



ISSN : 2456-1363

International Journal of Scientific Research & Growth

A multidisciplinary journal for empowering the research

Study of Medicinal and Nutritional Benefits of Drumstick (*Moringa Oleifera*) - Gods Boon to Mankind

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Abstract

Moringa oleifera, usually mentioned in literature as Moringa, is a natural as well as cultivated variety of the genus *Moringa* belonging to family Moringaceae. It is one of the richest plant sources contains all necessary vitamins needed for body to grow generally it contains Vitamins A, B, C, D, E and K. Along with vitamins several minerals like Calcium, Copper, Iron, Potassium, Magnesium, Manganese and Zinc are present in *Moringa oleifera*. *Moringa* is been used since from 150 BC by kings and queens of that time to supplement their diet with all nutrients, it is very good for mental health and healthy skin. The *Moringa* contains nearly 40 antioxidants. The complete tree i.e. leaves, pods, seeds, gums, and flowers are used across the world to fight against mineral and vitamin deficiencies. The parts of trees also helps to fight against various diseases, promote normal blood glucose levels, healthy cardiovascular system, neutralize free radicals, enrich anemic blood and support immune system, support anti-inflammatory mechanism. The regular use of *Moringa* improves mental

alertness, bone strength, and improves eyesight. It is highly capable to provide all necessary nutrients improving malnutrition, depression, general weakness and mental awareness.

Key Words; *Moringa*, benefits, nutritional value, therapeutic use, medicinal use.

Introduction

Gods boon to mankind *Moringa oleifera* Lam (syn. *M. pterygosperma*; commonly referred to as “The Miracle Tree,” “Horseradish-tree,” “drumstick tree” or “Ben oil tree”) is that the best known and most generally distributed species of Moringaceae family, having a formidable range of medicinal uses with high nutritional value throughout the globe. Native to Western and sub-Himalayan tracts, India, Pakistan, Asia, and Africa [1, 2, 3]. Almost every a part of this highly esteemed tree from times of yore is being consumed by humans and used for various domestic purposes as for alley cropping, animal

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forage, biogas, domestic cleaning agent, blue dye, fertilizer, foliar nutrient, manure, gum (from tree trunks), honey and sugar cane juice-clarifier (powdered seeds), ornamental plantings, bio-pesticide, pulp, rope, tannin for tanning hides, water purification, machine lubrication (oil), manufacture of perfume, and hair care products [6].

Besides other benefits the plants also have multiple uses culinary and other domestic uses, the tree is also possesses several special biological properties for which several studies were conducted previously also to understand the properties and uses of plants, ascribed to various parts of this tree have been reviewed and study was taken in the past. The leaves of *M. oleifera* have been reported to be a valuable source of both macro- and micronutrients, rich source of β -carotene, protein, vitamin C, calcium, and potassium and act as a good source of natural antioxidants; and thus enhance the shelf-life of fat-containing foods [7,13]. Fruit (pod)/drum sticks and leaves have been used to combat malnutrition, especially among infants and nursing mothers for enhancing milk production [7,14] and also regulate thyroid hormone imbalance [15,17].

Moringa oleifera 'Gods boon tree' miracle tree is having number of medicinal properties attributed to different parts of *Moringa* and has been recognized by both Ayurvedic and Unani systems of medicines [2] and are extensively used in medicine preparation. The plant finds its wide applicability in the treatment of several diseases, cardiovascular diseases as the

roots, leaves, gum, flowers, and infusion of seeds have nitride, mustard oil glycosides, and thio-carbamate glycosides as their chemical constituents which are suggested to be responsible for the diuretic, cholesterol lowering, antiulcer, hepato protective, and cardiovascular protective property of the tree [10, 15, 16, 18]. The roots have been reported to possess antispasmodic activity through calcium channel blockade which forms the basis for its traditional use in diarrhoea. It also possesses antimicrobial activity due to its principle component pterygospermin. The fresh leaf juice was found to inhibit the growth of human pathogens as *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

Phyto constituents from different parts of the tree as niazimicin, niaininin, various carbamates, and thiocarbamates. The flowers show effective hepato protective effect due to the presence of quercetin. Seeds are used as biosorbent for the removal of cadmium from aqueous medium and are one of the best-known natural coagulants discovered so far. They are also considered to be antipyretic, acrid, and bitter and reported to show antimicrobial activity. Various parts of the plant and their active constituents are known to possess diverse biological activity, however, little is known scientifically about the antioxidant potential of fruit (pod) and leaves of *Moringa oleifera*.

Uses of *moringa oleifera*

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Therefore, the present study investigates, establishes, and explains wide use of *Moringa oleifera* and to educate the society and individuals with the benefits of *Moringa oleifera* tree, and through which they can treat various illness and to strengthen the immune system.

