



# A Review On Pharmaco-Nutritive Importance Of Sahajan Tree (*Moringa Oleifera*), India

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## ABSTRACT

The world Health Organization (WHO) reported that more than 80% of the world population trust on traditional medicine particularly on plant drug for their primary health care needs. Plants have been the base of many traditional medicines throughout the world for thousands of years and especially in India. The science of Ayurveda and Ethanobotany has been continued to provide remedies through these plant products to mankind. Numbers of plants being used in Ayurveda as medicine in various ailments. *Sahajan* (*Moringa oleifera* Lam.) is the one of them. It is known as 'Drum stick tree' is a small evergreen tree, sahajan is used in the treatment of various disorders like Vatvyadhi, Kusth (leprosy), Krimi (worm infection), Sopha (Inflammation), Kandu (itching). In present time this plant is used very frequently.

**Keywords-** Ayurveda and Ethanobotany, Sahajan, *Moringa oleifera*, Nutritive value, Traditional uses etc.

## Introduction

*Moringa oleifera*, known popularly as 'drumstick tree', it is one of the most incredible plant, is a tropical plant grown for its nutritious leafy-greens, flower buds, and mineral-rich green fruit pods. It is a well-recognized member in the *Moringaceae* family of trees, and thought to be originated in the sub-Himalayan forests of the Indian subcontinent. It possesses horseradish-like root and, hence, known to the western world as horseradish tree. Their young, tender seed pods are popular as *murnga* in Tamil, and *malunggay* in Philippines. *Moringa* is truly a miracle plant, and divine gift for the nourishing and healing of humen. This plant having so many uses and special features.

*Moringa* is a drought tolerant, medium-sized, evergreen tree that prefers warm, frost-free climates to flourish. Its tender leaves and twigs can be harvested at any time from a well-established, 1.5 to 2 meters tall plant. Taller plants bear cream-white, small size flowers in clusters throughout the season, which subsequently develop into long slender dark-green, three-sided, edible seedpods with tapering ends. Each pod measures about 6-18 inches in length with constrictions at the seed nodes giving them a typical drumstick-like appearance. Inside, each pod features fleshy pulp and round pea-sized seed encased inside a wing-shaped coat (hull). Fresh tender leaves, flowers, tender pods, and seed-kernels of *moringa* are edible.

## Scientific Taxonomical Classification

Kingdom- Plantae

Subkingdom -Tracheobionta

Super division -Spermatophyta

Division - Magnoliophyta

Class – Magnoliosida

Sub class- Dilleniidae

Order- Capparales

Family- Moringaceae

Genus - Moringa

Species- *M. oleifera* Lam.

Synonyms- *Moringa pterygosperma*

## Morphological <sup>[1]</sup>

*Moringa oleifera* is a small or medium sized tree, about 10 mt. height, found in Sub-Himalaya's tract from chenab eastwards to Sarda.

**Bark:** - Bark is thick, soft, corky, deeply fissured, young part tomentose, and root is pungent.

**Leaves:** Leaves usually tripinnate, rachis slender thickened and articulate at the base and with a gland at the articulations, pinnate and pinnules opposite, deciduous. Leaflets Eleptic or Obovate in shape, rounded at apex, nerves obscure, measurements 12-20 by 6-10 mm. Lateral elliptic, terminal obovate, Lighter than the lateral one, Petals of lateral leaflets 1.5 to 2.5mm, those of terminal 3-6 mm long.

**Flowers:** White fragrant, in large puberulous pinicles, calyx lobes linear - Lanceolate reflexed, puberulous outside. Petals spatulate veined. Stamens 5 fertile, alternating with 5-7 antherless ones, filaments villors at the base. Ovary oblong, villovs style – cylindric.

**Fruit :** Pod, pendulous green, up to 45 cm long 9 ribbed.

**Seeds :** 3 angled, the angles winged and bitter is taste.

**Ayurvedic Properties** <sup>[2,3,4]</sup>

Sl. No.	Name of the text	Rasa	Guna	Veerya	Vipaka	Karma
1.	Priya Nighantu	Katu Tikta	Teekshna	Ushna	-	Shoolahara, Netrya, Raktpitta prokopaka
2.	Dhanvantari Nighantu	Katu Tikt	-	Ushna	-	Gulmahara, Visha, Ama, Krumighna, Pleecha, Meda, Vidhradhi
3.	Dravya Guna Vijnana	Katu Tikt	Laghu Ruksha Teekshna	Ushna	Katu	Swedajanaka, Grahi, Deepaka, Shoola prashaman, Rochaka
4.	Shaligrama Nighantu	Katu Madhura	Laghu Ruksha	Ushna		Shukravardhaka, Ruchikaraka, Chakshushya, Deepana
5.	Bhavaprakash Nighantu	Katu Tikta	Ushna Teekshna	Ushna	Katu	Deepana, Pachana, Slothahara, Kromighna, Vitanulomana
6.	Kaiyadeva Nighantu	Katu Tikta	Laghu Ruksha Tikshna	Ushna	Katu	Netrya, Shotha hara, Videradi hara, Krimighna, Agnideepaka, Sangrahi

