

Moringa Leaves: A Nutrient-Rich Superfood

ARTICLE ID: 0217

Priya Pandey¹, R.N. Kewat², Sheetanu Singh³, Garima Dixit⁴

^{1,3}Research Scholar, Department of Biochemistry, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya

²Professor, Department of Biochemistry, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya

⁴Research scholar, Department of Food science and Nutrition, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya

Moringa oleifera, commonly known as the drumstick or horseradish tree, is a highly valued plant native to tropical and subtropical regions. Nearly every part of the tree—leaves, flowers, pods, and seeds—has diverse applications in food, medicine, and industry. The leaves, in particular, are rich in essential nutrients including proteins, vitamins (A, B-complex, C, E, and K), minerals (iron, calcium, manganese), and antioxidants, making them a potent dietary supplement. Traditionally, moringa leaves have

human food and livestock feed. The nutritional composition of moringa leaves varies with geographic location, influencing their therapeutic efficacy. This review highlights the biochemical composition, health

benefits, and versatile uses of moringa leaves, underscoring their potential to improve nutrition and health worldwide.

Moringa oleifera, often referred to as the "drumstick tree" or "horseradish tree," is a member of the Moringaceae family. This genus, Moringa, comprises 13 different species,



with Moringa oleifera being the most commonly cultivated. It is native to tropical and subtropical areas around the world. Moringa leaves have long been used in traditional remedies for a variety of purposes. They were commonly applied to the stomach to help expel intestinal worms, and an infusion made from the leaves

has been used as an eyewash to treat conjunctivitis. Soup prepared from drumstick leaves is considered highly effective for preventing and managing conditions such as tuberculosis, bronchitis, and asthma. This soup is often enhanced with lime juice, pepper, and salt to suit the patient's taste. Additionally, moringa leaves have been found to help reduce thyroid hormone levels. In the Philippines, women traditionally consume moringa leaves with shellfish and chicken soup to support breast milk production. Beyond medicinal uses, the mashed leaves are sometimes used for scrubbing utensils and cleaning surfaces. Moringa flowers are recognized for their cholagogue, stimulant, diuretic, and tonic properties, which help promote bile flow. Agriculturists also mix moringa leaves into animal feed to maintain healthy livestock.

Medicinally, moringa leaves have been used to address a wide range of health issues, including bacterial infections, urinary tract infections, HIV/AIDS, fever, liver disorders, tumors, high blood pressure, diarrhea, dysentery, ulcers, headaches, and as an antioxidant. They are also valued for treating protein and iron deficiencies, vitamin and mineral shortages, enhancing lactation, and managing catarrh and scurvy. Moringa is highly valued for its exceptional nutritional profile, being rich in vitamins A, B (including riboflavin, pyridoxine, folic acid, and niacin), C, E (alpha-tocopherol), and beta-carotene. It also provides significant amounts of essential minerals such as iron and calcium, and is a notable source of essential amino acids, making it a valuable addition to the diet. (Jaiswal *et.al.*, 2022)

Biochemical Composition of Moringa Leaves

Moringa leaves are packed with vital nutrients, including proteins, vitamins, minerals, and antioxidants. The following table summarizes the key components found in 100 grams of fresh moringa leaves:

Nutrient	Amount per 100 g of Moringa oleifera Leaves
Carbohydrates	9.1 g
Dietary Fiber	2.1 g
Fat	1.7 g
Protein	8.1 g
Vitamin A equiv.	80 µg
Thiamine (B1)	0.103 mg
Riboflavin (B2)	0.112 mg
Niacin (B3)	1.5 mg
Pantothenic acid (B5)	0.48 mg
Vitamin B6	0.129 mg
Folate (B9)	41 µg
Vitamin C	8.6 mg

(Abbas *et.al.*, 2018)

The plant's nutritional composition is a key factor influencing its nutritional, medicinal, and therapeutic benefits. Moreover, the chemical makeup of the fiber fractions impacts the digestibility of the feed, which in turn affects how effectively animals can utilize it. It has been observed that the nutritional content of Moringa leaves varies depending on the geographic location.

Health Benefits

Moringa leaves possess antibacterial and anti-inflammatory properties. Drinking tea made from the leaves is a traditional remedy for gastric ulcers and

diarrhea. Due to their high protein and fiber content, moringa leaves are an excellent dietary option for individuals suffering from malnutrition. They are also used to treat fevers, bronchitis, infections of the eyes and ears, and inflammation of the mucous membranes. The leaves are rich in iron, making them beneficial for those with anemia, and they are also used in managing scurvy and various skin diseases. Among all parts of the plant, the leaves are considered the most nutritious, providing significant amounts of B vitamins, vitamin C, provitamin A (as beta-carotene), vitamin K, manganese, and protein, along with other essential nutrients. Moringa leaf powder is widely recognized for its substantial health benefits, especially in regions affected by food scarcity and malnutrition. Additionally, rubbing the leaves on the temples is a traditional method to relieve headaches. (Abbas *et.al.*,2018)

How to Use Moringa Leaves

Moringa is regarded as one of the world's most valuable trees because nearly every part of it can be utilized for food, medicine, or industrial applications (Khalafalla et al., 2010). Its leaves, flowers, and fresh

Pods are commonly consumed as vegetables, and it is also used as animal feed (Anjorin et al., 2010). With its wide range of uses, the moringa tree holds great potential for enhancing nutrition, improving food security, and supporting rural development.

Conclusion

Moringa oleifera stands out as a “miracle tree” due to its exceptional nutritional and medicinal qualities. The leaves are the most nutrient-dense part of the plant, offering a rich source of essential vitamins, minerals, proteins, and antioxidants that contribute to its wide-ranging therapeutic effects. Traditional uses of moringa leaves for treating infections, inflammation, malnutrition, and chronic diseases are supported by their biochemical properties. Moreover, moringa's adaptability and multiple uses—from human nutrition to animal feed—make it a valuable resource for enhancing food security and promoting sustainable rural development. Continued research and wider adoption of moringa leaf products could play a significant role in addressing global nutritional deficiencies and improving public health, especially in regions facing food scarcity.

References

1. Abbas, R., Elsharbasy, F. S., & Fadlemula, A. A. (2018). Nutritional values of Moringa oleifera, total protein, amino acid, vitamins, minerals, carbohydrates, total fat and crude fiber, under the semi-arid conditions of Sudan. *Journal of Microbial & Biochemical Technology*, 10(2) 1948-5948.
2. Jaiswal, V., Singh, G., & Kaur, J. (2022). Miracle tree: Moringa oleifera. *International Journal of Pharmaceutical Sciences and Research*, 13(5), 1924–1934.
3. Moyo, B., Masika, P. J., Hugo, A., & Muchenje, V. (2011). Nutritional characterization of Moringa (Moringa oleifera Lam.) leaves. *African Journal of Biotechnology*, 10(60), 12925–12933.