



LECTURE 1



THEME

Introductory lecture

On subject «Pharmaceutical botany 1»





PLAN OF THE LECTURE

Pharmaceutical botany - as a branch of Botany, its place among
of Botany,

The brief history of development, significance in pharmaceutical education.

Principles of working with sources of scientific literature in the field of
Pharmaceutical botany. The rules of searching of scientific literature and
presentation them in the report.



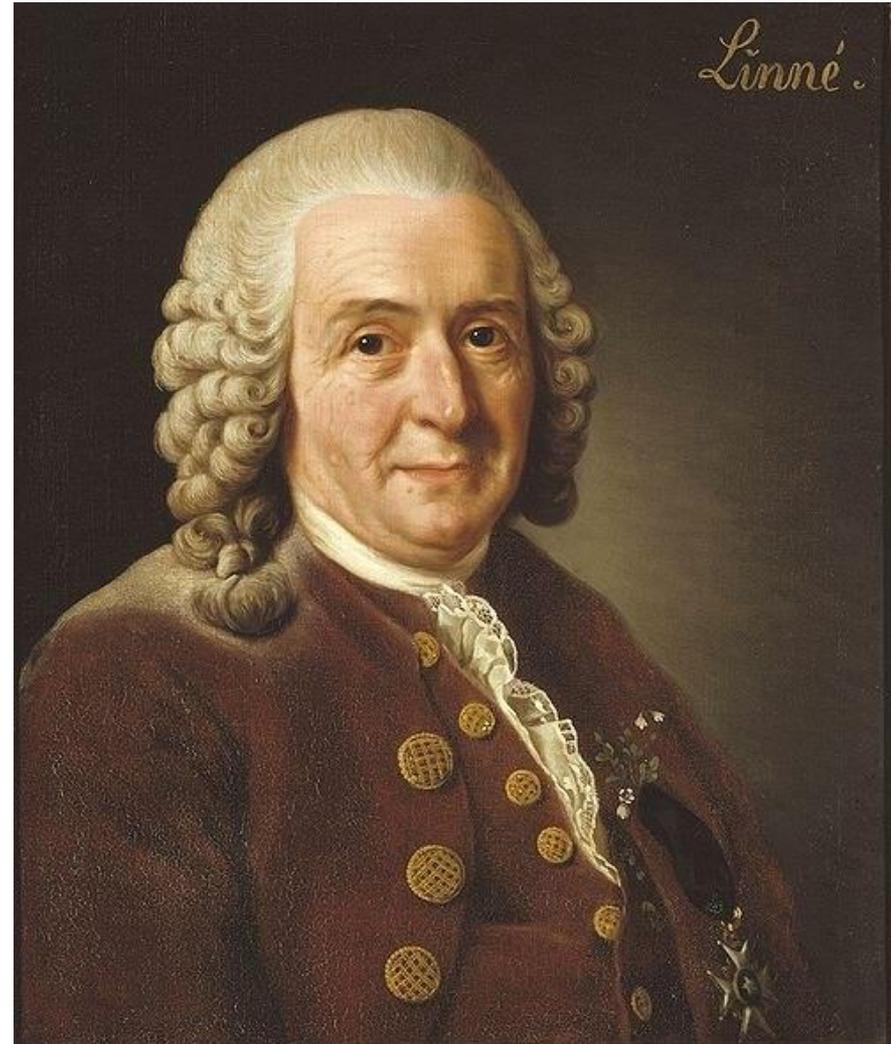
A brief history of the development and the main sections of Botany

Botany (or plant Biology) Greek word “botane”- grass, tree. This is a complex science of plants. Botany, as a biological science, studies the structure, structure of plants, the origin, distribution, vegetation cover of the Earth.

The first written information about plants was found in the clay tables of the ancient East. The foundations of botany as a science originated in ancient Greece. The "father" of botanists consider the ancient Greek philosopher and naturalist Theophrastus.

In the middle ages, botany practically did not develop, and from the 16th century its development accelerated. The emergence of capitalism, the discovery of the solar system, the invention of a microscope was of great importance for the development of botany.

FAMOUS BOTANICS



A great contribution to the development of botany was made by the Swedish scientist K. Linnaeus. He created a system covering up to 10,000 plant species. However, the Linnaeus system was artificial.

Thanks to the further improvement of the microscope in the 19th century, the cellular theory was discovered and the amount of knowledge about the cell increased. The basis of this theory was laid by the French biologist Dutroshe, the Russian botanist Goryaninov, the German botanist Shleiden and the zoologist Schwann.

In the middle of the XIX century the English scientist Charles Darwin expounded the evolution of living organisms and the scientific foundations of natural selection in his work "The Origin of Species."

Academician Grossheim, Karyagin, Rzazade, Prilipko, Tutayug, Abutalibov, Akhundov and other employees of the Institute of Botany of the Academy of Sciences of Azerbaijan made a significant contribution to botany in Azerbaijan. At present, separate sections of botany developed so intensively that they were separated into new independent fields of science.

The main chapters of botany

Morphology of plants (from the Greek "morphē" - form və "logos" doctrine) - studies the form, modification, variety of plants and individual organs, explains the patterns of their formation.

The anatomy of the plant (from the Greek anatome- dissection) - studies the internal structure of plants and their tissues. The anatomy of plants originated in the middle of the XVII century after the invention of the microscope, but the most important discoveries in this field of knowledge were made in the XIX and XX centuries. Anatomy of plants allows you to determine the authenticity of plant material. Anatomy allows you to determine the authenticity of plant raw materials in cases where raw cut or powdered and morphological signs in it can not be determined. Anatomy of plants - the doctrine of the structure of plant tissues, the laws of their origin and development.

