Pharmacognosy as a science and academic discipline. Its role in the pharmacist's practice.

Plan.

1. Definition of pharmacognosy as a science and academic discipline.
2. Problems of pharmacognosy at the present stage.
3. Nomenclature of medicinal plants and medicinal plant raw materials.
4. Connections of pharmacognosy with basic and specialized disciplines and its role in the practice of pharmacists.
5. Main stages of pharmacognosy development. Contribution of Russian scientists to the development of pharmacognosy.

Pharmacognosy (pharmakognosia)- science of medicinal plants, medicinal plant materials (MPM), products of its primary processing, and certain types of animal derived medicinal materials (ADMM). In modern pharmacognosy, there are not so many objects of animal origin (some animal fats, snake poisons, bee waste products).

Pharmacognosy is one of the most ancient medicinal sciences, and its first mention occurs in Arabic literature. centuries. In all European countries, including Russia, pharmacognosy as an academic and scientific discipline has been established in the past year. an integral part of a comprehensive discipline "Materia Medica", from which at the beginning XIX for centuries, pharmacy was formed as an independent discipline, and then-pharmacognosy.

Objects of pharmacognosy research.

Medicinal plants (plantae officinales)- these are plants that serve as a source for obtaining medicinal plant raw materials.

To impurity plants These include species that are similar in systematic position or similar in morphological features, which can be confused with medicinal plants.

Medicinal plant materials are dried or freshly harvested whole plants or parts thereof that serve as materials for the manufacture of medicinal products.

Animal derived medicinal materials are whole animals, parts of them, or waste products that are approved for use in medical practice or for the production of medicines. It is represented by medical leeches, badiaga, antlers, mummies, spermaceti, lanolin, fish oil, snake venom, products of honey bee activity.

Primary processing products of plants and animals are essential and fatty oils, resins, gums, etc. obtained from them.

Although medicinal plants have been studied in pharmaceutical and medical schools for a long time, but **title** of pharmacognosy emerged only at the beginning XIX centuries and comes from the Greek words ***pharmakon*** - medicine, poison and ***gnosis*** - cognition, science. Name "***pharmacognosy***" have been introduced by K. Seidler in 1815.

Tasks of Pharmacognosy includes:

1. Study of medicinal plants as sources of pharmacologically active substances. The chemical composition of the plant, the biosynthesis of the main substances of medical significance, the dynamics of their formation in the plant, the influence of environmental factors and methods of cultivation on the process of their accumulation in the plant are studied.

2. Search for new plants containing physiologically active substances, in order to create more effective medicines.

3. Conducting resource studies aimed at: identification of new harvesting areas and accounting of raw material reserves. Based on the data of resource studies, scientifically based plans for the preparation of medicinal raw materials are developed.

4. Rationing and standardization medicinal raw materials, development and improvement methods definitions of its usefulness and quality.

5. Drafting of regulatory documentation (draft state standards, pharmacopoeia articles, instructions).

6. Security natural plant resources and their use efficient use.

7. Introduction and cultivation medicinal plants.

The study of pharmacognosy is divided into **general information** and **a practical one** (special) parts.

In **the general part** the main general issues, the history of pharmacognosy and the organization of medicinal raw materials fishing are considered.

Special offer but **part** includes the study of individual medicinal plants and raw materials.

In modern pharmacognosy, it stands out resource science section.

The course of pharmacognosy examines issues related to the preparation, drying, processing, storage of medicinal raw materials and their rational use.

Considerable attention in pharmacognosy is paid to the standardization of medicinal plant raw materials. Pharmacognosy has a system of methods of pharmacognostic analysis that allow you to reliably determine the authenticity and good quality of medicinal plant raw materials.

Currently, the educational material is presented in the universities of our country according to chemical classification raw materials are grouped by biologically active (active) substances of plants, allowing deviations for some chemically insufficiently studied objects, which are classified by pharmacological action.

All medicinal plants are divided into official and non-official.

Plants whose organs or parts are included in the list of the State Register of Medicinal Products maintained by the Ministry of Health of the Russian Federation in accordance with the established procedure are called – **official ones** medicinal plants from which they are obtained **official medicinal raw materials.**

Depending on whether raw materials are included in the State Pharmacopoeia (GF) or not, they are distinguished, respectively, **pharmacopoeial and non-pharmacopoeial services** types of official medicinal plant raw materials.

In the course of pharmacognosy, objects of plant raw materials included in the State Pharmacopoeia of the USSR are studied X, XI, XIII and XIV publications.

Pharmacopoeial articles (permanent - FS and temporary - FVS) are introduced for all medicinal raw materials, and state standards (GOST) are developed for medicinal technical raw materials (i.e. used in various branches of the national economy).

According to international terminology, **names of medicinal plants** and **raw materials** in the pharmacognosy are given on Russian and Latin languages. The pharmacist must know the exact botanical name of the producing plant and family.

