A Review on Meracle tree: *Moringa oleifera*

U Spandana, Srikanth P, Gopi chand J and Ashok babu V

**Abstract**

*Moringa oleifera* is an important medicinal herb and it is an original of Indian subcontinent and has become naturalized in the tropical and sub-tropical areas around the world. Every part of *Moringa* is used for certain nutritional and medicinal purpose. And it consists of micro macro minerals, proteins, carbohydrates, vitamins, fatty acids and oils. It consist of various medicinal properties including wound healing, anti-tumor, anti-hepato toxic, anti-fertility, hypotensive, diuretic, anti-ulcer cardio vascular anti-cancer, the chemicals constituents may help in further research and may lead to development of novel agents for various diseases. This review is useful for the quick view and further development of novel agent.

**Keywords:** *Moringa oleifera*, anti-hepato toxic, anti-fertility, hypotensive

**Introduction**

- *Moringa oleifera* is an important medicinal plant belonging to the family Moringaceae. It is considered as Miracle tree as all the parts of the plant are useful for human. *Moringa oleifera* is the most widely cultivated species of the genus *Moringa*, which is the only genus in the family Moringaceae. English common names include: *moringa*, drumstick tree (from the appearance of the long, slender, triangular seed-pods), horseradish tree (from the taste of the roots, which resembles horseradish), ben oil tree, or benzoil tree (from the oil which is derived from the seeds). It is a fast-growing, drought-resistant tree, native to the southern foothills of the Himalayas in northwestern India, and widely cultivated in tropical and subtropical areas where its young seed pods and leaves are used as vegetables. It can also be used for water purification and hand washing, and is sometimes used in herbal medicine.

**Scientific classification**

- Kingdom: Plantae
- Division: Magnoliophyta
- Class: Magnoliopsida
- Order: Brassicales
- Family: Moringaceae
- Genus: *Moringa*
- Species: *M. oleifera*
- Binomial name: *Moringa oleifera*.

**Synonyms**

- English: Horseadish, Drum stick,
- Hindi: Saijan,
**Sanskrit:** Shigru, Mlonge, Mulangay clarifier tree, Mothers best friend, Kelor

**Botanical Description:** Ben oil Tree

**Geographical distribution**

A study on local uses and geographical distribution of *Moringa oleifera* that covers the major agro-ecological region in Nigeria, clearly established that “though considered a not indigenous species, *Moringa oleifera* has found wide acceptance among various ethnic Nigeria, who have exploited different uses (e.g., food, medicine, fodder etc.). Nowadays, *Moringa oleifera* and its derivatives are distributed mainly in Middle East, African and Asian countries and are still spreading to other areas.

**Cultivation:** *Moringa* cultivated all over the plains of India in the world tropics or hot dry land with average height that ranges from 5-10 m. It can survive in harsh climatic conditions including destitute soil without being much affected by drought (Morton, 1991). It can tolerate wide range of rainfall requirements estimated at 250mm and maximum at over 3000mm and a ph of 5.0 to 9.0 (Palada & chang 2003). It trunks is soft, white corky and branches bearing a gummy bark. Each tripinnately compound leaves bear several small leaflets.

The flowers are white and the tree wings seeds are scattered by winds. When matured the fruit becomes brown and has 10-15 seeds inside (Vlahof et al).

**Nutrition benefits**

*Moringa oleifera* provides
- *9* times the Iron in spinach
- *14* times calcium in milk
- *2* times the protein in yogurt
- *2* time the vitamin A in carrot
- *4* times the potassium in bananas
- *4* times the fiber in oats

**Chemical constituents**

*Moringa oleifera* plant parts all are consisting of phyto chemicals such as vanillin, omega fatty acids, carotenoids, ascorbates, tocopherol, kaempferol quercetin octaco sanioc acid, moringine mustard oil, glycocycles, phyto steorens & caffeyolquinic acids have been reported from flowers, roots fruits & seeds (Faizi et al. 1994, Fuglie 1999, Guvara et al., 1999) [8].

Its leaves have the calcium equipment of four times that of milk, the vitamin C contant is seven times that of oranges, while its potassium three times that of bananas, three times the Iron of spinach, four times that amount of vitamin A in carrots and two times the protein in milk (kamal, et al.,2008).

