



## **XIV МІЖНАРОДНА НАУКОВО-ТЕХНІЧНА КОНФЕРЕНЦІЯ**

**"Наукові проблеми харчових технологій та промислової  
біотехнології в контексті євроінтеграції"**

## **ПРОГРАМА ТА ТЕЗИ МАТЕРІАЛІВ**

*25 листопада 2025 р.*

**КИЇВ НУХТ 2025**

## 32. IMPLEMENTATION OF FUNCTIONAL AND SEMI-FUNCTIONAL ADDITIVES IN MODERN FOOD INDUSTRY TECHNOLOGIES

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In the modern world, there is a steady trend toward healthy nutrition, which determines the growing interest in functional food products.

These products, in addition to their basic nutritional value, can positively influence metabolic processes, support the functioning of organs, and help prevent the development of certain diseases [1].

A systematic analysis of recent studies on the introduction of functional and semi-functional food additives into food industry technologies indicates their importance and indispensability.

The relevance of this research is driven by the global trend toward personalized and health-oriented nutrition, which requires continuous improvement of the raw material base and technological approaches for creating products with proven beneficial effects on human health.

Functional and semi-functional additives - including dietary fibers, probiotics, antioxidants, as well as innovative protein–hydrocolloid emulsions and plant-based raw materials (such as pumpkin, buckwheat honey, and sprouted legumes) — represent one of the key directions in food technology development aimed at meeting modern consumer demands for food quality [1, 2, 3].

The rationale for this statement lies in the multifunctionality of these additives. For example, their ability to enhance nutritional value and provide health benefits enables the creation of products with high biological and food value, which contribute to the prevention of diseases (such as cardiovascular disorders, diabetes, and obesity) and support consumers' physiological well-being, including individuals with specific dietary needs.

Probiotics and dietary fibers actively modulate the gut microbiota, while

antioxidants reduce oxidative stress, thereby enhancing the body's protective functions [1, 2, 3].

The incorporation of functional compositions improves critical technological parameters of finished products and enhances organoleptic characteristics by neutralizing undesirable flavors or creating new textures [1, 2, 3].

The use of such compositions increases structural stability and water-holding capacity (for example, in minced meat systems and bakery products), which is essential for minimizing mass loss and maintaining juiciness.

The extension of shelf life is achieved by inhibiting the growth of pathogenic microflora and slowing oxidation processes [1, 2, 3].

The further development of functional nutrition requires the implementation of environmentally sustainable technologies, the expansion of raw material resources, and the optimization of formulations with predictable health benefits.

This also creates a foundation for forming new market segments and enhancing the competitiveness of domestic producers in the international arena [1, 2].

**Conclusion.** Thus, the targeted use of functional ingredients makes it possible to create competitive and safe food products with specified consumer and therapeutic-preventive properties.

### **References.**

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**УДК 664.8.036.5:635.65:664.38**