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CHRONICLE

## Medical botany in the system of botanical gardens of Ukraine

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### Abstract

The study analyzed the historical background and the formation of medical botany as a new scientific discipline at the M.M. Gryshko National Botanical Garden of the NAS of Ukraine. Throughout its entire period of existence (as a department and later as a laboratory), the Medical Botany division has functioned as a center for consolidating the efforts of botanists, florists, resource management specialists, iatrochemists, pharmacologists, clinicians, and other relevant experts from Ukraine. The coordinated work of these specialists has focused on the conservation and enhancement of biological resources, as well as the advancement and institutional development of phytotherapy in Ukraine. The primary scientific direction of the Laboratory of Medical Botany is the mobilization of Ukraine's medicinal plant resources for disease prevention and enhancing human performance under conditions of ecological stress. This requires targeted research aimed at: forecasting prospects for enriching the raw-material base of medicinal plants through the selection and inclusion of native Ukrainian flora and introduced species that represent valuable sources of biologically active compounds; conducting morphological and phytochemical studies of medicinal plants to determine the potential for their multifunctional use; identifying and investigating plants with antiviral, immunostimulatory, radioprotective, antimutagenic, insecticidal and other biologically active properties; introducing promising species into cultivation; searching for and utilizing unconventional plants as potential sources of biologically active compounds for medicinal, nutritional, technical and other applications; ensuring waste-free technologies for processing medicinal plant raw materials through the use of secondary resources to obtain complex biologically active substances; developing therapeutic and prophylactic products of special purpose, as well as phytopreparations with a broad spectrum of physiological activity; conserving rare and endangered species; and promoting medicinal plants through educational and outreach activities.

The plants of the collection fund are organized according to a systematic principle, taking into account their pharmacological properties, including anti-inflammatory, choleric, diuretic, immunostimulatory, sedative, antispasmodic, hemostatic, and other activities, which are determined by the content of biologically active compounds (carbohydrates, alkaloids, glycosides, flavonoids, volatile organic compounds, and others). In 2015, the Collection of Medicinal Plants was designated as a national heritage object.

**Keywords:** medical botany, medicinal plants, aromatherapy, phytocombinatorics, phytoergonomics

**Authors' contributions:** Nadiia Dzhurenko contributed to the analysis of the historical pathway of medical botany at the M.M. Gryshko National Botanical Garden of the NAS of Ukraine. Olena Palamarchuk provided additional input to the analysis of the historical path of medical botany at the M.M. Gryshko National Botanical Garden of the NAS of Ukraine. Oksana Sokol was responsible for the collection component of the Medical Botany Laboratory. Sergiy Ledenev researched the insecticidal properties of plants.

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In the past, most botanical gardens originated as apothecary gardens, where 'medicinal herbs' were primarily cultivated. Subsequently, such activity ceased to be a priority. The medical function of botanical gardens is crucial at the present stage of our development, particularly under wartime conditions, which determines the growing interest in medicinal plants (MP) within the botanical garden system of Ukraine.

On December 15, 2025, it will be 45 years since the establishment of the Department of Medicinal Plants and Phytotherapy, which later was reorganized into Laboratory of Medical Botany at the M.M. Gryshko National Botanical Garden of the NAS of Ukraine (NBG). It was created in accordance with the Resolution of the Presidium of the Academy of Sciences of the Ukrainian SSR No. 570 of December 29, 1978, "On the development of research on medicinal plants and their application in medicine," and based on the available capacities of the Central Botanical Garden of the Academy of Sciences of the Ukrainian SSR (Order No. 228-K of December 15, 1980). The duties of Acting Head of the Department of Medicinal Plants and Phytotherapy were assigned to A.P. Lebeda. The department initially included the research teams of the following specialists: PhD in medicine V.V. Kryvenko, PhD in biology O.Y. Taldykina, and PhD in chemistry S.M. Loos.

The idea of establishing such a unit originated with Academician Andrii Mykhailovych Hrodzynskyi, with the support of this innovation by Borys Yevhenovych Paton, the President of the National Academy of Sciences. This initiative provided impetus to the development of a distinct scientific field – medical botany, which addresses aspects of studying and using medicinal plants related to specific taxa, as well as issues of phytotherapy, phytodesign, and ethnomedicine, one of the priority areas among numerous scientific studies.

