

## A REVIEW ON THERAPEUTIC APPLICATIONS OF MORINGA OLEIFERA

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### ABSTRACT

Moringa oleifera is a plant that is often called the drumstick tree, the miracle tree, the ben oil tree, or the horseradish tree. Moringa has been used for centuries due to its medicinal properties and health benefits. It also has antifungal, antiviral, antidepressant, and anti-inflammatory properties. The moringa tree (*Moringa oleifera* Lam.) is the most “underutilized” multipurpose tropical crop. The leaves, tender pods and seeds could serve as a valuable source of nutrients for all age groups. Dry moringa seeds can be used in place of alum to treat turbid water and reduce bacteria in drinking water.

**KEYWORDS:** Natural Products, Antifungal, Antiviral, Antidepressant, Anti-Inflammatory.



**The Moringa Tree**



**Moringa Seed Powder**

### INTRODUCTION

*Moringa oleifera* is a fast-growing, drought-resistant tree of the family Moringaceae, native to the Indian subcontinent. The *Moringa* genus comprises 13 species distributed through

southwest Asia, southwest Africa, northeast Africa, and Madagascar. Common names include moringa, drumstick tree (From the long, slender, triangular seed-pods), horseradish tree (From the taste of the roots, which resembles horseradish), and ben oil tree or benzolive tree.

It is widely cultivated for its young seed pods and leaves, used as vegetables and for traditional herbal medicine. It is also used for water purification. Although listed as an invasive species in several countries, *M. oleifera* has "not been observed invading intact habitats or displacing native flora", so "should be regarded at present as a widely cultivated species with low invasive potential."

The purpose of this review is to provide updated and categorized information on the traditional uses, phytochemistry, biological activities, and toxicological research of *Moringa* species in order to explore their therapeutic potential and evaluate future research opportunities

### Phytochemistry

*Moringa* species contain various phytoconstituents such as alkaloids, saponins, tannins, steroids, phenolic acids, glucosinolates, flavonoids, and terpenes. The diversity of these phytochemicals in the genus contributes to its numerous pharmacological uses.

About 110 compounds were identified from the genus and are tabulated in some of these compounds showed positive results when tested for various biological activities. In addition to these 110 compounds, the genus contains more compounds as detected by GC-MS. Regardless of the high phytochemical contents of the genus, the constituents of only specific species had been explored, namely *M. concanensis*, *M. peregrina*, *M. stenopetala*, and *M. oleifera*, and most of the studies focused on the leaves of the plants.

### Pharmacognosy

<b>Moringa oleifera</b>	
<b>Scientific classification</b>	
Kingdom:	Plantae
Clade:	Tracheophytes
Clade:	Angiosperms
Clade:	Eudicots
Clade:	Rosids
Order:	Brassicales
Family:	Moringaceae

Genus:	Moringa
Species:	M. oleifera
<b>Binomial Name</b>	
Moringa oleifera	
<b>Synonyms</b>	
Guilandina moringa L.	
Hyperanthera moringa (L.) Vahl	
Moringa pterygosperma Gaertn. nom. illeg.	

### Biological activities

In the last three billion years, nature has played a major role in the production of bioactive compounds with massive structural and functional diversity that far exceed the current synthetic chemistry capability. As time has passed, natural products have been found to be highly beneficial for a variety of purposes for humans. Natural products can interact with multiple molecular targets and, thus, are privileged scaffolds for drug development. This has resulted in an extensive series of compound classes that display diverse biological activities, such as antimicrobial, antidiabetic, anticancer, antioxidant, and anti-inflammatory activities. Owing to the vast number of bioactive natural products available, it is difficult to cover all features of all compounds.

#### 1. Protecting and Nourishing Skin and Hair

Moringa seed oil is beneficial for protecting hair against free radicals and keeps it clean and healthy. Moringa also contains protein, which means it is helpful in protecting skin cells from damage. It also contains hydrating and detoxifying elements, which also boost the skin and hair. It can be successful in curing skin infections and sores.

#### 2. Treating edema

Edema is a painful condition where fluid builds up in specific tissues in the body. The anti-inflammatory properties of moringa may be effective in preventing edema from developing.

