membranes [11,12]. Mitochondria determine the course of many regulatory processes in the cell [13-17]. They interact chemically and non-chemically with the nuclear DNA of the cell and participate in the mechanisms of biophoton signaling, providing mechanisms for the translation of genetic information in the cell [18-19]. This ensures the creation of the necessary information electromagnetic conditions for the resonant interaction between molecules in vivo and the simultaneous course of a great many biochemical reactions in cells. The role of mitochondria in the vital activity of the cell is so significant that the disruption of their function leads to the occurrence of severe pathology of internal organs. Initially, this was established and studied in detail in patients with congenital mitochondrial diseases [20]. Further study of mitochondrial dysfunction in NCDs demonstrated its significant role in the pathogenesis of these diseases [21-27]. Systematic analysis of the relationships between risk factors for NCDs and molecular mechanisms of mitochondrial dysfunction has theoretically substantiated and demonstrated the key pathogenetic role of mitochondria in the pathogenesis of NCDs at all stages of the NCD continuum [28-30].

The scientific fact that mitochondria are a new therapeutic target in the treatment of NCDs is recognized by many scientists [31, 32]. Currently, there is a scientific search for the optimization of methods for clinical diagnostics of mitochondrial function and methods for pharmacological and non-pharmacological correction of their tasks [33-35].

Thus, further deepening of the understanding of the fundamental role of mitochondria in the pathogenesis of NCDs, extrapolation of mitochondriological knowledge into clinical medicine, and the development of methods for

correcting mitochondrial dysfunction are new promising directions for solving the problem of NCDs in the future. Molecular biologists have devoted the last few decades to studying the functions of mitochondria in health and disease. Significant advances have been made, and the paradigm of mitochondria has undergone considerable changes. Thanks to advances in molecular biology and modern knowledge of mitochondriology, it has become clear that mitochondria play a key role in regulating metabolism, the cell cycle, and cell death. Mitochondria are the “energy centers” of the cell. They metabolize food substrates and are the centers for the synthesis of a universal chemical energy carrier, adenosine triphosphate [10]. Mitochondria are the “synthetic centers” of the cell. All metabolic and synthetic processes of the cell occur on the mitochondrial membranes [11, 12]. Mitochondria determine the course of many regulatory processes in the cell [13-17]. They interact chemically and non-chemically with the nuclear DNA of the cell and participate in the mechanisms of biophoton signaling, providing mechanisms for the translation of genetic information in the cell [18-19]. This ensures the creation of the necessary information electromagnetic conditions for the resonant interaction between molecules in vivo and the simultaneous course of a great many biochemical reactions in cells. The role of mitochondria in the vital activity of the cell is so significant that the disruption of their function leads to the occurrence of severe pathology of internal organs. Initially, this was established and studied in detail in patients with congenital mitochondrial diseases [20]. Further study of mitochondrial dysfunction in NCDs demonstrated its significant role in the pathogenesis of these diseases [21-27]. Systematic analysis of the relationships between risk factors for NCDs and molecular mechanisms of mitochondrial dysfunction has theoretically substantiated and demonstrated the key pathogenetic role of mitochondria in the pathogenesis of NCDs at all stages of the NCD continuum [28-30].

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Continuum of NCDs is a new model for their catamnesia. A promising direction that can change the views on the problem of NCDs is their consideration in the general continuum model. Initially, this model was proposed for cardiovascular diseases. In the second half of the 20th century, cardiologists V. Dzau and E. Braunwald noted that cardiovascular diseases never occur immediately. Their appearance is preceded by a period of metabolic changes in the patient’s body. At the same time, dyslipid-