**Sahajan(Moringa) Nutritional Values** <sup>[5,6]</sup>

(Nutritional value per 100 g)

Nutrients	Moringa oleifera leaf, raw	M. oleifera pods, raw
Energy -	64 kcal (270 kJ)	37 kcal (150 kJ)
Carbohydrates -	8.28 g	8.53 g
Dietary fiber -	2.0 g	3.2 g
Fat -	1.40 g	0.20 g
Protein -	9.40 g	2.10 g
Vitamin A -	(47%) 378 µg	(1%) 4 µg
Thiamine (B1) -	(22%) 0.257 mg	(5%) 0.0530 mg
Riboflavin (B2) -	(55%) 0.660 mg	(6%) 0.074 mg
Niacin (B3) -	(15%) 2.220 mg	(4%) 0.620 mg
Vitamin B6 -	(92%) 1.200 mg	(9%) 0.120 mg
Vitamin C -	(62%) 51.7 mg	(170%) 141.0 mg
Calcium -	(19%)	(3%)
Iron -	(31%)	(3%)
Magnesium -	(41%)	(13%)
Phosphorus -	(16%)	(7%)
Potassium -	(7%)	(10%)
Sodium -	(1%)	(3%)
Zinc -	(6%)	(5%)
Water -	78.66 g	88.20 g

**SAHAJAN (MORINGA) LEAVES COMPARED TO COMMON FOODS** <sup>[7,8]</sup>

(Values per 100gm)

Nutrient	Moringa Leaves	Moringa Pods	Other Foods
Vitamin A	7564 IU	74 IU	Carrots: 16706 IU
Vitamin C	51.7 mg	141mg	Oranges: 30 mg
Calcium	185mg	30gm	Cow's milk: 120 mg
Potassium	337 mg	461mg	Bananas: 88 mg
Protein	9.4 gm	2.10gm	Cow's milk: 3.2 gm
Carbohydrates	8.28 gm	8.53 gm	Potato: 17.49 g
Dietary Fiber	2.0 gm	3.2 gm	Mung Bean: 16.3 g
Iron	4.0mg	0.36 mg	Spinach: 2.71 mg

**NUTRITIONAL & MEDICINAL BENEFITS OF MORINGA** <sup>[9]</sup>

Leaves	Pods	Other Parts
<p>Moringa greens (leaves) are an excellent source of protein which is a unique feature for any herbs and leafy-greens in the entire plant kingdom. 100 g of fresh raw leaves carry 9.4 g of protein or about 17.5% of daily-required levels. Dry, powdered leaves indeed are a much-concentrated source of several quality amino acids.</p> <p>Fresh leaves and growing tips of moringa are the richest source of vitamin A. 100 g of fresh leaves carry 7564 IU or 252% of daily-required levels of vitamin A. Vitamin A is one of the fat-soluble anti-oxidant offering several benefits, including mucus membrane repair, maintenance of skin integrity, vision, and immunity.</p> <p>*Leaves rubbed against the temple can relieve headaches. *To stop bleeding from a shallow cut, apply a poultice of fresh leaves. *There is an anti-bacterial and anti-inflammatory effect when applied to wounds or insect bites. * Extracts can be used against bacterial or fungal skin complaints. *Leaf tea treats gastric ulcers and diarrhoea. *Leaves treat fevers, bronchitis, eye and ear infections, inflammation of the mucus membrane</p>	<p>Fresh pods and seeds are a good source of oleic acid, a health-benefiting monounsaturated fat. Moringa, as a high-quality oilseed crop, can be grown alternatively to improve nutrition levels of populations in many drought-prone regions.</p> <p>Fresh moringa pods are excellent sources of vitamin-C. 100 g of pods contain 141 µg or 235% of daily-required levels of vitamin-C.</p> <p>The greens as well as pods also contain good amounts of many vital B-complex vitamins such as folates, vitamin-B6 (pyridoxine), thiamin (vitamin B-1), riboflavin, pantothenic acid, and niacin. Much of these vitamin functions as co-enzymes in carbohydrate, protein, and fat metabolism.</p> <p>*If eaten raw, pods act as a dewormer and treat liver and spleen problems and pains of the joints. * Due to high protein and fibre content they can play a useful part in treating malnutrition and diarrhoea.</p>	<p>*Moringa seeds are effective against skin-infecting bacteria <i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i>. They contain the potent antibiotic and fungicide terygospermin.</p> <p>*Seeds used for their antibiotic and anti-inflammatory properties to treat arthritis, rheumatism, gout, cramp, sexually transmitted diseases and boils. The seeds are roasted, pounded, mixed with coconut oil and applied to the problem area.</p> <p>*Flower juice improves the quality and flow of mothers' milk when breast feeding. * Flower juice is useful for urinary problems as it encourages urination.</p> <p>*The roots and bark are used for cardiac and circulatory problems, as a tonic and for inflammation. The bark is an appetizer and digestive.</p> <p>*The drumstick seeds are used as a sexual virility drug for treating erectile dysfunction in men and also in women for prolonging sexual activity.</p>

