BioThink E – Magazine, Vol. -3, Issue -2, April 2026
ISSN No. – 3048- 7943
www.biothink.in

Moringa: Health benefits, utilization and cultivation

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Kingdom: Plantae

Division: Magnoliphyta,

Class: Magnoliopsida,

Order: Brassicales,

Family: Moringaceae,

Genus: Moringa,

Species: *M. oleifera*

Moringa oleifera is named differently in different regions according to its characteristics like *drumstick tree* due to immature seed pods,*horseradish tree* because of the taste of ground root preparations and *Ben oil tree*as it's relation to seed- derived oils. It is a Miracle tree as it's each component is useful and has the ability to cure innumerable Illnesses.Leaves which can be used as forage, tree trunks are used for manufacturing of gums, flower's nectar in making honey and powdered seeds for purifying water. It has abundance of vitamins, minerals present and is rich in protein, phyto nutrients which makes it useful as nutrition for malnourished children and engages its use as a food fortificant.

Nutritional Composition of Moringa

Moringa is one of the most nutrient-dense plants known. The leaves, in particular, are rich in:

- **Proteins** (including essential amino acids)
- **Vitamins**: A, B-complex, C, and E
- **Minerals**: Calcium, potassium, iron, magnesium
- **Phytochemicals**: Flavonoids, phenolic acids, glucosinolates
- **Omega fatty acids (3 and 6)**

  Due to this rich composition, moringa serves as a valuable dietary supplement, especially in regions suffering from malnutrition.

Health Benefits

- Ulcers in the body can be eradicated on it's consumption
- Inflammation and allergies can be reduced
- It can treat bacterial and fungal infections as it has anti-microbial properties
- Blood sugar levels are considerably decreased and there by treating diabetes and showing anti-hyperglycemic activity
- Anti-oxidant activity is shown due to polyphenols present which prevent the oxidative damage to the tissues of the body
- It prevents tumors in the body
- Chemopreventive properties allow it to act as an anti-cancer agent
- Anti-clastogenic properties prevent the DNA from damaging and prevent mutations
- High density lipoprotein (HDL) which is a good cholesterol is elevated in the body while the Low density lipoprotein (LDL) is reduced in the body there by showing a drop in total cholesterol
- Cardiovascular health is maintained and it prevents heart diseases
- It helps in detoxification of blood
- Rejuvenates the skin cells, maintains healthy tissues and organs of the body
- Protects the liver by stabilization of liver enxymes
- Aids in digestion and prevents stomach ulcers
- Nutrient rich composition makes it useful to be used for pregnant women for lactation
- It can be used for managing of weight by obese patients as it increases fat burning ability in the body
- Improves nervous system functions and prevents neural degeneration
- Maintains the blood pressure of the body

Utilization of Moringa

1. Food Uses

- **Leaves**: Used as vegetables, in soups, salads, and powders
- **Pods (drumsticks)**: Popular in Indian cuisine (e.g., sambar)
- **Flowers**: Used in teas and curries
- **Seeds**: Consumed roasted or used in oil extraction

2. Medicinal Uses

Moringa has been traditionally used in Ayurvedic medicine to treat over 300 diseases, including hypertension, diabetes, infections, and skin disorders.

3. Industrial Uses

- **Oil production** (ben oil) used in cosmetics and lubricants
- **Water purification** using seed powder as a natural coagulant
- **Biofuel production** from seeds

4. Agricultural Uses

- Used as fodder for livestock due to high protein content
- Improves soil fertility and acts as a green manure
- Supports sustainable agriculture and climate resilience

Cultivation of Moringa

Climate Requirements

Moringa thrives in:

- Tropical and subtropical climates
- Temperature range: 25–35°C
- Annual rainfall: 250–1500 mm
- It is highly drought-tolerant and can grow in arid conditions.