emia, hypercholesterolemia, systemic inflammation, atherosclerosis, etc. gradually occur in the human body. They called this period the stage of formation of risk factors for cardiovascular diseases [36-38]. Dzau and Braunwald also noted a certain commonality in the stages of development of cardiovascular pathology in all patients and described it in the Cardiovascular Continuum Theory [36-38]. Now the Cardiovascular Continuum Theory is recognized worldwide. This theory describes in detail how one pathology is gradually supplemented by another pathology and emerging complications during the development of the cardiovascular disease follow-up, and ends with the death of the patient [36-38]. The ideas of the pathology continuum were reflected in subsequent studies. Thanks to this, the concepts of the renal continuum and so on appeared [39-41]. The concept of the existence of a general continuum of NCDs became a summary version of the development of ideas for a holistic consideration of the development of NCDs over time. The NCDs continuum is a new model of the patient's follow-up, which offers a scholastic consideration of the development of all pathologies of the patient's internal organs in the dynamics of their progression [28, 29, 42]. In this case, the Cardiovascular Continuum and the continua of pathologies of other organs are proposed to be considered as part of the general continuum. In simple terms, these ideas can be described as follows. From the moment of birth, a person begins to be exposed to risk factors for the development of NCDs. From childhood, poor nutrition with systematic overeating, lack of sufficient (up to 12 hours) daily periods of hunger, unbalanced diet with nutritional deficiencies of microelements, vitamins, and essential nutrients, excess harmful food components (easily digestible carbohydrates, trans fats, food additives, stabilizers and preservatives, dyes and other potentially toxic food components) begin to create conditions for the occurrence of mitochondrial dysfunction in the cells of the human body [28, 29] and primarily in the tissues

of the gastrointestinal tract [42]. Hypodynamia does not have a direct damaging effect on mitochondria, but it creates conditions for a decrease in energy requirements and contributes to a decrease in the number of mitochondria in the cells of hypotrophic muscles [43-46]. Thus, gradually and imperceptibly for a person, pathogenetic conditions for disruption of the energy supply of the tissues of his body begin to form in his body from childhood. Subsequently, the increase in the toxic damaging effect of alcohol, tobacco smoke components, and other toxic agents on mitochondria gradually further increases mitochondrial dysfunction [28,29]. Over time, an increasing number of mitochondria with dysfunction appear in the cells. When this number becomes critical, the functioning of the cell is disrupted [28, 29, 47]. This is reflected in changes in the biochemical and clinical indicators of organ functioning. For example, in liver cells, this is expressed in the disruption of the synthesis of various substances (lipoproteins, cholesterol, etc.). In pancreatic cells, this can manifest itself in changes in insulin production. Thus, as a result of the progression of mitochondrial dysfunction in the human body, conditions gradually arise in the form of a metabolic pattern that initiates the development of systemic inflammation and atherosclerosis. Further progression of the pathology leads to the emergence of various types of NCDs and the progression of their continuums [28, 29]. Consideration of NCDs from the position of their general continuum enables a holistic view of them as a single pathogenetic chain during the course of follow-up. This is a fundamentally new approach, the development of ideas of which can reveal in the future the mechanisms of the relationship between organs during the formation of pathology and explain the fundamental aspects of comorbidity in NCDs. It also opens up new prospects in the development of new methods of complex prevention of NCDs and can make it more effective (Figure 1).

The Theory of Complex Systems of the human



Figure 1. The authors of the Magnetochemical Theory of Metabolism and Life and the ideas of the NCDs Continuum.

body by Professor A. Vainoras is a new approach for the systemic study of NCDs.

The human body is a complex, multicomponent, non-linear system. To understand the essence of the body's reactions, the Theory of Complex Systems for the Human Body was developed by the Lithuanian professor A. Vainoras [48, 49]. This theory is an essential theoretical tool in forming a correct understanding of the essence of complex relationships in the human body. This theory links the fundamental principles of the structure of relationships in nature with the organization of the human body system. This theory describes the properties of the human body as a complex system (multicomponent nature, interconnectedness, "organized chaos", cooperation, competition, synergy, evolutionary dynamics, etc.). The use of this theory in further studying the pathogenesis of NCDs allows us to form a new conceptual apparatus for describing

processes in the human body from the standpoint of the scholastic approach and systems medicine. The accumulated knowledge of clinical medicine demonstrates close relationships between the functioning of organs in normal and pathology. NCDs are not separate diseases, but a complex of pathological processes co-occurring in the body of each person. These processes influence each other, predetermine each other, and the fate of the human body/catamnesis of NCDs. Therefore, to solve the problem of NCDs, it is critical to move at the present stage from the rudimentary perception of each nosology of NCDs to their holistic perception as a complex single pathology of the human body. The theory of complex systems of the human body opens up scientific possibilities for achieving such a scientific task (Figure 2).