#### 3. Protecting the liver

Moringa appears to protect the liver against damage caused by anti-tubercular drugs and can quicken its repair process.

#### 4. Preventing and Treating cancer

Moringa extracts contain properties that might help prevent cancer developing. It also contains niazimicin, which is a compound that suppresses the development of cancer cells.

## 5. Treating stomach complaints

Moringa extracts might help treat some stomach disorders, such as constipation, gastritis, and ulcerative colitis. The antibiotic and antibacterial properties of moringa may help inhibit the growth of various pathogens, and its high vitamin B content helps with digestion.

## 6. Fighting against bacterial diseases

Due to its antibacterial, antifungal, and antimicrobial properties, moringa extracts might combat infections caused by *Salmonella*, *Rhizopus*, and *E. coli*.

## 7. Making bones healthier

Moringa also contains calcium and phosphorous, which help keep bones healthy and strong. Along with its anti-inflammatory properties moringa extract might help to treat conditions such as arthritis and may also heal damaged bones.

## 8. Treating mood disorders

Moringa is thought to be helpful in treating depression, anxiety, and fatigue.

## 9. Protecting the cardiovascular system

The powerful antioxidants found in Moringa extract might help prevent cardiac damage and has also been shown to maintain a healthy heart.

## 10. Helping wounds to heal

Extract of moringa has been shown to help wounds close as well as reduce the appearance of scars.

## 11. Treating diabetes

Moringa helps to reduce the amount of glucose in the blood, as well as sugar and protein in the urine. This improved the hemoglobin levels and overall protein content in those tested.

## 12. Treating asthma

Moringa may help reduce the severity of some asthma attacks and protect against bronchial constrictions. It has also been shown to assist with better lung function and breathing overall.

**13. Protecting against kidney disorders**

People may be less likely to develop stones in the kidneys, bladder or uterus if they ingest moringa extract. Moringa contains high levels of antioxidants that might aid toxicity levels in the kidneys.

**14. Reducing high blood pressure**

Moringa contains isothiocyanate and niaziminin, compounds that help to stop arteries from thickening, which can cause blood pressure to rise.

**15. Improving eye health**

Moringa contains eyesight-improving properties thanks to its high antioxidant levels. Moringa may stop the dilation of retinal vessels, prevent the thickening of capillary membranes, and inhibit retinal dysfunction.

**16. Treating Anemia and Sickle cell disease**

Moringa might help a person's body absorb more iron, therefore increasing their red blood cell count. It is thought the plant extract is very helpful in treating and preventing anemia and sickle cell disease. Anyone considering using moringa is advised to discuss it with a doctor first.

**Can it aid weight loss?**

Evidence has shown that moringa extract can be effective in reducing and controlling weight gain in mice. Its high vitamin B content helps with smooth and efficient digestion and can assist the body when converting food into energy, as opposed to storing it as fat.

**Moringa is thought to**

Reduce weight gain

Help to lower cholesterol and blood pressure

Prevent inflammation

Help the body convert fats into energy

Reduce fatigue and improve energy levels

**Side effects**

There have been very few side effects reported.

Moringa may possess anti-fertility qualities and is therefore not recommended for pregnant women.

People should always read the label on the extract and follow dosage instructions.

### Contraindications

Some of the medications to be particularly aware of are:

**Levothyroxine:** Used to combat thyroid problems. Compounds in the moringa leaf may aid the thyroid function, but people should not take it in combination with other thyroid medication.

**Diabetes medications:** Diabetes medications are used to lower blood sugar, which moringa also does effectively. It is vital to ensure blood sugar levels do not get too low.

**High blood pressure medication:** Moringa has shown to be effective at lowering blood pressure. Taking moringa alongside other drugs that lower blood pressure may result in it becoming too low.

### CONCLUSION

Various researches have been conducted to evaluate the traditional uses of *Moringa* species and all of the research supported the traditional claims. However, there are still an abundance of traditional uses that have not been evaluated, especially in species other than *M. oleifera* and *M. stenopetala*. Hence, further research is needed to exploit the many uses of *Moringa* species.

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