Soil Requirements

- Well-drained sandy or loamy soils
- pH range: 6.0–7.5
- Avoid waterlogged conditions

Propagation

Moringa can be propagated by:

- **Seeds** (direct sowing)
- **Stem cuttings** (vegetative propagation)

Land Preparation and Planting

- Field should be ploughed and leveled
- **Spacing:**
    - Intensive cultivation: 1 × 1 m
    - Orchard system: 3 × 3 m
- Seeds are sown directly in pits or nursery beds

Nutrient Management

- Application of organic manure (FYM/compost) improves yield
- Balanced NPK fertilization enhances growth

Irrigation

- Requires moderate irrigation during establishment
- Once established, it can withstand drought

Intercultural Operations

- Weeding and mulching are essential
- Pruning encourages branching and higher leaf production

Pest and Disease Management: Common pests include:

- Caterpillars
- Aphids
- **Diseases:**
- Root rot
- Leaf spot

Integrated pest management (IPM) practices are recommended.

Harvesting

- Leaves: harvested 2–3 months after planting

- Pods: harvested 6–8 months after planting
- Seeds: collected from mature pods

Economic Importance and Scope

Moringa has immense economic potential due to:

- Rising demand for superfoods and nutraceuticals
- Use in pharmaceutical and cosmetic industries
- Export potential of moringa powder and oil

It also contributes to:

- Food security
- Income generation for farmers
- Sustainable agriculture systems

Constraints in Moringa Production

- Lack of improved varieties
- Limited awareness among farmers
- Post-harvest losses
- Inadequate processing and storage facilities

Future Prospects

Future research and development in moringa may focus on:

- Genetic improvement and high-yielding varieties
- Value addition and processing technologies
- Integration into climate-resilient agriculture
- Expansion in nutraceutical and pharmaceutical sectors

Moringa's role in combating malnutrition and promoting sustainable agriculture makes it a key crop for future food systems.

Conclusion

Moringa (*Moringa oleifera*) is a highly valuable multipurpose tree with exceptional nutritional, medicinal, and economic importance. Its adaptability to harsh climatic conditions, combined with its wide range of applications,

makes it a promising crop for sustainable agriculture and global food security. Increased research, awareness, and policy support can further enhance its utilization and cultivation.

References

Anwar F, Latif S., Ashraf M., & Gilani A.H. (2007). *Moringa oleifera: A food plant with multiple medicinal uses*. *Phytotherapy Research*, 21: 17–25.

Fahey JW (2005). *Moringa oleifera: A review of the medical evidence for its nutritional, therapeutic, and prophylactic properties*. *Trees for Life Journal*, 1(5): 1–15.

FAO (2013). *Moringa: A multipurpose tree for food, medicine and industry*. Food and Agriculture Organization of the United Nations, Rome.

Foidl N, Makkar H.P.S., & Becker K. (2001). *The potential of Moringa oleifera for agricultural and industrial uses*. In: *The Miracle Tree: The Multiple Attributes of Moringa*. CTA Publications.

Gopalakrishnan L, Doriya K., & Kumar D.S. (2016). *Moringa oleifera: A review on nutritive importance and its medicinal application*. *Food Science and Human Wellness*, 5(2): 49–56.

Leone A, Spada A., Battezzati A., et al. (2015). *Cultivation, genetic, ethnopharmacology, phytochemistry and pharmacology of Moringa oleifera leaves: An overview*. *International Journal of Molecular Sciences*, 16: 12791–12835.

Mbikay, M. (2012). *Therapeutic potential of Moringa oleifera leaves in chronic hyperglycemia and dyslipidemia*. *Frontiers in Pharmacology*, 3: 24.

Rockwood JL, Anderson B.G., & Casamatta D.A. (2013). *Potential uses of Moringa oleifera and an examination of antibiotic efficacy conferred by Moringa oleifera seed and leaf extracts*. *African Journal of Biotechnology*, 12(36): 6075–6083.

Saini RK, Sivanesan I., & Keum Y.S. (2016). *Phytochemicals of Moringa oleifera: A review of their nutritional, therapeutic and industrial significance*. *3 Biotech*, 6: 203.

Vergara-Jimenez M, Almatrafi M.M., & Fernandez M.L. (2017). *Bioactive components in Moringa oleifera leaves protect against chronic disease*. *Antioxidants*, 6(4): 91.