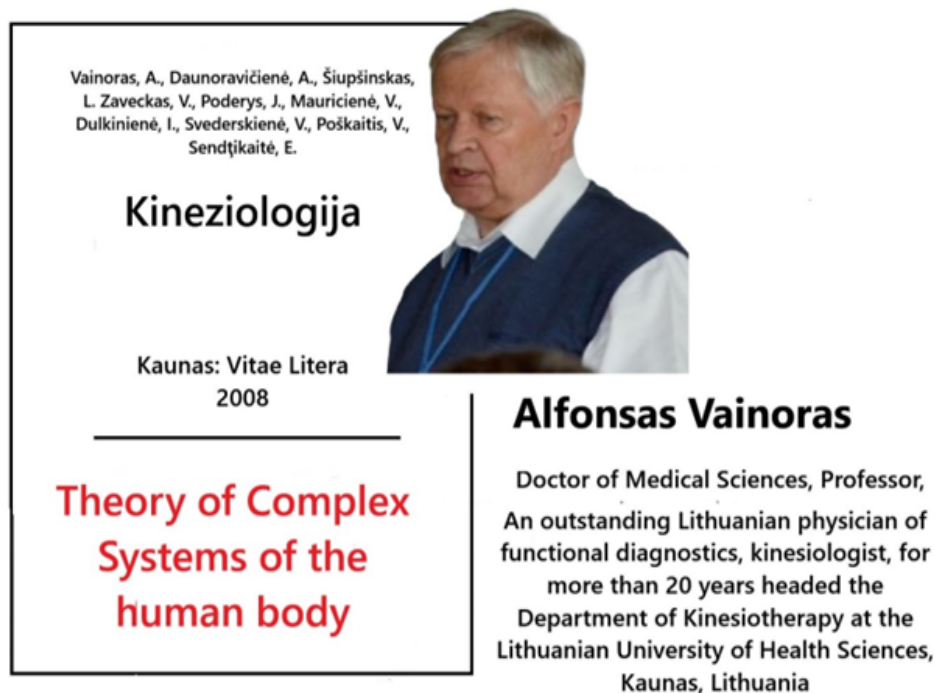


Figure 2. The author of the Theory of Complex Systems of the human body.

The Promising Role of Magnetobiology in the Search for New Mechanisms of NCDs Pathogenesis.

Scientific understanding of the fact that the human body at the subatomic level is formed by electromagnetic fields [50-53] radically changes the view on the essence of its metabolic processes. All metabolic processes of the human body occur in the form of reactions between subatomic structures at quantum levels and are determined

by their electromagnetic parameters [53, 54]. This is the next step in understanding the role of electromagnetic processes in the pathogenesis of NCDs. This determines the further transition from the electrochemical paradigm of describing metabolic processes to the magnetochemical paradigm of metabolism. At the current stage of extrapolation of this new knowledge to medicine, theoretical studies are devoted to the conceptualization of the

Magnetochemical Theory of Metabolism and Life [55-61]. These studies were started in 2018 by an initiative group of Ukrainian scientists led by Professor O. Mintser and Professor M. Potyazhenko. They are currently ongoing jointly with Lithuanian scientists. The study of aspects of the role of magnetobiological factors in cardiology is carried out under the supervision of Professor G. Jarusevicius and Professor A. Vainoras. The study of aspects of the role of magnetobiological factors in nephrology is carried out under the supervision of Professor I.A. Bumblyte. The theoretical and clinical results of the studies allow us to assert the existence of reliable links between the dynamics of

the parameters of the Earth's electromagnetic field and the functional state of a person. The influence of the Earth's electromagnetic field on the heart rate and the occurrence of acute myocardial infarction has been proven [62-64], and there are trends that indicate the existence of such an influence on cases of exacerbation of chronic renal pathology as well [65]. Continuation of research in this direction is relevant and can lead to the discovery of new fundamental mechanisms of NCDs. This can also be the basis for solving the problem of NCDs in the future (Figure 3).