**TRADITIONAL USES** <sup>[10]</sup>

Each part of *Moringa oleifera* has very unique medicinal properties; hence traditionally it is used for the treatment of various diseases-

- Leaves: It possess different properties such as Antibacterial, Urinary tract infection, Herpes simplex virus, Fever, Hepatic, Anti-tumor, Headache, Antioxidant, Lactation, Antiseptic, Scurvy, and tonic.
- Flowers: Throat infection, Common cold, Anthelmintic, Antitumor, Diuretic, Rheumatism ,Tonic.
- Roots: Antispasmodic, Abortifacient, Carminative, Cardiotonic, Common cold, Dental caries ,Diuretic, Epilepsy, Gout, Headache .
- Bark: Dental caries, Toothache, Common cold, Antitumor, Snakebite, Scorpion bite, Abortifacient, Birth control and Scurvy.
- Pods: Anthelmintic, Skin cancer, Anti-hypertensive, Diabetes, Joint pain.

- Gum: Rheumatism, Astringent.
- Seeds: Anthelmintic, Warts, Anti-tumor, Ulcer, Rheumatism, Arthritis , Antispasmodic
- Exudates: Dental caries, Syphilis, Typhoid, Headache, Abortifacient,

### Pharmacological Activities<sup>[11]</sup>

Pharmacological activity	Useful parts	Mode of prepration
Antiulcer Activity	Root-bark	Ethanol
Hepatoprotective Activity	Leaves	Hydroalcoholic
Antidiabetic Activity	Leaves	Leaves formulated in to tablets
Antiarthritis Activity	Leaves & Root	Methanolic
Hyperglycemic Activity	Leaves	Aqueous
Antitumor promoter Activity	Seeds	Ethanol
Regulation of thyroid hormones	Leaves	Aqueous
Radioprotective effect	Leaves	Methanolic

### DISCUSSION & CONCLUSION<sup>[12]</sup>

Increased vegetable utilization and consumption are critical to alleviate world-wide incidence of nutritional deficiencies. Diets rich in micronutrients and antioxidants are strongly recommended to ameliorate the harmful effects of many diseases.

Lack of vitamin A ,due to malnutrition causes 70% of childhood blindness around the world. Moringa with its high content of beta carotene, which is converted to vitamin A by the body, to combat childhood blindness.

Moringa leaves are the most widely used parts of this plant contains all the essential amino acids needed by the body. Amino acids are the building blocks of proteins which are needed to grow, repair and maintain cells. Human body manufactures 10 to 12 amino acids. The remaining 8 amino acids are known as the essential amino acids which should be provided from everyday diet and moringa contains all of them.

The Moringa leaves helps in boosting energy levels in a natural manner, which is long lasting. It is also found to heal ulcers, restrict tumors, reduce arthritis pain and inflammation and control blood pressure.

Daily consumption of moringa as part of the diet improves body's natural defense mechanism. It is an immune stimulant and it is often prescribed for AIDS afflicted patients.

The Moringa leaves helps in boosting energy levels in a natural manner, which is long lasting. It is also found to heal ulcers, restrict tumors, reduce arthritis pain and inflammation and control blood pressure.

There is a need to high lighten the importance of daily usage of sahan in diet and recipes and also there is a need to motivate Ayurvedic students and researchers to cultivate this miraculous tree and promote society & farmer's to grow this tree for its highly nutritional values.

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