

CHEMICAL COMPOSITION OF PEAR FRUIT AND ITS
IMPORTANCE IN TRADITIONAL MEDICINE

X.M. Noibjonova

Andijan State Medical Institute Teacher

<https://orcid.org/0000-0001-6771-4655>

O.Z. Qayumjonov

Andijan State Medical Institute assistant

<https://orcid.org/0009-0009-2841-601X>

E-mail: omatilloqayumjonov111@gmail.com

M.M. Qayumjonova

<https://orcid.org/0009-0009-4045-2101>

Annotation. This scientific article presents a comprehensive analysis of the chemical composition of pear fruit, the biologically active compounds it contains, and their physiological and biochemical effects on the human body. In addition, the role of pear fruit in the digestive system, its influence on metabolic processes, and its applications in folk medicine are systematically described based on scientific literature and experimental data. The results of the study allow pear fruit to be evaluated as a functional food product with significant health benefits.

Keywords: pear fruit, chemical composition, bioactive compounds, vitamins, digestion, folk medicine.

Introduction. Physiological processes occurring in the human body are carried out through the integration of complex systems, among which the digestive system plays a central role [1]. This is because the food consumed undergoes mechanical and chemical breakdown within this system and is converted into energy and essential building materials for the body. However, due to modern lifestyle changes, unhealthy dietary habits, increased consumption of processed foods, and environmental factors, digestive system disorders have become increasingly widespread [2]. From this perspective, the scientific study and practical application of natural food products, particularly fruits with medicinal properties, have become highly relevant. In recent years, enzyme-based pharmaceutical preparations, especially those containing pancreatin, have been widely used. Nevertheless, long-term use of such medications may suppress the natural enzymatic activity of the body. Therefore, natural alternatives, such as pear fruit, have become an important focus of scientific research [3].

Pear fruit belongs to the Rosaceae family and has been cultivated by humans since ancient times. Its origin is associated with ancient Eastern regions, from where it spread

widely across Europe and Asia. Today, hundreds of pear varieties exist, differing in their adaptability to environmental conditions, productivity, and nutritional value. In Uzbekistan, pear cultivation has a long-standing tradition, with local varieties such as “Nashvati” being particularly widespread [4]. These varieties are the result of traditional selection and are characterized by high biological value. The adaptability of pear trees to various climatic conditions further enhances their agricultural significance, as they can withstand both low and high temperature extremes. Pear fruit has a complex and well-balanced chemical composition, containing a wide range of substances essential for human health. Carbohydrates serve as the primary energy source, with fructose, glucose, and sucrose being the main components. Notably, the relatively high fructose content makes pears suitable even for individuals with diabetes or those managing body weight. In addition, pears contain polysaccharides such as pectin and dietary fiber, which play a crucial role in regulating intestinal activity [5]. Organic acids, phenolic compounds, essential oils, and phytoncides contribute to the biological activity of the fruit. Compounds such as arbutin and chlorogenic acid exhibit antioxidant properties, protecting the body against oxidative stress caused by free radicals.

Pear fruit is rich in vitamins, particularly water-soluble ones, which are essential for maintaining metabolic balance. Vitamin C (ascorbic acid) acts as a powerful antioxidant, protecting cells from oxidative damage and strengthening the immune system. It also plays a key role in collagen synthesis, which is necessary for maintaining healthy connective tissues. B-group vitamins are involved in energy metabolism and function as cofactors in numerous enzymatic reactions. Folate (vitamin B9) is especially important for hematopoiesis, the process of blood cell formation. Mineral elements such as potassium, calcium, and magnesium contribute to the proper functioning of the cardiovascular system and help regulate physiological processes [6].

One of the most significant properties of pear fruit is its beneficial effect on the digestive system. This is primarily due to its high dietary fiber content, which stimulates intestinal peristalsis and helps prevent constipation. At the same time, pectin substances support the balance of intestinal microflora by promoting the growth of beneficial bacteria.

Sorbitol and fructose facilitate digestion by enhancing the breakdown of food, thereby improving nutrient absorption. As a result, regular consumption of pears contributes to improved digestive function and reduces the occurrence of gastrointestinal disorders [7].

Pear fruit has been widely used in traditional medicine for centuries due to its therapeutic properties. It is considered beneficial for strengthening the cardiovascular system, improving kidney function, and eliminating toxins from the body. Furthermore, pears are used in the treatment of respiratory conditions such as

bronchitis and persistent cough. In cases of anemia, the presence of iron and other trace elements in pears supports blood formation. Additionally, their immunomodulatory properties enhance the body's defense mechanisms and increase resistance to infectious diseases [8]. The bioactive compounds present in pear fruit exhibit a wide range of pharmacological effects, including antioxidant, anti-inflammatory, and antimicrobial activities. These properties allow pears to be considered a natural therapeutic agent [9]. Moreover, pears possess mild diuretic properties, aiding in the elimination of excess fluids and harmful substances from the body. Their regenerative effects also contribute to tissue repair and recovery processes. Studies conducted using high-performance liquid chromatography (HPLC) have demonstrated that pear fruit is rich in essential vitamins. In particular, the relatively high concentration of ascorbic acid confirms its strong antioxidant potential. The presence of B-group vitamins further highlights the importance of pears in supporting metabolic processes [10].

The findings indicate that pear fruit is not only a nutritious food product but also a valuable source of biologically active compounds. Regular consumption of pears contributes to maintaining metabolic balance and plays a significant role in the prevention of various diseases. Compared to synthetic pharmaceutical agents, pears offer the advantage of being natural and having minimal side effects, making them a safer alternative for long-term use [11].

Conclusion. In conclusion, pear fruit is a nutrient-rich plant product characterized by a high content of biologically active compounds. The vitamins, minerals, and other bioactive substances it contains have a positive impact on human health. Regular consumption of pears improves digestion, strengthens the immune system, supports cardiovascular health, and helps regulate metabolic processes. Therefore, incorporating pear fruit into the daily diet can be considered an effective approach to maintaining a healthy lifestyle.

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