The physiology of plants (from the Greek "fysis" - nature) - studies life processes: growth, development, nutrition, breathing, reproduction, etc. The beginning of physiology was laid by experiments on plant nutrition, carried out in the XVII century. Now it is an actively developing science. Physiology is closely related to the anatomy of plants. Dependence between the structure of organs and their functions is one of the reasons for the emergence of physiological anatomy.

Biochemistry of plants - studying chemical processes in plants. Biochemistry of plants together with physiology studies the process of accumulation of medicinal substances in plants and determines the collection period of parts of plants that are used as a medicine, storage conditions and other tasks

Cytology (from the Greek "kitos" - a cell) - studies the structure and vital activity of cells.

Embryology of plants (from the Greek "embryo" - embryo) studies the patterns of formation and development of various structures that ensure sexual reproduction of plants.

Genetics of plants (from the Greek "genesis" - origin) - studies the heredity and variability of plant organisms. Genetics serves as the theoretical basis for selection.

Systematics of plants (from the Greek "systematics" - ordered, relating to the system) - studies their nomenclature, classification and phylogeny. Systematics deals with the classification of plants and unites them in a single system.

Systematics is closely related to the morphology of plants. The systematics functions include the classification of plants on the basis of evolution and the definition of the plant system. Systematics identifies species and distributes them into groups with similar characteristics and origins. This simplifies the process of understanding the plant world and determining the direction of use of plants.

Ecology of plants (from the Greek "oikos" - home, abode) - studies the interaction of plants with the environment. It arose in the late XIX and early XX centuries. And is one of the most important branches of knowledge about nature.

Geography of plants - studies the patterns of formation of vegetation.

Geobotany (from the Greek "keos" -foss) or phytocenology (from the Greek "fiton" - plant, "kenozi" - common or phytocenosis - a system of plants) is the science of the vegetation of the Earth as a population of plant communities - trees, shrubs, herbs. Thus, he studies the patterns of formation of the vegetation and its elements.

Paleobotany (from the Greek "pelayos" - ancient) - the science of fossil plants.

In addition to the fundamental botanical disciplines, there are a number of particular sciences, also attributed to botany. The most important of them is **botanical resource science** or economic botany.

There are a number of other botanical disciplines. For example, within the morphology of plants, **carpology** is distinguished-the division of knowledge about fruits and seeds. Within the anatomy of plants, is distinguished, which studies the structure of pollen.

Algology studies algae, **bryology**-mosses, **pteridology**-ferns.

Dendrology explores a variety of aspects of trees and shrubs.

Mycology studies fungi, **lichenology**-lichens.

THE IMPORTANCE BOTANY FOR PHARMACY

Botany- is very important for pharmacist's practical work on identification of medical raw material.

In the process of their professional activity pharmacists should use light microscope and conduct analysis of medical herbal material. Structure of plant cells, their shape, content and insertion are significant diagnostic features during conducting micro examination. With help of starch grains shapes, species of a plant can be determined. According to calcium oxalate crystal forms, class of plant can be determined. Color of plant cell sap indicates biologically active substances it contains- alkaloids, tannins and organic acids.

During microscopically analysis of medicinal raw material, presence or absence of specific tissues and way they are situated in plant organs are of great diagnostic value. For example, presence of secondary meristematic tissue- cambium or mechanical tissue-collenchymas can indicate that plant belongs to divot. Shape of dermal tissue cells and gas exchange complex allow determining not only class, but also family of plant. Vascular bundles are of specific significance when determining medicinal raw material: opened collateral and bicollateral are typical for divot plants, closed collateral and concentric with phloem inside- for monocot, concentric with xylem inside- only for ferns.

Vegetative organs of different plant are used in medicine as crude drug. Their anatomical structure is a diagnostic feature.

Therefore pharmacist should know how to prepare temporary micro preparation and conduct microscopically analysis of plant cell as well as use qualitative reactions for determination of biologically active substances in plant cell sap. Knowledge of plant tissue structure and their arrangement in plant organs are necessary for pharmacist's practical work on identification of medical raw material.

Search engines (databaza)

A database is an organized collection of structured information, or data, typically stored electronically in a computer system

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PubMed.

Ovid.

Web of Science.

Science Direct.

Scopus.

Cochrane Library.

Google Scholar.



COVID-19 Information

Public health information (CDC) | Research information (NIH) | SARS-CoV-2 data (NCBI) | Prevention and treatment information (HHS) | Español



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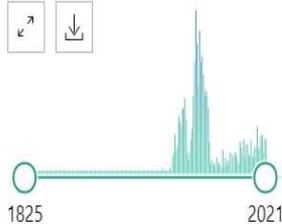
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RESULTS BY YEAR



TEXT AVAILABILITY

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Atropa belladonna neurotoxicity: Implications to neurological disorders.

1 Kwakye GF, Jiménez J, Jiménez JA, Aschner M.
 Cite Food Chem Toxicol. 2018 Jun;116(Pt B):346-353. doi: 10.1016/j.fct.2018.04.022. Epub 2018 Apr 10.
 PMID: 29653183 Review.

Share **Atropa belladonna**, commonly known as **belladonna** or deadly nightshade, ranks among one of the most poisonous plants in Europe and other parts of the world. ...This review offers an integrated view of the homeopathy and neurotoxicity of **Atropa bellado** ...

Atropa belladonna.

2 Davies MK, Hollman A.
 Cite Heart. 2002 Sep;88(3):215. doi: 10.1136/heart.88.3.215-a.
 PMID: 12181204 **Free PMC article.** No abstract available.

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