**Medicinal properties**

Nearly every part of this plant including root, bark, gum, leaf fruit pods, flowers, seeds and seed oil have been used for various elements indigenous medicine (Odebiyi and sofoworel., et al 1999). But recent research is also accepting in modern medicine because of its chemical constituents.

<table>
<thead>
<tr>
<th>Plant part</th>
<th>Chemical constituents</th>
<th>Name of the extract</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf</td>
<td>Benzyl iso thiocyanate, niazimicin, benzyl glycosinosilate.</td>
<td>Aqueous extract</td>
<td>Anti-microbial anti-bacterial</td>
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<tr>
<td>Flowers, leaves</td>
<td>Poly phenols</td>
<td>Ethanolic extract</td>
<td>Anti helmimite</td>
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<td>Seed kerenels</td>
<td>Moringine</td>
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<td>Anti asthamatic</td>
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<td>Pods like fruits</td>
<td>Polyphenols</td>
<td>Ethanolic extract</td>
<td>Analgesic activity</td>
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<tr>
<td>Leaves</td>
<td>Anti-oxidant</td>
<td>Aqueous extract</td>
<td>Anti-atherosclerotic</td>
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<tr>
<td>Plant</td>
<td>4-(rhamnosyl ozy benzyl) o-methyl Thio carbamate, Niazininn A, B; Niazimicin.</td>
<td>Aques extract</td>
<td>Anti-ulcer</td>
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<tr>
<td>Leaves</td>
<td>Poly phenols like auiriten n-3-glycoside rutin, Kaempferol</td>
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<td>Anti-diabetic</td>
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<td>Leaves</td>
<td>sitosterol</td>
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<td>Cholesterol lowering</td>
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<tr>
<td>Leaves</td>
<td>Mustard oil, glycosides thio carbonate mile glycosides</td>
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<td>Anti-hyper tense</td>
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<tr>
<td>Root wood bark</td>
<td>Moringine, moringinine, nitrite glycosides</td>
<td>Aqueous chloroform</td>
<td>Urolithiasis</td>
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<tr>
<td>Leaves</td>
<td>Dark choclet poly phenols &amp; other poly phenols</td>
<td></td>
<td>Hypo glycemics</td>
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<tr>
<td>Leaf</td>
<td>Quercetine, Kaempferol</td>
<td>Aqueous extract</td>
<td>Anti-oxidant [Bajpaietal.,2005, Idduratruj (or) Becker 2003]</td>
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<tr>
<td>Leaf</td>
<td>Quercetin</td>
<td>Ethanol, methanol</td>
<td>Anti-oxidant [Suddaju &amp; Becker 2003]</td>
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<tr>
<td>Leaves</td>
<td>Poly phenols</td>
<td>Ethanolic extract</td>
<td>Hepato protective [pair &amp; kumar 2002]</td>
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<tr>
<td>Leaves</td>
<td>Niazamateim thioar</td>
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<td>Anti-tumar activity</td>
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<tr>
<td>Seed</td>
<td>Poly phenols</td>
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<td>Anti-cancer [Bharalielal 1999]</td>
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<tr>
<td>Leaf</td>
<td>4- (rhamnosyl ozy benzyl) o-methyl thio carbamate, Niazinin A.B, niazimicin</td>
<td>Aqueous extract</td>
<td>Regulation of thyroid hormone, hyper thyroidism [Pankaj Tahилиani &amp; Anandkar,.1999]</td>
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<tr>
<td>Roots &amp; seed fruits</td>
<td>Moringinie, niazinine A, niazirin</td>
<td>Methanolic extract</td>
<td>Anti-inflammatory</td>
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<td>Flowers</td>
<td>Quercitin</td>
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<td>Hepato protective [Rukmani et al.,1997]</td>
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<tr>
<td>Roots, Leaves</td>
<td>4-(rhamnosyl ozy benzyl) o-methyl thio carbamate, Niazinin A, B, Niazimicin.</td>
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<td>Anti-pasmodic [Crliani et al.,1994]</td>
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Conclusion
Cisplatin induced nephrotoxicity was reversed by the roots of *Moringa oleifera*, probably via its antioxidant activity. The ethanol fraction conferred maximum protection suggests that semi-polar antioxidant principles might be responsible for the observed effect.

Acknowledgement
Authors thank to the Principal, Nirmala College of pharmacy, Society of Catechist Sisters of St. Ann, Atmakur, Mangalagiri.

References