Moringa is especially promising as a food source in the tropics because the tree is in full leaf at the end of the dry season when other foods are typically scarce. Drumstick leaves are analyzed and reported 27.1mg of total carotene, 17.4mg of carotene and 143.6mg of ascorbic acid per 100 gm of fresh leaves. The shade dried drumstick leaves when rehydrated and incorporated into recipes suffered further losses of carotene, which were smaller in recipes that involved steaming and shallow frying (27% and 31%) but greater in recipes that involved repeated boiling and stirring (65%). There are many varieties of green leafy vegetables, which are rich in antioxidants and other essential micronutrients, but they are discarded and are not used for human consumption. Drumstick (*Moringa oleifera*) leaves are one of them, which are available at no cost and are very rich in all the micronutrients.

Moringa oleifera is a plant native to northern India that can also grow in other tropical and sub-tropical places, like Asia and Africa. Folk medicine has used the leaves, flowers, seeds, and roots of this plant for centuries. It's traditionally been used as a remedy for such conditions as: Diabetes, Long lasting inflammation, Bacterial, viral, and fungal infections,

Joint pain, Heart health, Cancer. Moringa has many important vitamins and minerals. The leaves have 7 times more vitamin C than oranges and 15 times more potassium than bananas. It also has calcium, protein, iron, and amino acids, which help your body, heal and build muscle. It's also packed with antioxidants, substances that can protect cells from damage and may boost your immune system. There's some evidence that some of these antioxidants can also lower blood pressure and reduce fat in the blood and body.

Moringa against diseases

Around the world lots of research is going on to understand the medicinal properties of Moringa, it is clearly evident from previous studies that the Moringa is very useful in fighting various illness in human body. There are some common medicinal ailments in which morina is extensively used to treat the patients with the disease.

Rheumatoid arthritis: Moringa leaf extract may lower fluid swelling, redness, and pain.

Diabetes: Several early studies show that insulin-like proteins found in moringa may help lower blood sugar. Plant chemicals found in the leaves might help the body process sugar better, and it may affect how the body releases insulin.

Cancer: In lab tests, leaf extracts slowed the growth of pancreatic cancer cells and helped chemotherapy work better.



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Other lab studies show that moringa leaves, bark, and roots all have anti-cancer effects that might lead to new drugs.

Memory: Some experts think the antioxidants and other health-promoting plant chemicals may heal stress and inflammation in the brain.

Scientists are also trying to see if it might help with: Cholesterol, Arthritis, High blood pressure, Liver damage caused by medicines, Stomach ulcers, Asthma, Wound healing, Ulcerative colitis, Diarrhea, Anemia, Weight Loss. Research shows that it's generally good to eat the leaves or young seed pods, and leaf extracts made from powder and water may also be safe. But it can be dangerous to eat bark or pulp, especially for pregnant women. Chemicals in the bark may make the uterus contract and lead to a miscarriage. Though you can buy it as a powder, pill, oil, or tea, supplements and powders made from moringa aren't regulated by the FDA. That means there isn't a standard dose you should take for health benefits. Don't use it if you're pregnant or breast feeding. Talk to your doctor before taking moringa or any supplement, especially if you take any medications.

Rich Source of Nutrients; Many of the healthy foods you eat have one standout nutrient. Think carrots that are rich in Vitamin A, citrus fruits are rich in Vitamin C, nuts and vitamin E. Moringa stands out as a superfood because one cup of chopped leaves is taken into account an honest source of iron, calcium, vitamin C, vitamin B6, and riboflavin and has

notable amounts of potassium, vitamin A, vitamin E, and magnesium. In fact, the leaves are more concentrated in vitamin C than oranges. Which means moringa can contribute to everything from better vision and immunity to bone health and skin radiance.

Super source of Protein; whether you're a vegetarian or just trying to cut down on meat, it's not always easy finding convenient plant-based protein. Sure, there are lentils and soups, curries, but sometimes you just want a quick, no-cook add-in to sprinkle on smoothie bowls or add to soup. That's where moringa comes in, powders made from its crushed leaves are packed with protein—3 grams of protein per tablespoon, in fact and have a leg up on legumes because they contain all the essential amino acids, necessary for muscle repair, energy production, and mood regulation.

It is estimated that Nutritious composition of Moringa oleifera leaf per 1 cup Nutrients Quantity Vitamin B6 19% of the RDA. Vitamin C 12% of the RDA. Iron 11% of the RDA. Riboflavin (B2) 11% of the RDA. Vitamin A (from beta-carotene) 9% of the RDA. Magnesium 8% of the RDA. Protein 2 grams.

Stress Management; Stress can stress your sex life. It can throw hormone levels off, spiking cortisol and decreasing dopamine to lower libido.



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In animal studies, moringa has not only been shown to bring down cortisol levels, it may also naturally boost testosterone levels, a known sex drive booster. In one study, moringa extract worked to enhance sexual performance in stressed rats by suppressing cortisol and increasing testosterone.

