

A Review on Drumstick Tree (*Moringa pterygosperma* Gaertn): Multiuse Tree with Higher Economical Values

Mohammed Rageeb Mohammed Usman*¹, Dr. S. D. Barhate², Md. Abullais
Md. Usman³

¹JJT University, Jhunjhunu, Rajasthan, India, 333001

²Shri Suresh Jain Institute of Pharmaceutical Education and Research Center, Jamner,
Maharashtra, India, 424206.

³Smt. S. S. Patil College of Pharmacy, Chopda, Maharashtra, India, 425107

ABSTRACT

The nature has provided a complete storehouse of remedies to cure all ailments of mankind. Since the dawn of civilization, in addition to food crops, man cultivated herbs for his medicinal needs. The knowledge of drugs has accumulated over thousands of years as a result of man's inquisitive nature, so that today we possess many effective means of ensuring health-care. *Moringa Pterygosperma* Gaertn grown and used in many countries around the world is a multiuse tree with medicinal, nutritional and socio-economic values. In Senegal and Benin, *Moringa Pterygosperma* Gaertn is dispensed as powder at health facilities to treat moderate malnutrition in children. It established the medicinal uses of *Moringa Pterygosperma* Gaertn by local communities. The plant kingdom represent a rich storehouse of traditional medicines, folk medicines and organic compound that may lead to development of novel agent for various treatment. *Moringa Pterygosperma* Gaertn commonly known by regional name such as horse radish tree, sajiwan, kelor murungai kaai, saijhan and sajna, is a natural as well as cultivated variety of the genus *Moringa* belonging to the family Moringaceae. It is multiuse tree known as natural medicine cabinet. Different parts of plant are employed for the treatment of various diseases.

Keyword: *Moringa Pterygosperma*, Traditional, Folk, Importance, Economical.

INTRODUCTION

In Indian system of medicine, a large number of drugs of either herbal or mineral origin have been advocated for various types of diseases and other different unwanted conditions in humans. Ayurveda is one of the traditional systems of medicine practiced in India and Sri Lanka and can be traced back to 6000 B.C. Ayurvedic medicines are largely based upon

herbal and herbomineral preparations and have specific diagnostic and therapeutic principles¹. Herbal medicines are a valuable and precious gift of the nature and have been playing a significant role in the prevention and treatment of various human ailments since the time immemorial. The major population of the south eastern Asian countries relies heavily on the efficacy of herbal remedies². Herbal medicines, also called phytotherapy or phytomedicines, and has been practiced since the beginning of recorded history. Specific remedies have been handed down from generation to next generation³. The use of medicinal parts is accepted as the most common form of traditional medicine. Among the entire flora, it is estimated that 35,000 to 70,000 species have been used for medicinal purpose. Some 5000 of these have been studied in biomedical research. In developing countries, herbal medicines continue to play important role in primary health care, especially where coverage of health service is limited⁴.

SCIENTIFIC CLASSIFICATION OF *MORINGA PTERYGOSPERMA* GAERTN⁵

Kingdom	: Plantae
Division	: Magnoliophyta
Class	: Magnoliopsida
Order	: Viales
Family	: Moringaceae
Genus	: <i>Moringa</i>
Species	: <i>Pterygosperma</i>

DIFFERENTS SPECIES IN THE GENUS OF MORINGA FAMILY⁶

1. *Moringa Pterygosperma*
2. *Moringa Oleifera*
3. *Moringa Arborea*
4. *Moringa Borziana*
5. *Moringa Concanensis*
6. *Moringa Drouhadii*
7. *Moringa Hildebrandtii*
8. *Moringa Longituba*
9. *Moringa Ovalifolia*
10. *Moringa Peregrine*
11. *Moringa Pygmaea*
12. *Moringa Rivae*

13. *Moringa Ruspoliana*

14. *Moringa Stenopetala*

VERNACULAR NAMES OF MORINGA PTERYGOSPERMA GAERTN⁷

Bengali	: Sajina, Sajna, Sujana.
English	: Drumstick tree, horseradish tree, oil of been tree.
Gujarati	: Midhosaragavo, saragavo, segto, seyla.
Hindi	: Mungna, sahjan, saijna, sanjna, Shajna, Soanjana, Soajna, Sohajna.
Kannada	: Guggala, mochaka, nugge, moxing.
Malayalam	: Moringa, Murinna, Sigru.
Marathi	: Achajhada, shevgi.
Oriya	: Munigha, munika, sojina, sojaba.
Punjabi	: Sanjna, Senjna, soanjna
Sanskrit	: Shobhanjana, sigru, sigruh, sobhanjana.
Tamil	: Moringa, murungai.
Telegu	: Mulaga munaga, munga, sajana, tellamunaga.
Urdu	: Sahajna

DESCRIPTION

A small or medium-sized tree up to 10 m tall, with thick, soft, corky, deeply fissured bark and tomentose twigs.

