

## SYLLABUS

### FOR STATE EXAM IN PHARMACOGNOSY

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

In developing the individual questions the student must show knowledge of: chemical structure, classification, properties, methods of analysis and action of the group of substances. For each group of biologically active substances, the most important plant substances in which they are contained must be considered. For each plant substance, the following must be indicated: botanical affiliation, brief description of the plant and plant substance, chemical composition, action and application.

Questions on ways and stages in obtaining herbal substances and on the advantages and disadvantages of obtaining them from natural and cultivated medicinal plants are included. Issues for their standardization and the types of standardization documents, for phytoproducts used in practice and stages in their creation are considered.

Students must know the main herbal medicinal products registered in Bulgaria and present data on herbal origin, composition, therapeutic use, side effects.

Homo- and heteropolysaccharides – general characteristic. Plant substances and herbal medicinal products.

Lipids. Fixed oils and fats.

Coumarins – general characteristic. Plant substances and herbal medicinal products.

Flavonoids – general characteristic. Plant substances and herbal medicinal products.

Anthraquinones – general characteristic. Plant substances and herbal medicinal products.

Tannins – general characteristic. Plant substances and herbal medicinal products.

Steroidal and triterpene saponins – general characteristic. Plant substances and herbal medicinal products.

Cardiac glycosides – general characteristic. Plant substances and herbal medicinal products.

Iridoids – general characteristic. Plant substances and herbal medicinal products.

Essential oils – general characteristic. Plant substances and essential oils containing acyclic, monocyclic and bicyclic monoterpenes. Herbal medicinal products.

Plant substances and essential oils containing sesquiterpens and aromatic terpenes. Herbal medicinal products.

Alkaloids – general characteristic. Carbocyclic, pyrrolidine, pyrrolyzidine, pyridine and piperidine alkaloids. Plant substances and herbal medicinal products.

Tropane and quinolizidine alkaloids. Plant substances and herbal medicinal products.

Quinoline and purine alkaloids. Plant substances and herbal medicinal products.

Isoquinoline alkaloids. Plant substances and herbal medicinal products.

Indole alkaloids. Plant substances and herbal medicinal products.

Regulatory control on herbal medicinal products/traditional herbal medicinal products according European Pharmacopoeia. Parameters for quality control of herbal medicines. Stages in the creation of phytoproducts. Registration and marketing of phytoproducts.

Standardization documents for herbal drugs - content and benefits. Types of medicinal phytoproducts and problems with standardization. Examples.

Obtaining herbal substances (plant drugs) from wild medicinal plants - goals, stages, dynamics of accumulation, classical periods of collection, advantages and disadvantages. Legislative measures for the protection of wild medicinal plants.

Obtaining herbal substances (plant drugs) from cultivated medicinal plants under natural conditions. Factors and methods for quality improvement. Basic rules and methods for picking, drying, packing, marking and storing drugs. Quality control in the production chain of plant products.

Obtaining herbal substances and biologically active substances from cultivated *in vitro* medicinal plants - nature, advantages and disadvantages. Examples. Methods and techniques related to induction of secondary metabolism *in vitro*.

Medicinal plants and herbal medicinal products acting on the respiratory system.

Medicinal plants and herbal medicinal products acting on the gastrointestinal systems.

Medicinal plants and herbal medicinal products acting on the cardiovascular system.

Medicinal plants and herbal medicinal products acting on the nervous, urinary and reproductive systems.

Medicinal plants and herbal medicinal products with immunostimulating and antitumor action.

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