Throughout its entire period of existence (as a department and later as a laboratory), the medical botany division at the NBG has functioned as a center for consolidating the efforts of botanists, florists, resource specialists, pharmacologists, clinicians, and other relevant experts of Ukraine. Their joint work is aimed at fulfilling tasks related to the conservation and enhancement of biological

resources, as well as the development of phytotherapy in Ukraine. This specialized unit aims to mobilize Ukraine's plant resources for safeguarding public health under conditions of ecological distress exacerbated by the state of war.

Within the system of botanical gardens of Ukraine, the following areas are being developed:

- botanical research integrating systematics, resource studies, and conservation of the gene pool of MP;
- the so-called 'medicine for the healthy life' (pharmacosanation) applying plants with adaptogenic properties (families Araliaceae, Schisandraceae, Asteraceae, etc.), as well as wild or cultivated fruit and berry species with medicinal properties (seabuckthorn, rowan, hawthorn, viburnum, elderberry, etc.);
- a critical analysis of the experience of empirical medicine (i.e., folk medicine, traditional Eastern medicine, and homeopathy);
- the introduction of endangered and rare MP species, as well as plant species from other countries, as sources of genetic material.

The leading role of botanical research lies in the fact that systematists, florists and resource specialists forecast the prospects of the raw material base, determine harvesting volumes, assess the possibilities of introducing plants into cultivation, identify the composition of biologically active compounds and their required effects on the human body, establish the botanical name of the plant and the organ to be used and conduct informational screening.

An informational screening of Ukraine's MP was conducted, including the identification of biological, chemical, and medical data within several frameworks: 'Medicinal plants containing cardiac glycosides' (Lebeda, 2002); 'Medicinal plants containing anthracene derivatives' (Lebeda, 2003a, 2003b); 'Medicinal plants containing iridoids' (Lebeda, 2004); 'Medicinal plants containing coumarins' (Lebeda, 2005a, 2005b); 'Ethnobotany of tropical and subtropical plants introduced into Ukraine' (Lebeda, 2005c); 'Medicinal plants containing alkaloids' (Lebeda, 2006); 'Medicinal plants containing saponins' (Lebeda, 2007);

'Medicinal plants containing carotenoids' (Lebeda, 2008a, 2008b); 'Medicinal plants containing phytoecdysteroids' (Lebeda, 2009); 'Medicinal plants containing lignans' (Lebeda, 2011a, 2011b); and 'Medicinal plants containing quinones' (Lebeda, 2012). This work contributes to solving an important problem related to the provision of comprehensive information, eliminating randomness in selecting promising medicinal plant species for in-depth research, facilitating the introduction of new species into scientific and practical use, expanding the raw material base, and accelerating the development of new plant-derived pharmaceuticals. It is based on summarized data on plant species that contain the major groups of biologically active compounds, serving as a foundation for biodiversity conservation monitoring. He is also the compiler of the encyclopedic reference books "Medicinal plants" (Dzhurenko et al., 1989) and a co-compiler of the edition "Medicinal plants: a complete encyclopedia" (Lebeda, 2004; 2006). He prepared the scientific reference works "Catalogue of medicinal plants of the botanical gardens and arboreta of Ukraine" (Lebeda, 2009) and "Catalogue of rare plants of the botanical gardens and arboreta of Ukraine" (Lebeda, 2011b). The International Council of Botanical Gardens for Plant Conservation recognized the scientific reference work "Catalogue of medicinal plants of the botanical gardens and arboreta of Ukraine" (Lebeda, 2009) as one of significant importance for addressing the issues outlined in the Global Strategy for Plant Conservation.

