

## THE ROLE OF MEAT AND DAIRY PRODUCTS IN FOOD SAFETY AND HUMAN HEALTH

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**Abstract.** *This article discusses the role of meat and dairy products in the human body, their significance in terms of food safety, and modern processing technologies. Meat products are the main source of high-quality protein, iron, and B-group vitamins, while dairy products are rich in calcium, phosphorus, and beneficial probiotic compounds found in fermented products. Research shows that the safe production and proper storage of these products are crucial for ensuring healthy nutrition for the population [1; 2].*

**Keywords:** *meat products, dairy products, protein, calcium, food safety, processing technologies.*

### Importance of Meat Products

Meat is considered a complete source of eight essential amino acids necessary for the human body. Studies show that the digestibility coefficient of meat proteins reaches 95–97% [3].

Furthermore, heme iron in meat is easily absorbed, helping to prevent anemia. Meat is processed into a wide range of products, including sausages, semifinished goods, and canned foods. In processing technologies, refrigeration, freezing, smoking, and sterilization are widely applied. Recently, innovative methods such as vacuum packaging, high-pressure processing (HPP), and modified atmosphere packaging (MAP) have been introduced to extend shelf life while preserving nutritional value [4].

### Importance of Dairy Products

Milk is the primary source of calcium for human health. Compared to other foods, the bioavailability of calcium in milk and dairy products is relatively high (30–35%), which plays a key role in the development of bones and teeth [5]. In addition, dairy products contain vitamins A, D, and B2, which strengthen the immune system.

Fermented dairy products such as yogurt, kefir, buttermilk, and cheese are not only nutritious but also provide probiotic effects. Probiotic bacteria improve intestinal microflora balance, support digestion, and enhance immunity [6].

### Food Safety Considerations

Despite their nutritional value, meat and dairy products are highly perishable and microbiologically sensitive. Therefore, compliance with hygienic requirements and international standards is essential during production. According to the World Health Organization (WHO), more than 60% of foodborne infections are linked to meat and dairy products [7].

The implementation of the HACCP (Hazard Analysis and Critical Control Points) system is recognized as one of the most effective measures for ensuring food safety in the production chain.

### Modern Research and Prospects

In recent years, special attention has been given to eco-friendly, energyefficient, and innovative methods of processing meat and dairy products. For example, High Pressure Processing (HPP) technology ensures the microbiological safety of foods while preserving their natural taste and nutritional value. In addition, biotechnological advances have enabled the development of probiotic-enriched dairy products with enhanced functional properties.

Consumer demand is also shifting toward healthier options—low-fat, high-protein products without artificial additives. As a result, producers are increasingly relying on certified raw materials and adopting international standards to meet modern expectations. Looking ahead, the introduction of smart packaging technologies in the food industry is anticipated. Such packaging can monitor freshness, shelf-life, and quality indicators in real time. This approach will further guarantee the reliability and safety of meat and dairy products for consumers worldwide.

#### Conclusion

Meat and dairy products are an essential part of a balanced diet. Their proteins, fats, minerals, and vitamins contribute to the proper growth and development of the human body. At the same time, the introduction of modern technologies in processing and storage, strict compliance with sanitation and hygiene requirements, and adherence to international quality standards play a decisive role in ensuring food safety and public health.

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