



Medicinal Potential of Mulberry Fruit

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Mulberry is a perennial, heterozygous, and important economic crop in the sericulture industry. It belongs to the genus *Morus* L. of the family Moraceae. It is usually cultivated in low-bush or dwarf tree form by repeated pruning to feed silkworms; apart from its importance in silkworm rearing, it is also valued for providing delicious fruits that contain high carbohydrate besides vitamins and minerals. Mulberry is a species native to Indo-China and has been widely cultivated in many regions including Asia, Africa, America, Europe and India. Globally recognized 68 species of the *Morus* genus, and most of them are still cultivated in Asia. For each species, there are several varieties; these are the results of intensive selection from open pollination, controlled hybridization and selection and mutation breeding. White mulberry (*Morus alba*), Black mulberry (*Morus nigra*) and Red mulberry (*Morus rubra*) are the most common *Morus* species in the world. The white mulberry is known as the main food source for silkworms; its colour can vary between white and very light pink. It is mainly cultivated in China, where it has been used as an ingredient in Chinese medicine. Black mulberry (*Morus nigra*) and red mulberry (*Morus rubra*) are molecularly different from white mulberries; they are respectively black-purple and purple-red fruits, and they can be easily found in northern India, Pakistan, and Iran.

Medicinal Composition of Mulberry Fruit

The fruit of the mulberry tree, commonly known as mulberry fruit, is widely consumed and is characterized by its nectar-like juice, sweet-sour fragrance, and rich nutritional content. The Chinese Ministry of Health classifies it as one of the “dual-purpose” agricultural products for both food and medicine (Hao *et al.*, 2022). Mulberry (*Morus* spp.) is a highly nutritious fruit that has been valued for centuries in traditional systems of medicine. These nutrients contribute to several health-promoting and medicinal benefits, making mulberries an excellent addition to a balanced diet. Nutritional Components Responsible for Medicinal Benefits are:

Anthocyanins: Anthocyanins are natural water-soluble pigments that give black and red mulberries their deep purple or black color. Major bioactive pigments include cyanidin-3-glucoside and cyanidin-3-rutinoside, with strong antioxidant and anti-inflammatory properties that protect cells from oxidative damage.

Flavonoids: Include quercetin, rutin, kaempferol, and catechins; contribute to antioxidant, antimicrobial, and cardioprotective effects.

Phenolic acids: Chlorogenic acid, gallic acid, caffeic acid, and protocatechuic acid provide antioxidant and anti-diabetic activities.

Vitamins: Rich in vitamin C, vitamin E, and small amounts of B-complex vitamins, Boosts immunity, promotes collagen synthesis, improves iron absorption, and reduces oxidative stress.

Minerals: Contains potassium, calcium, magnesium, iron, phosphorus, and zinc, important for metabolic and physiological functions.

Dietary fiber: Mulberries contain both soluble and insoluble dietary fiber, which promote digestive health, prevent constipation, support beneficial gut bacteria, and help regulate blood glucose and cholesterol levels.

Organic acids: Mulberry fruit contains natural organic acids such as Citric, malic, and tartaric acids, which help in digestion, improve mineral absorption, and Support metabolism.

Sugars: Mulberries naturally contain glucose and fructose, providing natural sweetness and energy.

Polysaccharides: Exhibit immunomodulatory, antioxidant, and anti-fatigue activities.

Alkaloids: Minor amounts of bioactive alkaloids, including 1-deoxynojirimycin (more abundant in leaves but present in low levels in fruits), are associated with anti-diabetic effects.

Conclusion

Mulberry is more than just a delicious seasonal fruit—it is a valuable functional food with numerous medicinal properties. Rich in antioxidants, vitamins, minerals, and unique bioactive compounds such as DNJ, mulberries support heart health, blood sugar regulation, immunity, digestion, skin health, and overall well-being. It contains a lot of flavonoids and other substances with potential antibacterial effects as well as free radical scavenging abilities. All components of the plant are utilised as medication because of its pharmacological qualities. Mulberry has been shown to protect the liver, enhance vision, make it easier for people to pass urine, lower blood pressure, fight diabetes, and control their weight. Regularly including fresh or dried mulberries in a balanced diet may contribute to overall health by helping protect the body against oxidative damage.

References

1. B.K. Singhal, M.A. Khan, A. Dhar, F.M. Baqual, B.B. Bindroo). Approaches to industrial exploitation of mulberry (Mulberry sp.) fruits J. Fruit. Ornam. Plant Res., 18 (1) (2010), pp. 83-99.
2. K. Vijayan Google Scholar The emerging role of genomic tools in mulberry (Morus) genetic improvement Tree Genet. Genomes, 6 (4) (2010), pp. 613-625.
3. Kahkashan Qayoom and Shaista Manzoor, Medicinal values of mulberry (Morus spp.): A review, Journal of Current Research in Food Science 2023; 4(1): 95-99.
4. M. Imran, H. Khan, M. Shah, R. Khan, F. Khan Google Scholar Chemical composition and antioxidant activity of certain Morus species J. Zhejiang Univ. Sci. B, 11 (2010), pp. 973-980
5. Moirangthem Nishila Devi, Aparajita Bhasin and Preetamkumar Ashemcha, Pharmacological properties of mulberry fruits and effect of different preservation methods on phytochemical profile: A review, The Pharma Innovation Journal 2022; 11(7): 3176-3182.
6. View in Scopus Y. Yang, Y.X. Tan, R.Y. Chen, J. Kang Google Scholar The latest review on the polyphenols and their bioactivities of Chinese Morus plants J. Asian Nat. Prod. Res., 16 (6) (2014), pp. 690-702
7. Y. Jiang, W.J. Nie Chemical properties in fruits of mulberry species from the Xinjiang province of China Food Chem., 174 (2015), pp. 460-466.