The results obtained in the field of medical botany have been reflected in numerous scientific publications and have been distinguished with the National Award of Ukraine and the L.P. Symyrenko Award. The encyclopedic reference book "Medicinal plants" gained nationwide recognition and was nominated for the National Award of Ukraine in 1992. The reference edition comprises over 1,297 articles and features 754 illustrations, offering morphological and botanical information on MP, as well as methods for harvesting, storage, and use. It also presents chemical composition, pharmacological properties, medicinal forms, and applications. Special attention is given to the protection of medicinal plants, including rare and endangered species.

Comprehensive studies have been conducted on the following plant species: *Hippophae rhamnoides* L. (Dzhurenko, 1984; Lebeda & Dzhurenko, 1990), *Matricaria chamomilla* L. (Chetvernia, 1987), *Hypericum perforatum* L. (Makovetska, 1992), *Pastinaca sativa* L. (Palamarchuk, 2004), and *Arctium* spp. (Sokol, 2021), each of which was defended as dissertation research.

The study of the morphological diversity of the unique natural population of *Hippophae rhamnoides*, the only one of its kind in Ukraine, located in the Danube Delta, enabled the selection of nearly 30 promising forms suitable for breeding, pharmacology, phytomelioration, and landscape development. Seventy-three *Hypericum* Tourn. ex L. species were examined, five of which were recommended as substitutes for already known officinal species. The species *Hypericum montanum* L., *H. orientale* L., and *H. hirsutum* L. were proposed as raw materials for the industrial production of hypericins and flavonoids. Forty samples of *Pastinaca sativa* were examined, and those recommended as substitutes for officinal species (forms and varieties) were selected for the production of medicinal phytopreparations. Investigation of *Hippophae rhamnoides* resulted in two comprehensive publications (Lebeda, 2003b, 2005a).

In the context of pharmacosanation, relevant studies focused on the search for and comprehensive investigation of plants with adaptogenic properties are particularly relevant, especially those characterized by a high content of biologically active compounds with preventive and therapeutic significance. Notable progress has been made in the field of aromatherapy. In particular, a non-structural laboratory of preventive and restorative phytotherapy, whose core consisted of medical researchers, addressed the issues of the practical application of volatile compounds (essential oils) for improving public health in our country. The controlled saturation of indoor air with volatile biologically active compounds from higher plants, according to developed methodologies, enables the regulation of human mood and vital activity, enhancement of work capacity, and increased resistance to stress factors and diseases (Kryvenko & Potebnia, 1988; Makarchuk & Lechinskay, 1990).

A significant role is attributed to the proposed new field of phytoergonomics, which is emerging at the intersection of biology, physiology, hygiene, and botany. It constitutes an integral component of the developing branch of ergonomics, phytoergonomics (Ivanchenko et al., 1989). A significant contribution to the development of phytoergonomics was made by researchers at the NBG, under the leadership of A.M. Hrodzynskyi, who established the Department of Medical Botany. A conference on medical botany was held in 1984, and the presentations delivered there focused on issues of phytoergonomics. The works of A.M. Hrodzynskyi, N.M. Makarchuk, Y.S. Leshchynska, and others received positive evaluations from specialists for their work on using plants to optimize the occupational environment (Hrodzynskyi, 1986). Conditionally, phytoergonomic research can be divided into two directions: the first is associated with the direct effects of medicinal and food plants on human work capacity; the second, termed phytodesign by Hrodzynskyi (1986), involves an indirect influence of plants on work capacity through the improvement of the human environment in artificial systems.

A new field in medical botany, phytocombinatorics, was initiated by Volodymyr Davydovych Osetrov. Its essence consists of analyzing combinations of medicinal plant raw materials in the formulations of folk and scientific medicine from various countries, with the aim of identifying the most characteristic combinations of medicinal plants (phytocomponents) to expand the possibilities for developing phytopreparations with predetermined pharmacological properties. He compiled a reference book containing 1,265 alternative phytotherapy formulations and involving 430 species of the European flora (Osetrov & Shreter, 2001; Lebeda & Osetrov, 2002; Osetrov, 2003).