The Latin name is the same and consists of two words, for example: **acorus calamus L. (calamus of the swamp).**

The first word - a noun that denotes gender, to which the plant belongs; second - more often an adjective denoting it view.

If the plant differs in any features from the specific type, then write more names varieties, - ***varietas*** for example: ***Amugdalus communis varietas dulkis*** - **common almonds**, variety – **sweet.**

After the scientific name of a plant, it is customary to write (abbreviated) the surname of the scientist who first described and named this plant.

Name of the raw material the name by which it is described in the Pharmacopoeia and prescribed by the doctor in prescriptions consists of two words: the first is the name of the producing plant, the second is the name of the organ. For example: ***Salviae officinalis folia*** **- Sage officinalis leaves.**

It is less common to use both generic and specific names if several plant species are used as medicinal raw materials from the same genus. For example: ***Digitalis Lanatbute folia*** **- Foxglove woolly leaves.**

Possible deviations from the specified rule.

Some types of raw materials have names that have long been ingrained in pharmacy. This is, for example: **ergot -** ***Sekale cornutum*** (translated as horned rye). The name was given when it was not known that it was a sclerotium fungus.

Sennae folia **- Senna leaves** - the name is taken from Arabic medicine (the botanical name of the producing plant - ***Cassia acutifoli*****a Del - cassia hollyleaf).**

Modern pharmacognosy is highly specialized applied science, representing one of the five major pharmaceutical disciplines.

Pharmacognosy together with other pharmaceutical disciplines develops professional knowledge of a highly qualified pharmacist-pharmacist.

Students need a thorough knowledge of botany, organic chemistry, biochemistry, and analytical chemistry to successfully master pharmacognosy.

Knowledge of pharmacognosy is necessary when studying technologies of dosage forms and galena production, as well as pharmacology, which deals with the mechanism of action and use of medicines. On the basis of pharmacognosy successfully develop herbal medicine - treatment based on the use of medicinal plants.

Based on pharmacognosy pharmaceutical chemistry in terms of the chemistry of natural compounds and their analysis. In practice toxicological chemistry and forensic medical examination knowledge of pharmacognosy is necessary when it is necessary to determine which poisonous plant was the cause of poisoning or death of a person.

The work of a pharmacist is very versatile. Knowledge of pharmacognosy is necessary for training pharmacists with a narrower specialization, pharmacologist-pharmacognost.

In our country, wild and cultivated medicinal plant raw materials are harvested in huge quantities.

To master this wealth, we need organizers, resource specialists, and analysts who are well versed in the specifics of medicinal plants and plant raw materials. Pharmacognostics are needed in the pharmacy chain, in other major procurement organizations, as well as in research pharmaceutical institutions.

In recent decades, it has been developed a new direction in pharmacognosy - culture of isolated cells and tissues of medicinal plants as sources of biologically active substances.

The range of medicinal plants used in modern medicine has its own history.

The ancient Greek naturalist, philosopher and botanist Theophrastus, who is considered the "father of botany", paid great attention to plants, primarily medicinal ones; of his works, 15 books are devoted to botany.

In pharmacognosy, he paid a lot of attention to medicinal plants ***Dioscoride,*** A Greek native of Asia Minor, a famous physician of his time (1st century AD). His main book is "Materia medicaIt was translated into Latin and was the most authoritative guide in Europe until the end of the twentieth century. XVI in

It should be noted that in modern writings on pharmacognosy, Dioscorides is also referred to.

The first domestic pharmacognostic sources should be considered ancient handwritten Russian books - "herbalists", which described medicinal plants, etc. medicinal products.

The first pharmacy was opened in Moscow in XVI B. when **To Ivan IV** according to the Western European model.

A significant impetus to the development of pharmacognosy and pharmacy was provided by the following events: **Petra I** on the deployment of pharmacies in Russia and the laying of apothecary's gardens.

In 1706, by decree of Petra I the first one was organized military hospital pharmacy attached to a hospital in Moscow, where the hospital apothecary's garden was the main base for studying botany and pharmacognosies.

Teaching apothecary science to medical students, which at that time was a combination of botany and pharmacognosy with pharmacy and pharmacology, it was assigned to the apothecary.

A huge influence on the development of Russian pharmacognosy was exerted by the creation of the Academy of Sciences (1724), which systematized everything previously known about medicinal plants and then began to systematically study the medicinal plant riches of the country.

Formation, development and modernization of Russian pharmacognosy (after the revolutionary period) result collective work of many pharmacognosts.

When pharmacognosy in higher education institutions was separated into an independent discipline, the first teachers of pharmacognosy were in Leningrad. **A. S. Ginsberg**, and in Moscow - professor **Dmitry Shcherbachev**.