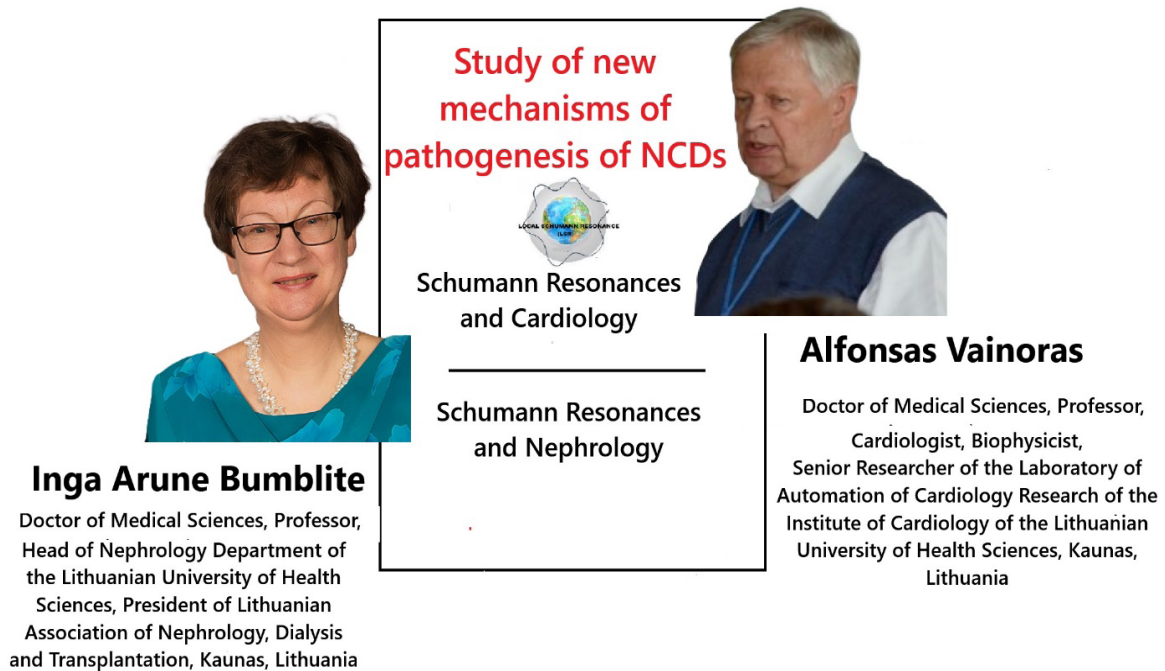


Figure 3. Pioneering scientists research aspects of NCD pathogenesis that are related to the dynamics of Schumann Resonances.

Frequency-wave model of the human body structure and its role in the prospects for finding new methods for diagnosing and treating NCDs.

Understanding the fact that the human body at the subatomic level is formed by electromagnetic fields [50-53] radically changes the view of its structure. Based on this concept, the human body can be described in a frequency-wave model. The idea is that each atom of a substance is formed by electromagnetic energies, which are organized in it in the form of a nucleus and an electron/electrons rotating around it. In this case, the nucleus has its oscillatory motion - the precession of the nucleus. The precession of the nucleus has specific frequency-wave characteristics for each substance. This is a constant objective parameter. The composition of a substance is determined in science by the frequency of precession of nuclei. This principle underlies the study of body composition using the Magnetic Nuclear Resonance method [66]. The presence of frequency-wave characteristics in atoms of sub-

stances underlies their frequency interaction according to the resonance principle in the human body in vivo.