The Medicinal Plants collection plot was established at the beginning of the 1940s, mainly based on funds from the Kyiv Acclimatization Garden, which at that time cultivated approximately 200 species of medicinal, aromatic, and valuable plants. This gene pool, assembled by Academician Mykola Feofanovych Kashchenko, subsequently served as the foundation for the creation of the collection of useful plants of the Department of Cultural Flora of the NBG. The purposeful

formation of the medicinal plant collection began in the 1970s through the acquisition of seed and planting material from natural flora, primarily of Ukraine (the material was collected during expeditions to various regions of the country). Part of the seed material was obtained through the international seed exchange system among botanical gardens worldwide (Index Seminum). At different times, the development of the collection involved researchers N.S. Burachynska, O.Y. Taldykin, A.P. Lebeda, O.P. Isaikina, S.O. Chetvernia, N.I. Dzhurenko and others.

The collection comprises plants from various botanical and geographical regions of the world, featuring more than 400 species and cultivars belonging to 61 families and 181 genera. The most numerous families are Asteraceae (68 taxa), Lamiaceae (38), Rosaceae (27), Brassicaceae (24), Fabaceae (21), Ranunculaceae (20), and Apiaceae (14). Among them, 100 species are officially designated medicinal plants, 63 are considered promising, 11 species are listed in the Red Book of Ukraine, and 47 species are regionally rare medicinal plants in the administrative territories of Ukraine that require protection. The Collection of Medicinal Plants represents an essential center for the conservation of genetic resources, including rare, endangered species and those listed in the Red Book of Ukraine, such as *Adonis vernalis* L., *Gentiana lutea* L., *Astragalus dasyanthus* Pall., *Acorus calamus* L., and *Centaurium erythraea* Rafn. The collection also serves as a basis for reintroducing them into their natural habitats. Within the framework of the collection fund, an exhibition plot, the Apothecary Garden, has been established.

Plants of the collection fund are arranged according to a systematic principle, taking into account their pharmacological properties, including anti-inflammatory, choleric, diuretic, immunostimulatory, sedative, antispasmodic, hemostatic, and other activities, which are determined by the content of biologically active compounds (carbohydrates, alkaloids, glycosides, flavonoids, volatile organic compounds, and others). Considerable attention is paid to the search for plant species with antiviral, immunostimulatory, radioprotective, antioxidant, insecticidal, and other properties. The collection plays a vital role as a potential

basis for conducting a wide range of integrated studies in plant anatomy, morphology, and phytochemistry. Phytochemical research aims to identify biologically active compounds and elucidate patterns of their accumulation in various plant organs throughout the growing season.

Studies of plants with adaptogenic properties are of particular importance, including *Panax ginseng* C.A. Mey., *Aralia elata* (Miq.) Seem., *A. cordata* Thunb., *Eleutherococcus senticosus* (Rupr. & Maxim.) Maxim., *E. sessiliflorus* Seem., and *E. lasiogynus* Harms. from the family Araliaceae. The family Schisandraceae is represented by *Schisandra chinensis* (Turcz.) Baill. The plants have successfully undergone the introduction process under the conditions of the Forest-Steppe zone of Ukraine, making it possible to cultivate them in Ukraine, particularly in botanical gardens. The collection includes plant species introduced from the Far East, such as *Dioscorea nipponica* Makino, and from the Caucasus, such as *D. caucasica* Lipsky, as well as other taxa.

Based on studies of adaptogenic plants (i.e., *Aralia elata*, *Ginkgo biloba* L., *Echinacea purpurea*, and *Eleutherococcus senticosus*), a functional phytocomposition with a broad spectrum of adaptogenic biological activity has been developed. This composition stimulates and regulates metabolic processes in the human body. As a result, a Declarative Patent for a Utility Model entitled “Method for obtaining a phytoextract with adaptogenic activity” No. 98029 dated April 10, 2016 was obtained. In addition, based on studies of the antimicrobial properties of plants, a Declarative Patent for a Utility Model entitled “Method for obtaining a plant-based agent with antimicrobial activity” No. 159475 dated June 4, 2025, was granted.

The collection holds exceptional cognitive and cultural significance (for the many thousands of visitors) as well as educational value. Since 2015, the Collection of Medicinal Plants has been granted the status of an object of national heritage (Order of the Cabinet of Ministers of Ukraine dated January 28, 2015, No. 59-r; Order of the Presidium of the National Academy of Sciences of Ukraine dated February 10, 2015, No. 73).