A special role belongs to **Adeli F. Hammerman** (1888-1978), who made an invaluable contribution to pharmacognostic science and created the school of Soviet pharmacognosists. For more than 30 years, she headed the Department of Pharmacognosy at the Leningrad Chemical and Pharmaceutical Institute. Her name is associated with the creation of the classic course of diagnostics of medicinal plant raw materials, introduction to the curriculum of commodity and phytochemical analysis. A. F. Hammerman belongs to the textbook of pharmacognosy, which has passed 6 editions (6th edition is out published in 1967.).

Adele F. Hammerman - a whole epoch in Russian pharmacy. By graduated from the Petrograd Chemical and Pharmaceutical Institute A. F. GamMerman was retained in the Department of Pharmacognosy as an assistant. From 1935 to In 1966, she was the head of this department. Simultaneously working in the Main Menu N. A. Monteverde, conducted a series of research projects in the Botanical Garden under the guidance of Professor N. A. Monteverde. major research on the study of medicinal plants of eastern medicine and the description of the richest collection of Turkestan and Tibetan medicinal plant raw materials.

In 1941. she got her doctorate your dissertation dedicated to the review of medicinal plants of the Eastern European regionditsiny. Brilliantly proficient in microscopic techniques, A. F. Hammerman She has made a significant contribution to paleobotany on the evidence of nature wood of coal residues from the hearths of the sites of primitive man paleolithic epochs. Her name is associated with the creation of a classic course for the diagnosis of plant raw materials, an introduction to the commodity specialist curriculumchemical and phytochemical analyses.

A. F. Hammerman belongs to Izvestianew textbook of pharmacognosy, "Maps of the distribution of the most important medicinal plants "(joint edition with E. Y. Chassom, 1954), fundamental " Biblyography on medicinal plants" (joint edition with L. A. UtkiV. A. Nevsky, 1957) and many other publications. In the early 30s she made two expeditions to the Trans-Baikal Territory, marking the beginning of a revival interest in studying Tibetan medicine in Russia. In 1953-1955., working in Pyatigorsk, Adel Fyodorovna provided invaluable assistance in organizing the educational process (especially in methodological terms) at the Department of Pharmacognosy of the Pyatigorsk Pharmaceutical Institutetuta (established in 1943).

Students of A. F. Hammerman are professors K. F. Blinova and G. P. Yakovlev (Saint Petersburg State Chemical and Pharmaceutical Academy), Professor D. A. Muravyeva (Pyatigorsk Pharmaceutical Academy), Professor L. I. Eristavi (Tbilisi Medical Institutehere).

A prominent scientist in the field of pharmacognosy was Dmitry Mikhailovich Shcherbachev (1864-1954) - student of V. A. Tikhomirov, author (together with A. V. Mogilsky) of the first post-revolutionary textbook on pharmacognosy (1930), based on the chemical classification.Bachev as head of the Department of pharmacognosy was replaced by prominent scientists — professors L. A. Razdorskaya (1896-1960), N. A. Lvov (1887-1962) and F. V. Ivanov (1890-1965). Currently, the Department of Pharmacognosy in MoscowI. M. Sechenov Moscow State Medical Academy is headed by Professor I. A. Samylina.

Pro has made a great contribution to the study of medicinal plants in SiberiaProfessor V. V. Reverdatto, head of the Department of Pharmacognosy for several years.Moscow State Medical Institute. Together with a major pharmacologist D. D. Yablokov created a large school of pharmacognostics in Siberia. This The school is represented by Professor L. N. Bereznegovskaya (1906-1995), an expert in the biochemistry of tropane alkaloids, now living

Professor T. P. Berezovskaya, and Professor S. E. Dmitruk, Head of the Department of Pharmacognosy of the Russian Academy of Sciences.zii.

Professor Alma Yakobovna Tomingas (1900-1963) — prominent representative of the Russian Academy of Scienceshead of the Baltic pharmacognostic school. Pupil of TartusIn 1933, she defended her dissertation on the topic " On the process self-oxidation of fatty oils". A. J. Tomingas was the first Estonian woman to become a doctor.She was awarded the title of Doctor of Pharmaceutical Sciences (1933) and was the first Doctor of Pharmaceutical Sciences to be awarded the title of Doctor of Pharmaceutical Sciences. a woman professor (1940). Since 1946, A. J. Tomingas has been a full member of the Estonian Academy of Sciences and until 1963 she was the head of the Department of Pharmacognosy. Learn moreAlma Yakobovna's kami were Professor I. K. Tammeorg (1919-1986) and Associate Professor E. H. Arak. Field of research of pharmacognostics of Tartu-study medicinal flora of Estonia, local traditional medicine, works on microdiagnosis of raw materials (known textbook A. J. Tomingas " Pharmacoanatomia", 1936).

Scientific work on medicinal plants is focused on the following areas: All-Union Institute of Medicinal and Aromatic Plants (VILAR), which was founded in 1931 and is intensively conducted at special departments of pharmaceutical and medical institutes, in research chemical and pharmaceutical institutes, and other institutions.

The main stages of pharmacognosy development (independently).

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