

THE PHARMACOGNOSY DEPARTMENT OF THE NATIONAL UNIVERSITY OF PHARMACY: ACHIEVEMENTS AND PROSPECTS OF SCIENTIFIC COOPERATION

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The Department of Pharmacognosy of the National University of Pharmacy has a long history. As a separate division, it was formed as far back as in 1938.

The main directions of our research are studies in biologically active substances of medicinal and agricultural plants, wastes of their processing, the development, on their basis, of medicines and standardization of medicinal plant raw material and phytodrugs; search for plant-based biologically active substances with anti-enzymatic, inhibitory or activating effects on enzymes; synthesis of analogues and modification of biologically active substances of natural origin: flavonoids, isoflavonoids, anthraquinones and cardiosteroids; chemotaxonomic and chemoresource research in flora species of Ukraine and neighboring countries with the view to identification of promising sources of biologically active substances for widening the nomenclature of medicinal plants.

In recognition of our research, 13 members of staff have been awarded academic degrees of DSc and 73 PhD. 63 certificate of authorship and 171 patents granted. 16 scientific monographs and 1050 articles published. 411 species from 20 families studied. Over 200 phytosubstances were developed, 12 of which were adopted for industrial production.

In addition to the classic pharmacognostic studies of plant raw materials and substances some specific directions of our research are presented. These include morphological, taxonomic and chemotaxonomic studies under the guidance of Professor Kovaleva, Alla Mikhailovna. Representatives of 11 genera in the flora of Ukraine were studied. We consider it on the example of the genus Sage. This method enables purposeful search for new medicinal plants and significantly reduces the amount of chemical experiments.

For optimization of obtaining galenic medicines from raw materials we use mathematical methods. Galenic medicines show several disadvantages: storage, standardization, dosing, etc. Therefore, to enhance the pharmacological effectiveness of phyto substances and rational use, we resort to a number of methods: development of new medicinal substances from waste products of galenic drugs; purification and concentration of target groups of biologically active substances; modification of galenic medicines using inorganic substances; modification of galenic medicines with the use of aminoacids.

To modify extracts with the inorganic substances the metal replacement reaction in the porphyrin ring occurs at the interface of two liquids. Such chemical modification of extracts allows for a significant increase in the antibacterial activity of the primary extract.

Amino acids are mostly perceived by phytochemists as inert substances, although, in our opinion, they significantly affect the total pharmacological effect of extracts. Amino acids are capable of forming salts, amides and imides with natural substances and, thereby, alter their activity. And their addition to extracts can potentiate their activity. For example, when arginine is added to a bilberry leaves extract, its effectiveness in correcting the metabolic syndrome is significantly enhanced. The level of glucose, cholesterol and lipids decreases. We established that lysine potentiates an anti-inflammatory effect, whereas alanine and argenine – a sedative one.

We hope that we definitely find shared interests for our joint research projects.