



MODERN TECHNOLOGIES FOR THE PRODUCTION AND STANDARDIZATION OF HERBAL PHARMACEUTICAL SUBSTANCES

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Relevance: The development of phytopharmaceuticals requires the introduction of innovative methods for obtaining substances from medicinal plant raw materials. Modern technologies – supercritical CO₂ extraction, ultrasonic and microwave extraction - make it possible to increase the yield of biologically active substances, ensure their selectivity and environmental friendliness of processes, which meets international quality requirements.

The purpose of the study. To summarize modern approaches to the production and standardization of herbal pharmaceutical substances and to assess their prospects for introduction into domestic production.

Materials and methods. The analysis of publications in Scopus, PubMed, and Web of Science databases (2005-2025) on extraction technologies and quality control methods was carried out. Modern methods of quantitative analysis (HPLC, GC-MS, IR spectroscopy) and approaches to standardization are considered.

Results. It was found that the use of ultrasonic extraction makes it possible to increase the yield of flavonoids by 20-35% compared with classical maceration. Supercritical CO₂ extraction ensures the selective isolation of lipophilic components while maintaining their biological activity. For standardization of substances, the most promising is the use of chromatographic methods in combination with the pharmacopoeial requirements of the EAEU and the Pharmacopoeia of the Republic of Kazakhstan.

Conclusions. Modern extraction technologies and analytical control methods open up broad prospects for the development of new phytopreparations. Their implementation will improve the effectiveness and safety of herbal medicines, as well as the competitiveness of domestic pharmaceutical products.