In essence, the human body is a conglomerate of frequency-wave oscillatory processes that are combined into a single functional whole [67]. In science, frequency-wave processes of organ functioning have been defined [59, 67]. The most understandable example is the frequencies of brain functioning/brain rhythms and heart frequencies/heart rhythm. Functioning frequencies have also been established for other organs, molecules, and microorganisms [68, 69]. Also, parts of the body can be represented as a model of total frequencies [70], and so on. The frequency-wave model has practical significance for clinical medicine as a justification of the principles of interaction between molecules and can be used for this reason in instrumental diagnostic methods for NCDs. As noted earlier, such a method is magnetic nuclear resonance.

Another example is the method of vegetative resonance testing [70]. The essence of the process is that a

known frequency of a substance (for example, a vitamin, amino acid, etc.) is fed to a biologically active point of the human body. The device records the electromagnetic reaction of the body in the form of a change in electrical voltage on the skin at this biologically active point. Based on these parameters, methods have been developed for an objective study of the presence/absence of the substance under study and a qualitative assessment of its level in the human body. This method allows for the evaluation of the presence/absence of pathology of an organ or organ systems by testing complexes of established frequencies according to a similar principle [70]. This opens up new potential opportunities for non-invasive diagnostics of the functional state of patients with NCDs. It also makes it possible to objectively determine nutritional deficiencies in patients, select suitable pharmacological drugs, and carry out therapeutic effects using specific spectra of therapeutic frequencies [70]. This is the basis of frequency-wave/bioresonance therapy. This is a promising direction for the development of new approaches for diagnostics [71, 72] and the development of complex treatments for NCDs in the future using appropriate equipment. Further study and practical implementation of these approaches in practical healthcare is a new promising way to solve the problem of NCDs in the future.

Kinesiotherapy and regular exercise are scientifically proven ways to overcome mitochondrial dysfunction and NCDs

The importance of regular exercise has long been substantiated for maintaining health, treating and preventing NCDs [70]. However, new ideas about the role of mitochondria in energy supply and the creation of an

information signal inside and outside the cell deepen the knowledge about the mechanisms of muscle participation in the energy of the human body and its health [45, 46, 71]. The proposed working concept of biophoton signaling describes the fundamental importance of muscles as an energy-supplying system for the whole body [18, 19, 72]. At the same time, connective tissue and muscle synkinesia form pathways for transmitting electromagnetic energy in the human body. Due to this, the body is united into a single whole, and the electromagnetic energy generated by muscles is redistributed throughout the human body [18]. This opens up new directions for studying the relationship between organ trophism and muscle synkinesia in NCDs, explains the mechanisms of the proven clinical effectiveness of kinesiotherapy in NCDs, and is a promising practical component of their treatment and prevention. Further development of this direction deserves the attention of scientists as a real practical opportunity to supplement the complex therapy of NCDs effectively. The study of the relationship between organs and the functioning of muscle synkinesia continues in the integration of Ukrainian scientists from Poltava State Medical University under the leadership of Professor M. Potyazhenko, employees of the Department of Physical Therapy and Occupational Therapy of Kherson State University, Associate Professor S. Danilchenko and Associate Professor I. Golovchenko, together with Lithuanian colleagues from the Lithuanian University of Health Sciences [72]. Since 2025, scientists from the Lithuanian Sports University under the leadership of Associate Professor K. Poderiene have joined the research work (Figure 4).



Figure 4. A group of scientists who are developing innovative ideas on the pathogenesis of NCDs that are associated with mitochondrial dysfunction and electromagnetic mechanisms of energy and information transfer in the human body.