Significant results have been obtained regarding the insecticidal properties of

complex plant-based phytopreparations, which demonstrate high efficacy and polyvalent insecticidal activity due to the presence of biologically active compounds that act against pests of various groups. The insecticidal and bactericidal properties of many plants have been known for a long time. However, their importance declined with the advent of synthetic organic insecticides. Moreover, unlike conventional insecticides, which are based on a single active ingredient, plant-derived insecticides containing mixtures of chemical compounds can affect both behavioral and physiological processes. The likelihood of pests developing resistance to such substances is very low. It appears that the search for bioinsecticides that are both effective and well-suited to, and adaptable in, environmental conditions is of considerable importance for achieving adequate insect control. Such agents have proven particularly effective against small insects and newly hatched early-instar larvae. Practical developments in this field are reflected in scientific publications as well as in a utility model patent “Method for preparing the insecto-acaricidal preparation ‘Artedok’” (No. 158518, dated February 19, 2025).

Modern challenges require the laboratory team to focus on accomplishing several essential tasks, the resolution of which will contribute to the practical application of completed developments, as well as the conservation and enhancement of biological resources. The development of medicines for healthy individuals that eliminate or mitigate the effects of harmful factors, prevent diseases, maintain health, and ensure a long and active life has become particularly relevant. The selection and study of promising medicinal plant species under current conditions are being conducted, and based on these, formulations of phytocompositions are being developed for the production of beverages, dietary supplements, teas, and other products. Research and application of plants with phytoncidal activity are being revived for the sanitation of air in premises of many scientifically substantiated. Original herbal teas with a balanced composition and carefully designed formulations have been developed using medicinal plant raw materials with therapeutic and preventive effects, including antioxidant, detoxifying,

immunostimulatory, antimicrobial, and other properties. In addition, special-purpose jelly products with antioxidant, antimutagenic, genoprotective, and detoxifying properties, as well as high biological value, have been created. These products are produced using the liquid fraction (juice) of plant fruits (such as guelder rose, seabuckthorn, and kiwifruit), which contain a powerful complex of biologically active compounds, combined with apple pectin concentrate, providing enhanced resilience of the human body under conditions of environmental stress.

The developed special-purpose products were presented at the international exhibition "Food and Life. XXI Century" and at interregional exhibitions, where they were recognized as therapeutic and preventive phytoproducts for restoring the deficiency of natural bioregulators. These products can be used as adjuncts for comprehensive health improvement and for primary and secondary prevention under conditions of everyday exposure to stressful and aggressive chemical and physical factors.

One alternative approach to enhancing treatment efficacy is the use of phytotherapy, a method based on medicinal forms derived from whole plants that contain pharmacologically active substances and do not produce significant adverse effects on the body. Based on numerous biochemical and pharmacological studies of individual plants, it has been found that, due to the rationally balanced and finely dosed proportions of various substances, whole plants (unlike isolated active constituents) possess valuable qualities such as mild pharmacological action, gradual accumulation of therapeutic effect, low toxicity even with prolonged use and the presence of multiple active compounds within a single plant exhibiting diverse therapeutic properties. The complex and diverse chemical composition of plants is a key factor in their multifaceted biological activities, distinguishing them by the complexity of their therapeutic effects. This allows phytoproducts to act comprehensively on the body, targeting different stages of diseases and pathogenetic factors, thereby contributing to the elimination of the underlying cause of the illness.

Medicinal products made from native plants, despite their seemingly modest pharmacological activity at first glance, are in

some cases more effective than their synthetic counterparts or isolated phytopreparations, which account for about one-third of modern medicines. The latter occurs because the separation of one or even several components from a plant composition disrupts the natural balance of their proportions within the plant, which can result in changes to its therapeutic properties. Clinical practice and extensive experimental studies conducted in various countries have demonstrated that the action of phytotherapeutic agents is realized on a fundamentally different basis compared to synthetic drugs.

