



“DORIVOR O‘SIMLIKLARNI YETISHTIRISH VA ULARDAN FOYDALANISHNING DOLZARB MASALALARI” MAVZUSIDAGI O‘ZBEKISTON – XITOIY XALQARO SIMPOZIUMI MATERIALLARI TO‘PLAMI



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PROCEEDINGS OF UZBEKISTAN-CHINA INTERNATIONAL SYMPOSIUM ON "CURRENT ISSUES IN THE CULTIVATION AND UTILIZATION OF MEDICINAL PLANTS"



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Only a small percentage of cultivated medicinal plant species is clearly genetically defined and represented on the seed market for variety. And other crops, traditional breeding methods, biotechnological procedures and selection assisted with molecular markers are used in development of new varieties and cultivars of MAP with the perspective of their desirable characteristics improvement. This means enhancing the output of a particular drug and the content of desired secondary metabolites in the plant. Identifying genes and DNA sequences linked to the biosynthesis of specific metabolite classes will be a future challenge in the breeding programs of medicinal and aromatic plants (MAPs). Presently, the focus of research is on the genetic diversity among different species of medicinal plants using various types of DNA markers, like restriction fragment length polymorphism (RFLP), amplified fragment length polymorphic DNA (AFLP), random amplified polymorphic DNA (RAPD), cleavage amplified polymorphic sequence (CAPS), simple sequence repeat (SSR), and sequence characterized amplified region (SCAR) markers. It is a well known fact that the main purpose for targeted alteration of traits in medicinal plants is the content of bioactive compounds. Though, for their use as crops, aspects of basic agronomy related to uniformity, stability, growth and development, and resistance to biotic and abiotic stresses, also need to be enhanced.

Keywords: cultivation, medicinal and aromatic plants, market, machinery, DNA markers.

CURRENT ISSUES OF USING MEDICINAL PLANTS IN PHARMACOLOGY, MEDICINES AND FOOD INDUSTRY

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Abstract. Medicinal plants have won full significance in the pharmacology, medicine and meal business due to their healing ability, natural basis and increasing customer preference for plant-based total products. Despite their widespread use, many challenges persist to limit their safe and powerful use. The gift explores opinions on primary problems associated with the use of medicinal plants in pharmaceutical formulations, health products, nutritional and food systems. A comprehensive assessment of medical literature, regulatory advisories, and commercial reports was conducted to grasp key concerns. The findings show that variability in phytochemical composition, adulteration, heavy metal contamination, pesticide residues, microbial pathogens, and lack of standardization are a number of the fundamental demanding situations affecting product quality and efficacy. Furthermore, incomplete scientific evidence, inconsistent regulatory frameworks, and unacceptable first-rate manipulative practices detract from the worldwide reputation of natural products. The food industry faces several issues related to protection assessment, labeling accuracy, bioactive ingredient stability, and consumer awareness. Environmental issues, including overharvesting and lack of biodiversity, similarly threaten the sustainable use of medicinal plants. Advanced

analytical strategies, harmonized rules, verified quality-manipulating tactics, and sustainable cultivation strategies are critical to addressing these demanding situations. They have a look to highlight the desire for multidisciplinary tactics to ensure the protection, efficacy, and sustainability of medicinal plant-based products across the pharmaceutical and food sectors.

Keywords: Medicinal plants, Pharmacology, Herbal medicines, Food industry, Quality control, Phytochemicals, Sustainability

Introduction. Medicinal plants had been used for hundreds of years as a source of healing targets and preservatives to make a contribution especially to trendy drug discovery and beneficial meal developments. Growing buyer calls for natural products have elevated their incorporation into pharmaceutical preparations, dietary supplements, and foods. However, issues regarding nicety, safety, efficacy, and sustainability have emerged, necessitating scientific evaluation and regulatory oversight.

Research Methodology. They take a look at modified to carried out through a comprehensive review of peer-reviewed scientific articles, books, worldwide indications, and regulatory records regarding medicinal plants. Information on phytochemical variability, infection, standardization, medical validation, meal applications, and sustainability constraints were systematically analyzed.

Results and Discussion. The evaluation identified several problems affecting the use of medicinal plants. Variability in active ingredients due to geographic region, climate, cultivation practices, and harvest sites significantly affects product compatibility. Fouling and contamination with heavy metals, insecticides and microorganisms remain major protection concerns. Many herbal products lack sufficient clinical evidence to aid therapeutic claims. Regulatory requirements fluctuate in different countries, developing challenges for international product and product certification. In the food industry, maintaining a balance between bioactive compounds, ensuring accurate labeling, and achieving safe dosage levels are critical. Sustainable procurement and conservation of medicinal plant species have proven to be an increasing number of necessities due to increasing global demand and environmental pressures.

Conclusion. Medicinal plants offer tremendous opportunities for developing safe and effective pharmaceutical and food products. However, challenges related to quality assurance, safety, standardization, regulatory compliance, and sustainability must be addressed. The implementation of advanced analytical techniques, evidence-based validation, harmonized regulations, and sustainable cultivation practices will support the responsible utilization of medicinal plants in the future.

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CREATION OF AN INTELLIGENT DRYING SYSTEM CONTROLLED BY ARTIFICIAL INTELLIGENCE ELEMENTS AND STUDY OF ITS IMPACT ON THE QUALITY OF FUNCTIONAL FOOD PRODUCTS.

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Abstract: This article examines the development of an intelligent drying system controlled by artificial intelligence (AI) elements and its impact on the quality indicators of functional food products. During the research, an intelligent algorithm was developed that controls temperature, relative humidity, and airflow velocity in real time during the drying process. The results showed that the AI-based control system significantly increases the retention rate of biologically active substances, vitamins, and antioxidants in the product compared to traditional drying methods. Smart drying technology allows for reduced energy consumption, reduced drying time, and improved quality of the final product.

Keywords: artificial intelligence, smart drying system, functional food products, drying technology, antioxidants, energy efficiency, automation.

Introduction: In the context of growing public demand for healthy nutrition, improving technologies for the production and storage of functional food products is one of the most pressing issues [1]. Functional food products are products rich in biologically active components that have not only a nutritional but also a preventive and health-improving effect on the human body. Although drying fruits and vegetables is one of the most effective ways to extend their shelf life, improperly chosen drying regimes lead to the breakdown of vitamins, phenolic compounds, and other bioactive substances [2]. In traditional drying units, drying parameters are usually maintained at predetermined values, which does not allow for the consideration of the individual characteristics of the product. In recent years, the development of artificial intelligence technologies has expanded the possibilities for the automatic optimization of production processes [3]. The integration of artificial intelligence elements into drying technologies allows for real-time monitoring of product condition and the automatic selection of optimal drying parameters. The objective of this study is to develop an intelligent drying system controlled by artificial intelligence and to evaluate its impact on the quality of functional food products [4].

Research methodology: The object of the research. The following raw materials widely used in the production of functional food products were selected as the object of