Roots: Acrid, bitter, pungent, thermogenic

Leaves: Usually tripinnate, 45 cm long; pinnate and pinnules opposite, deciduous; leaflets 1.2-2 cm long and 0.6-1 cm. wide. The lateral elliptic, the terminal obviates.

Flowers: White, fragrant, in large panicles.

Fruits: (Pods) Pendulous, green, 22-50 cm or more in length, triangular, 9-ribbed.

Seeds Trigonous, the wings angled. Flowers and fruits once or twice each year, depending on locality; in central India, where trees remain leafless between December-January and January-February, flowering occurs mainly between November and March, and fruiting from February to June⁸⁻¹², Showing in Table 1.

PHYSICAL PROPERTIES OF PODS AND SEEDS

Physical Properties of *Moringa Pterygosperma* Gaertn. Pods and Seeds⁹, Showing in Table 2

DISTRIBUTION

Moringa is native to the Himalayan foothills. As a commercial crop, it is cultivated extensively in India and Africa. Moringa is most commonly found in area with South and Southeast Asia population. Today it is widely cultivated in Africa, Sri Lanka, India, Mexico, Malaysia. It is one of the most useful tree, every parts of Moringa can be use for various purpose.

Table 1: Size of *Moringa Pterygosperma* Gaertn.

Sr.	Parts	Size
1	Stem	1.5 – 2 m in height
2	Branch	Disorganized manner
3	Leaves	1 -2 cm in long
5	Fruits	30 – 120 cm long 1.8 cm wide
6	Seeds	0.39/ seed in weight

Table 2: Physical Properties of *Moringa Pterygosperma* Gaertn. Pods and Seeds.

Sr. No.	Determination	A	B	C
1	Averages weight of pod	7.60 g	-	7.95 g
2	Averages weight of seed (g) / pod	3.59	5.03	4.83
3	Averages number of seed / pod	12.00	29.00	30.20
4	Averages weight (g) / 100 seeds	29.90	29.60	30.20
5	Moisture in kernel	4.5 %	-	6.50 %
6	Moisture in hull	9.20 %	-	12.90 %
7	Moisture in whole seed	5.80 %	-	7.50 %

ECOLOGICAL FACTOR

Different factor affecting on *Moringa Pterygosperma* Gaertn.¹³, Show in Table 3.

CULTIVATION¹⁴

It is propagated by planting limb cuttings 1-2 m long, from June – August. Starts bearing pods 6-8 months after planting but bearing after second year. Also propagated by seed,

cultivation depends on producing the right environment for plant. Seed are planted an inch below the surface and germinated year around in well draining soil. Annual production of plant is 1.1 – 1.3 million tons from an area of 380 km².

Table 3: Ecological factor of *Moringa Pterygosperma* Gaertn.

1	Climate	25 - 30°C (77 - 86° F)
2	Soil	4.5 – 9 pH
3	Growth and development	Mature and Harvested in 6 month
4	Flower and fruiting	After planting 4- 12 & 4- 5 (Some section) month

CHEMICAL CONSTITUENTS

Leaf: Carotene, nicotinic acid and ascorbic acid, oxidase sulphur, and a prolamin. The essential amino acids present in the total proteins are arginine, histidine, lysine, tryptophan, phenylalanine, methionine, threonine, leucine, isoleucine, and valine, The essential amino acids present in the leaf proteins are arginine, histidine, lysine, tryptophan, phenylalanine, methionine, threonine, leucine, isoleucine, and valine.

Seed: The seed contain a newly developed glycoside moringine¹⁵. 4(alpha-L Rhamnoloxo) Benzylisothiocynate in seed. Alanine, arginine, glycine, serine¹⁶. Acidic, stearic, palmitic, linoleic.

THERAPEUTIC USES

Roots: The roots are bitter, acrid the thermogenic, digestive, carminative, anthelmintic, constipating anodyne, anti-inflammatory, emmenagogue, sudorific diuretic, ophthalmic, rubefacient, expectorant, haematinic, antilithic, constipating, anodyne, anti-inflammatory, emmenagogue, sudorific, diuretic, ophthalmic, rubefacient, expectorant, haematinic, antilithic, alexipharmic stimulant and vesicant. Paralysis, amenorrhea, fever and dysmenorrhoea.

Bark: The bark is acrid, bitter, thermogenic, abortifacient, antifungal and cardiac ringworm.

Leaves The leaves are anti-inflammatory, anodyne, anthelmintic, ophthalmic and rich in vitamin A and C. They are useful in scurvy, vitiated conditions of kapha and vata, wounds, tumours, inflammations and helminthiasis.

Seeds:The seeds are acrid, bitter, anodyne, anti-inflammatory, purgative, antipyretic and ophthalmic. They are useful in neuralgia, inflammations, intermittent fevers and ophthalmopathy¹⁷.