Hence, the priority scientific direction of the Laboratory of Medical Botany is the mobilization of medicinal plant resources of Ukraine for disease prevention and for enhancing human work capacity under conditions of environmental adversity and wartime. This necessitates targeted research aimed at: forecasting the prospects for expanding the raw material base of medicinal plants through the selection and involvement of plant species from the flora of Ukraine as well as introduced species that represent valuable sources of biologically active compounds (BACs); conducting morpho-phytochemical studies of medicinal plants to determine the possibilities of their multifunctional use; the search for and investigation of plants possessing antiviral, immunostimulatory, radioprotective, antimutagenic, insecticidal and other properties; the introduction into cultivation of promising medicinal plant species; the search for and utilization of non-traditional plants as potential sources of biologically active compounds (BACs) for medicinal, nutritional, technical and other applications; the development of waste-free processing technologies for medicinal plant raw materials, including the use of secondary resources to obtain substances containing complexes of BACs as well as individual BACs; the development of therapeutic and preventive products for special purposes and herbal remedies with a broad spectrum of physiological activity; the conservation of rare and endangered medicinal plant species; and the popularization of medicinal plants and the implementation of educational and outreach activities.

Over the long period of activity of the Department and the Laboratory of Medical

Botany, the phytocomplex 'Energovital' has been developed in powdered form, based on high-energy natural plant components as a source of naturally occurring biologically active compounds for use in diabetes mellitus, overfatigue, and hypotension, as well as for enhancing mental and physical performance. The formulation includes powder of fresh ginseng root, burdock root, plantain flowers, quercetin, pectin, ascorbic acid, and citric acid. An innovative technology was applied to preserve the natural complexes of ginseng triterpene panaxosides in combination with polysaccharides, stabilized by modulation with quercetin and ascorbic acid. This approach contributes to the preservation of the informational component of the natural ingredients and to the manifestation of their energy-enhancing effects.

A biologically active supplement 'Arctan' has been developed in gel form, based on structured complexes of inulin, antioxidant vitamins, polyphenolic compounds, and sulfur-containing compounds present in the roots of *Arctium lappa* L. The supplement exhibits detoxifying and anti-inflammatory properties and is intended for use in disorders of the musculoskeletal system.

Lipid complexes derived from *Viburnum* spp., *Actinidia* spp., and *Sambucus* spp. have been investigated and proposed, demonstrating a high level of antioxidant activity, which suggests their potential for developing oil-based preparations as natural antioxidants.

An antioxidant phytotherapeutic agent has been developed in tablet form, obtained by the direct compression method using excipients such as tablettose and hydroxypropylcellulose grades LH-11 and NBD-022, based on powder of marigold (*Tagetes* spp.) inflorescences.

A medical film based on 3% sodium carboxymethylcellulose and a homeopathic mother tincture of *Ruta graveolens* L. has been developed, exhibiting wound-healing, reparative, and analgesic effects. In addition, a liniment based on a homeopathic mother tincture of *Juglans regia* L. with the addition of white beeswax, prepared extemporaneously, has been formulated for the treatment of certain skin diseases.

A positive effect and the adaptive mechanism of action of the lipid extract from seeds of *Schisandra chinensis* on the state

of the prooxidant-antioxidant balance in cellular membranes have been demonstrated, using erythrocyte membranes as a model. In addition, the high biological activity of Seabuckthorn *Hippophae rhamnoides* buds has been revealed, indicating their value as a biologically active medicinal raw material for the development of new, multifunctional, therapeutic, and preventive phytotherapeutic agents. Seabuckthorn buds, in comparison with birch buds, which are already used as medicinal raw materials, accumulate two to five times higher levels of essential vitamins (ascorbic acid, carotenoids) and flavonoid compounds (catechins, anthocyanins, leucoanthocyanins). These compounds potentiate their functional biological activity, thereby determining the prospects of this raw material for the development of therapeutic and preventive phytotherapeutic agents, as well as medicinal phytopreparations with antioxidant and immunostimulatory properties.

