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A Review on Meracle tree: *Moringa oleifera*

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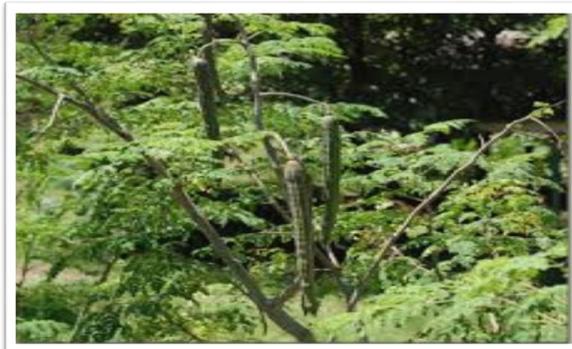
Abstract

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,

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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).

Its trunk 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 wings. 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 times 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 phytochemicals such as vanillin, omega fatty acids, carotenoids, ascorbates, tocopherol, kaempferol quercetin octaco sanic acid, moringine mustard oil, glycosides, phyto steorens & caffeoylquinic 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 content 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 Sofowore, *et al* 1999). But recent research is also accepting in modern medicine because of its chemical constituents.

Plant part	Chemical constituents	Name of the extract	Use
Leaf	Benzyl iso thiocyanate, niazimicin, benzyl glycosinolate.	Aqueous extract ethanolic extract	Anti-microbial anti-bacterial [masher rahaman <i>et al.</i> , 2009]
Flowers, leaves	Poly phenols	Ethanolic extract	Anti helminthic [Bhattacharya <i>et al.</i> , 2001], <i>et al.</i> , 2009]
Roots and seed fruits	Moringinine		
Seed kernels	Moringine	-----	Anti asthmatic [Agarwal & Mehta 2008] [Kirhtikar & Baser 1975]
Pods like fruits	Polyphenols	Ethanolic extract	Analgesic activity [Rao <i>et al.</i> , 2008]
Leaves	Anti-oxidant	Aqueous extract	Anti-atherosclerotic [Pilai parkchumarts <i>et al.</i> , 2008]
Plant	Chemical constituent	Name of the extract	Use
Leaves	4-(rhamnosyl ozy benzyl) o-methyl Thio carbamate. Niazinin A, B; Niazimicin.	Aqueous extract	Anti-ulcer [Debnath & Guha 2007]
Leaves	Poly phenols like aurtin n-3-glycoside rutin, Kaempferol		Anti-diabetic [Ndongetal., 2007]
Leaves	-sitosterol		Cholesterol lowering [Ghasi <i>et al.</i> , 2007]
Leaves	Mustard oil, glycosides thio carbonate mile glycosides		Anti-hyper tensive [Anwar <i>et al.</i> , 2007]
Root wood bark	Moringine, moringinine, nitrile glycosides	Aqueous chloroform	Urolithiasis [Ravindra v.karedi., 2006]
Leaves	Dark chocolate poly phenols & other poly phenols		Hypo glycemics [grassi <i>et al.</i> , 2005]
Leaf	Quercetine, Kaempferol	Aqueous extract	Anti-oxidant [Bajpaietal., 2005, Idduratrju (or) Becker 2003]
Leaf	Quercetin	Ethanol, methanol	Anti-oxidant [Suddaju & Becker 2003]
Leaves	Poly phenols	Ethanolic extract	Hepato protective [pair & kumar 2002]
Leaves	Niazbamateimin thiocar		Anti-tumar activity [Guevalaa <i>et al.</i> , 1999]
Seed	Poly phenols		Anti-cancer [Bharaliatal 1999]
Leaf	4- (rhamnosyl ozy benzyl) o-methyl thio carbamate. Niazinin A, B. niazimicin	Aqueous extract	Regulation of thyroid hormone, hyper thyroidism [Pankaj Tahiliani & Anandkar., 1999]
Roots & seed fruits	Moringinine, niazinine A, niazirin	Methanolic extract	Anti-inflammatory [Zeamuzie <i>et al.</i> , 1996, Khare <i>et al.</i> , 1997]
Flowers	Quercitin		Hepato protective [Rukmani <i>et al.</i> , 1997]
Roots, Leaves	4-(rhamnosyl ozy benyl) o-methyl thio carbamate, Niazinin A, B, Niazimicin.		Anti-pasmodic [Crilani <i>et al.</i> , 1994]

Leaves, seeds, Roots	Poly phenols		Luoncil healing [Uplupa <i>et al.</i> , 1994]
Roots, Seeds, Gums, Leaves, Flowers	Dark chocolate, Poly phenols		Diuritic activity [Morton 1991]
Root bark	Moringine, Nitrile-glycosides	Aqueous extract	Anti-fertility [Prakash <i>et al.</i> , 1987]

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.

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