

PROGRAM FOR THE STATE EXAM IN PHARMACOGNOSY

The program for the state exam in Pharmacognosy includes the main groups of biologically active substances (BAS) of plant origin, some of which are studied only in this discipline (polysaccharides, flavonoids, tannins, saponins, etc.).

When developing the individual questions, the student must demonstrate knowledge about: chemical structure, classification, properties, methods of analysis and activity of the individual groups of BAS. For each group BAS, the most important plant substances in which they are contained, must be considered indicating: botanical affiliation, chemical composition, activity and application.

Questions about ways and stages in obtaining the plant substances and about the advantages and disadvantages of obtaining them from natural and cultivated medicinal plants are included. Questions about their standardization and the types of standardization documents for phytoproducts used in practice and stages in their creation are considered. Students have to know the main phytoproducts from the different groups of BAS used in our country and comment on their plant origin, composition and therapeutic application.

General characteristic of polysaccharides and plant substances (drugs) that contain them.

Lipids - general characteristic. Hard and soft fats. Fixed oils. Oils with specific action. Lipoids.

Phenolic compounds - general characteristic. Plant substances containing simple phenolic glycosides, hydroxycinnamic acids and their derivatives, and lignans.

General characteristic of coumarins and plant substances containing them.

General characteristic of flavonoids and plant substances containing them.

General characteristic of anthraquinones and plant substances containing them.

General characteristic of tannins and plant substances containing them.

Steroidal and triterpene saponins – general characteristic and plant substances containing them.

General characteristic of cardiac glycosides and plant substances containing them.

General characteristic of iridoids and plant substances containing them.

Essential oils - general characteristics. Plant substances and oils containing acyclic, monocyclic and bicyclic monoterpenes.

Plant substances and essential oils containing sesquiterpenes and aromatic terpenes.

Alkaloids - general characteristic. Alkaloids with nitrogen in the side chain. Pyrrolidine and pyrrolizidine alkaloids. Plant substances that containing them.

Tropane and quinolizidine alkaloids, and plant substances containing them.

Quinoline and purine alkaloids, and plant substances containing them.

Isoquinoline alkaloids and plant substances containing them.

Indole alkaloids and plant substances containing them.

Historical stages in the development of Pharmacognosy. Evolution of the views on the healing properties and active principles in plants. Modern Trends in the Study of Medicinal Plants and Organisms.

Standardization documents for plant substances and preparations obtained from them, as outlined in the European Pharmacopoeia – content and examples.

Composition of herbal medicinal products, problems in their standardization, and stages of their development. Registration of herbal medicinal products depending on their type.

Extraction of plant raw materials (plant substances). Types of solvents. Classical and modern extraction techniques – types, definitions, advantages, and disadvantages.

Quality control of herbal medicinal substances. Aspects of the quality of plant substances and the active ingredients obtained from them – methods for performing identity, purity, and quantitative determination of marker and biologically active substances. Examples.

Modern techniques and tests for analyzing the chemical composition of medicinal plants and their derived products. Dereplication – definition, most commonly used techniques, and examples. Techniques and strategies for isolating plant secondary metabolites.

Application of spectroscopic methods for structural elucidation of plant secondary metabolites – definitions and examples.

Methods and techniques for determining the biological activity of extracts and pure natural compounds. Examples.

Obtaining plant substances from wild medicinal plants – objectives, stages, dynamics of accumulation, classical periods of collection, advantages and disadvantages. Legislative measures for the protection of wild-grown medicinal plants.

Obtaining raw materials (plant substances) from wild-growing and cultivated medicinal plants under natural and artificial conditions – advantages and disadvantages. Protective measures when collecting plant substances from natural habitats. Cultivation of medicinal plants under natural conditions. Stages of introduction. Cultivation of medicinal plants in Bulgaria.

Harvesting of plant substances – objectives and stages. Dynamics of accumulation of secondary and primary metabolites in plants. Selection of the phase and period for harvesting. Methods for harvesting and primary cleaning of plant substances. Drying – purpose, types, and main rules. Secondary cleaning and packaging. Types of packaging. Storage – basic rules. Storage pests – Types and control measures.

Types of medicinal phytoproducts. Pure (isolated) natural compounds and their semi-synthetic derivatives. Plant substances (mono- and combined herbal teas), liquid medicinal phytoproducts, and solid medicinal phytoproducts.

Types of herbal medicinal products. Pure natural compounds and semi-synthetic derivatives of natural substances. Herbal teas, liquid and solid herbal medicinal products. Non-medicinal products containing primary or secondary plant metabolites (dietary supplements and medical devices).

Plant substances and herbal medicinal products used in diseases of the nervous system.

Plant substances and herbal medicinal products used in diseases of the cardiovascular system.

Plant substances and herbal medicinal products used in diseases of the respiratory system.

Plant substances and herbal medicinal products used in diseases of the digestive system.

Plant substances and herbal medicinal products used in diseases of the urinary and reproductive systems.

Plant substances and herbal medicinal products with antitumor and immunomodulation effects.

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