Analytical work has been conducted on medicinal plant species from the world's flora to expand the raw material base and utilize them in the development of multifunctional therapeutic and preventive phytotherapeutic agents. An informational screening of the flora of Ukraine regarding the presence of plants with medicinal properties revealed that, in the creation of such phytotherapeutic products by leading companies (particularly the US company NSP), more than 150 plant species, three medicinal fungus species, and over 50 tropical species are used. The vast majority of these plants are cultivated in Ukraine, including *Mahonia aquifolium* (Pursh) Nutt., *Vitex negundo* L., *Stevia rebaudiana* (Bertoni) Bertoni, *Eleutherococcus senticosus*, *Scutellaria baicalensis* Georgi, and others.

## Conclusions

The genetic resources of medicinal, edible, and aromatic plants represent a crucial strategic basis for the effective and sustainable development of not only the pharmaceutical sector and agriculture, but also of other areas of the economy and social sphere in Ukraine, Europe, and worldwide. In Ukraine, research has been conducted for

over 100 years on the study, conservation, and formation of collections encompassing the global diversity of evolutionarily and genetically related cultivated and wild plants, particularly medicinal and aromatic species, which constitute potentially valuable material for breeding programs.

Today, current realities require the laboratory team to focus its efforts on addressing several critical tasks that will facilitate the practical application of completed developments, as well as the conservation and enrichment of the “Medicinal Plants” collection. In this context, the study of the potential for comprehensive utilization of plants (particularly their multifunctional properties, including antioxidant, antimicrobial, immunostimulatory, radioprotective, antimutagenic, and other activities) becomes significant.

The Laboratory of Medical Botany of the M.M. Gryshko National Botanical Garden of the NAS of Ukraine can rightly be regarded as a center uniting botanists, pharmacologists, and clinicians for the study of medicinal plants of Ukraine’s flora and introduced species.

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## Медична ботаніка в системі ботанічних садів України

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Проаналізовано історичні аспекти зародження нового наукового напрямку медичної ботаніки в Національному ботанічному саду імені М.М. Гришка НАН України. Впродовж всього періоду існування (відділ, лабораторія) медичної ботаніки виконує роль центру консолідації сил ботаніків, флористів, ресурсознавців, ятрохіміків, фармакологів, клініцистів та інших профільних фахівців України, зусилля яких спрямовані на виконання завдань по збереженню і примноженню біологічних ресурсів і розвитку фітотерапії в Україні. Пріоритетним науковим напрямком лабораторії медичної ботаніки є мобілізація лікарських рослинних ресурсів України для профілактики, підвищення працездатності організму людини в умовах екологічного неблагополуччя, що вимагає цільових досліджень спрямованих на: прогнозування перспектив збагачення сировинної бази лікарських рослин за рахунок відбору, залучення рослин флори України та інтродуцентів – цінних джерел біологічно активних сполук; морфолого-фітохімічне дослідження лікарських рослин з визначенням можливостей їх поліфункціонального використання; пошук та вивчення рослин з противірусними, імуностимулюючими, радіопротекторними, антимуtagenними, інсектицидними, тощо властивостями; введення в культуру перспективних видів; пошук і використання нетрадиційних рослин - потенційних джерел біологічно активних сполук як лікарських, харчових, технічних, тощо; забезпечення безвідходних технологій переробки лікарської рослинної сировини з використанням вторинних ресурсів для одержання субстанцій з комплексом; розробку лікувально-профілактичних продуктів спеціального призначення та фітозасобів з широким спектром фізіологічної дії; збереження рідкісних і зникаючих видів; популяризацію лікарських рослин та просвітницько-освітню роботу. Рослини колекційного фонду розміщені за систематичним принципом з урахуванням їх фармакологічних властивостей: протизапальних, жовчогінних, сечогінних, імуностимулюючих, седативних, протиспазматичних, кровоспинних, тощо, які визначаються вмістом біологічно активних сполук (вуглеводи, алкалоїди, глікозиди, флавоноїди, леткі органічні сполуки та інші). З 2015 року колекції “Лікарські рослини” надано статус об’єкту, що становить національне надбання.

**Ключові слова:** медична ботаніка, лікарські рослини, ароматерапія, фітокомбінаторика, фітоергономіка