Flowers: The flowers are use as a tonic, aphrodisiac and diuretic. Both the flower and roots contain pterygospermin, an antibiotic that is highly effective in treatment of cholera.

Fruit The fruit (pod) is used to treat diseases of the liver and spleen, articular pains, tetanus, paralysis and tonic¹⁸.

Table 4: Different uses of *Moringa Pterygosperma* Gaertn.

Sr. No.	Uses	Percentage (%)
1	HIV/AIDS related symptoms	60
2	Bronchiasis	12
3	External sores/ulcers	13
4	Malaria/Fever	15
5	Anti-hypertensive	108
6	Diabetes mellitus	108
7	Colitis	13
8	Gastritis/ulcers	12
9	Impotence	13
10	Syphilis	13
11	Flu	13
12	Asthma	12
13	Heart burn	12
14	Skin disease	13
15	Stress	12
16	Lactation enhancer	70

17	Protein energy malnutrition	13
18	Anti-septic	12

CONCLUSION

In view of the edible nature will be the plant, more research work can be done humans so that a drug with multifarious effect will be available in the future market. The poor countries shout promote planting and use of *Moringa Pterygosperma*. The rural community use *Moringa Pterygosperma* to treat common medical conditions but a few use it for preventing and treating malnutrition. *Moringa Pterygosperma* appears to be a Miracle plant having countless benefit for humanity and need to carry out more pharmacological studies to support the use of *Moringa Pterygosperma* as a medicinal plant showing in Table 4.

REFERENCES

1. Milind P, Nitin B (2005) Harmless of Herbal Remedies. Antiseptic, 12(2):532.
2. Patil, MB, Jalalpure SS (2003) Anti-inflammatory activity of leaves of Anacardium Occidentals Linn. Ind. J. Pharma. Sci., 6(1):70-72.
3. Donna D. Nursing Herbal medicine handbook, Senior publisher Springhouse Corporation, 1990, 1-5.
4. Tamizhamani TT, Panusankar S, Nandey J, Suresh B (2003) Investigation of herbal drugs. Ind. J. Pharma. 37(4):208-210.
5. Radovich T, Farm and forestry production and marketing profile for *Moringa oleifera* In: specialty Crops for pacific Island Agroforesry. Elevitch. PAR, Holualoa, 2009. 34-36.
6. Mahmood HPS, Becker K (1997) Nutrient and antiquality factors in different morphological parts of *Moringa Pterygosperma*. J. Agric. Sci., 128:311-322.
7. Ram P, Mehrotra BN, Compendium of Indian Medicinal Plants. Vol. I, Central Drug Research Institute Lukhnow and National Institute of Science communication, New Delhi, 2001, 280.
8. Ram P, Rastogi, Mehrotra BN, Compendium of Indian Medicinal Plants. Vol. IV, Central Drug Research institute Lukhnow and National Institute of Science communication, New Delhi, 2001. 85-89, 02, 484.
9. Foid N, Makkar HPS, Becker K (2001) The potential use of *Moringa oleifera* for agriculture and Industrial uses. In: the Miracle tree, CTA, USA. 230-233.

10. Morton JF, (1991) The horseradish tree *Moringa Pterygosperma* A boon to arid. land Econ. Bot. 45:318-333.
11. Sachan A, Meena AK, Kaur R, Pal B, Singh B (2010) *Moringa Pterygosperma* A Review. J. Pharm. Res. 3:840-482.
12. Burkill JH, A Dictionary of Economic Product of the Malay peninsula, Vol. 2. Art Printing Work Publishers, Kuala Lumpur, Malaysia, 1966, 315-317.
13. Odee D, (1998) Forest biotechnology research in dryland of Kenya: the development of *Moringa* Species Dryland Biodiversity 2: 7-12.
14. Rajangam J, Manavalan RSA, Thangaraj T. (2001) Status of production and utilization of *Moringa* in Southern India. http://www.Moriganews.org/actes/rajangam_en.doc.
15. Ram P, Rastogi, Mehrotra BN. Compendium of Indian Medicinal Plants, Central Drug Research Institute Lukhnow and National Institute of Science communication, New Delhi, 2001. 80-84.
16. Ram P, Rastogi, Mehrotra BN. Compendium of Indian Medicinal Plants, Vol. II, Central Drug Research institute Lukhnow and National Institute of Science communication, New Delhi, 1970, 79468.
17. Prajapati ND, Kumar T, Purohit SS, Sharma AK A Hand book of Medicinal Plants: A Complete Source book, Vol. I, Agrobios India, Jodhpur, 2003, 350A-351.
18. Parrota, J. A Healing Plant of Peninsular Indian, Edn. 53, CSBI publishing, 2001, 528-529.