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

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**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 kindom represent a rich storehouse of traditional medicines, foak 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

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herbal and herbomineral preparations and have specific diagnostic and therapeutic principles\(^1\). 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 remedies\(^2\). 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 generation\(^3\). 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 limited\(^4\).

**SCIENTIFIC CLASSIFICATION OF MORINGA PTERYGOSPERMA GAERTN\(^5\)**

- **Kingdom**: Plantae
- **Division**: Magnoliophyta
- **Class**: Magnoliopsida
- **Order**: Violes
- **Family**: Moringaceae
- **Genus**: Moringa
- **Species**: Pterygosperma

**DIFFERENTS SPECIES IN THE GENUS OF MORINGA FAMILY\(^6\)**

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 GAERTN^7

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 June^8-12, Showing in Table 1.

PHYSICAL PROPERTIES OF PODS AND SEEDS
Physical Properties of Moringa Pterygosperma Gaertn. Pods and Seeds^9, 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 areas with South and Southeast Asia populations. Today, it is widely cultivated in Africa, Sri Lanka, India, Mexico, and Malaysia. It is one of the most useful trees, every part of Moringa can be used for various purposes.

Table 1: Size of *Moringa Pterygosperma* Gaertn.

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Parts</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stem</td>
<td>1.5 – 2 m in height</td>
</tr>
<tr>
<td>2</td>
<td>Branch</td>
<td>Disorganized manner</td>
</tr>
<tr>
<td>3</td>
<td>Leaves</td>
<td>1 - 2 cm in length</td>
</tr>
<tr>
<td>5</td>
<td>Fruits</td>
<td>30 – 120 cm long, 1.8 cm wide</td>
</tr>
<tr>
<td>6</td>
<td>Seeds</td>
<td>0.39/seed in weight</td>
</tr>
</tbody>
</table>


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

**ECOLOGICAL FACTOR**

Different factors affecting on *Moringa Pterygosperma* Gaertn.\(^{13}\), Show in Table 3.

**CULTIVATION\(^{14}\)**

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

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

<table>
<thead>
<tr>
<th></th>
<th>Climate</th>
<th>25 - 30°C (77 - 86°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Soil</td>
<td>4.5 – 9 pH</td>
</tr>
<tr>
<td>3</td>
<td>Growth and development</td>
<td>Mature and Harvested in 6 month</td>
</tr>
<tr>
<td>4</td>
<td>Flower and fruiting</td>
<td>After planting 4- 12 &amp; 4- 5 (Some section) month</td>
</tr>
</tbody>
</table>

**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 moringine\(^{15}\), 4(alpha-L Rhamnoloxy) Benzylisothiocynate in seed. Alanine, arginine, glycine, serine\(^{16}\). 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 helminthasis.
Seeds: The seeds are acrid, bitter, anodyne, anti-inflammatory, purgative, antipyretic and ophthalmic. They are useful in neuralgia, inflammations, intermittent fevers and ophthalmopathy.

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 tonic.

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