Conclusions. This review has outlined potential new directions for further scientific research to overcome the problem of NCDs. The most promising directions were those related to deepening the knowledge of NCD pathogenesis. These are studies devoted to the role of mitochondria in the pathogenesis of NCDs, the creation of new ideas about the continuum of NCDs, the search for new mechanisms of NCDs pathogenesis based on modern knowledge of magnetobiology, and deepening the understanding of the role of the myofascial system in the energy supply of the human body. Of fundamental importance is the further use of the ideas of the Theory of Complex Systems of the Human Body to deepen the fundamental issues of NCDs pathogenesis and unravel the causes of NCDs comorbidity. An important and promising direction is the study of the capabilities of instrumental diagnostic complexes based on veg-

etative resonance testing and bioresonance therapy methods in the complex management and treatment of patients with NCDs.

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НОВІТНІ ШЛЯХИ ВИРІШЕННЯ ПРОБЛЕМИ НЕІНФЕКЦІЙНИХ ЗАХВОРЮВАНЬ

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Резюме. Огляд присвячений пошуку нових напрямків для розв'язання проблеми хронічних неінфекційних захворювань у майбутньому. Термін «неінфекційні захворювання» (НЗЗ) стосується хронічних захворювань внутрішніх органів людини, які не передаються від однієї людини до іншої. Цей термін вперше був використаний медичною академічною спільнотою та Всесвітньою організацією охорони здоров'я наприкінці 20 століття після поглиблення розуміння спільного патогенезу всіх неінфекційних захворювань. Усі неінфекційні захворювання мають тривалий перебіг/катамнез і є результатом поєднання генетичних, фізіологічних, екологічних та поведінкових факторів.

Мета цього перспективного огляду була позначити нові перспективні напрями у вирішенні проблеми хронічних неінфекційних захворювань із позиції сучасних біофізичних знань.

Матеріали і методи: загально наукові і теоретичні методи були використані у теоретичному дослідженні. Результати системного аналізу існуючих нових наукових знань, які потенційно можуть стати основою нових підходів у вирішенні проблеми хронічних неінфекційних захворювань, представлені в огляді.

Результати. В результаті теоретичного дослідження було визначено такі перспективні наукові напрями вирішення проблеми неінфекційних захворювань (НЗЗ) у майбутньому:

- Мітохондріальна дисфункція як нова тенденція в патогенезі НЗЗ та нова терапевтична мішень;
- Континуум НЗЗ – нова модель їх катамнезу;
- Теорія складних систем людського організму – новий підхід до системного вивчення НЗЗ;
- Перспективна роль магнітобіології в пошуку нових механізмів патогенезу НЗЗ;
- Частотно-хвильова модель будови тіла людини – перспективний напрямок у пошуку нових методів діагностики та лікування НЗЗ;
- Кінезіотерапія та регулярні фізичні вправи – науково обґрунтовані способи подолання мітохондріальної дисфункції та НЗЗ.

Висновки: найперспективніші були визначені напрями, пов'язані з поглибленням знань патогенезу хронічних неінфекційних захворювань як основи патології. Це є дослідження, присвячені ролі мітохондрій, створенню нових уявлень про континуум хронічних неінфекційних захворювань, пошуку нових механізмів патогенезу хронічних неінфекційних захворювань на основі нових знань магнітобіології, поглиблення знань про роль міофасціальної системи в енергозабезпеченні тіла людини. Принципово важливе значення має розвиток ідей Теорії організму людини як комплексної системи проф. А. Вайнораса. Перспективним напрямком є дослідження можливостей інструментально-діагностичних комплексів на основі вегеторезонансного тестування та методів біорезонансної терапії у комплексному віданні та лікуванні пацієнтів із хронічними неінфекційними захворюваннями.

Ключові слова: хронічні неінфекційні захворювання, мітохондріальна дисфункція, континуум хронічних неінфекційних захворювань, теорія комплексних систем, кінезіотерапія, біофотонний сигналінг, міофасціальна система.

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The team of scientific co-authors and the editorial board of the journal join in congratulating the famous Lithuanian scientist, author of the Theory of Complex Systems of the Human Body, founder of the ideas about the key role of Magnetobiology in the pathogenesis of NCDs, Professor Alfonsas Vainoras, on his 80th birthday. We wish him good health and the fulfillment of all his goals and dreams in life and science.