Hormones Balancing; Menopause can throw women's hormones out of whack—and make them feel out of whack, but moringa may help. A study published in the *Journal of Food and Science Technology* found that postmenopausal women who took a combination of moringa leaf powder and amaranth leaf powder for three months not only had decreased markers of oxidative stress, but they also had better fasting blood glucose and increased hemoglobin levels, which could mean more balanced hormones. Moringa has also been linked to improved thyroid health, which controls hormones related to energy, sleep, and digestion.

Liver protector; Think of your liver as the body's detoxifier. It filters the blood, detoxifies chemicals, and metabolizes fat—and moringa may help it work better. First off, moringa contains high concentrations of polyphenols to reverse oxidation in the liver, and preliminary research has shown moringa consumption to reduce liver fibrosis and protect against liver damage.

Fight against Free Radicals; Free radicals are created by things like pollution, fried food, and sun exposure. They damage your cells by robbing them of an electron, causing oxidative stress, cell damage, and premature aging. The antidote: antioxidants, like the flavonoids, polyphenols, and ascorbic acid found in moringa. A diet rich in antioxidants has been shown to prevent premature wrinkles and possibly make you live longer.

Fight against inflammation; Move over, turmeric, moringa has been shown to significantly lower inflammation in cells. As well as containing inflammation-lowering polyphenols and isothiocyanates, moringa reduces inflammation by suppressing inflammatory enzymes and proteins in the body. Take that, diabetes, cardiovascular disease, and cancer.

Balancing Blood Sugar; Spikes in insulin and blood sugar can cause mood swings and sugar cravings and even lead to the development of type 2 diabetes and obesity. The leaf powder has been effective at reducing lipid and glucose levels and regulating oxidative stress in lab studies. One study also showed therapeutic antioxidant properties as well as lower fasting glucose levels in postmenopausal women who took a supplement with moringa, and amaranth, leaves for three months. One animal study even showed that moringa in the diet could help reduce weight gain and insulin resistance.



Improves digestion; Moringa leaf powder contains about 30% fiber, most of it insoluble, something you not only need for digestion but that may also reduce your risk of disease. Moringa is a natural antibiotic and antibacterial and may help inhibit the growth of various pathogens that can cause digestive upset. Moringa's anti-inflammatory properties have been shown to help with digestive disorders, like colitis, plus a recent study in mice found that it may improve gut bacteria.

Brain tonic; It's estimated that one in eight people over the age of 65 have Alzheimer's disease. Moringa leaf is high in vitamins C and E, which combat the oxidative stress associated with Alzheimer's. Animal studies of both Alzheimer's and dementia are showing promising results. More good news: Moringa has also been linked to increased dopamine and serotonin ('happy hormones'), and with more research, it could possibly be used to help treat depression in the future.

Side effects of moringa

The leaf powder had been deemed safe in human studies, even in larger doses than normal. But you might want to stay clear of seed extract consumption, as they have shown a level of toxicity in immune cells. Moringa can have a laxative effect when consumed in large quantities or lead to stomach

upset, so we suggest starting with a small dose ½ to 1 teaspoon per day to start. Moringa is likely unsafe for pregnant women to use due to the chemicals possibly found in the root, bark, or flowers of the plant. Consuming moringa may cause the uterus to contract, possibly leading to a miscarriage. So it is better to first try single to double doses, so as one shall have knowledge of body response to the Moringa.

How to use moringa powder.

The best way to consume Moringa leaves is to make it in powder, form for it first pluck the leaves from tree, and wash them thoroughly to clean any unwanted material dust from the leaves. Now after washing the leaves, dry them in shade, they easily get dried as the size of leaves is very small, after complete drying, grind them in powdered form, and store it in air tight container. The powder has a mild flavor with a slightly earthy taste. Add it to everything from green smoothies and oatmeal to hummus and guacamole. It can also be sprinkled into soups and salads, dusted on top of your avocado toast or sweet potato toast, baked into muffins and zucchini bread, or mixed into your favorite energy balls. Moringa powder is easy to find online and in healthy grocery store chains. But as it is very easy to prepare at home to prepare it at home only, as the plant can be easily found grown in your area.



Conclusion

Moringa oleifera is a tropical tree whose numerous economic applications and facility of propagation are arousing growing international interest. It is needs to be widely cultivated in most of the areas where climatic conditions favor its optimum growth. In this way, a maximum yield of its different useable parts could be achieved to derive the maximal amount of commodities of a multifarious nature for the welfare of mankind. So far numerous studies have been conducted on different parts of Moringa oleifera, but there is a dire need to isolate and identify new compounds from different parts of the tree, which have possible different promoters as well as inhibitory properties. Furthermore, the raw seeds are valuable because extracts have a flocculating protein that works as a coagulant of surface muddy and turbid water to tap-water in many countries. Now that research and pilot scale tests have been carried out, consideration is being given to the production and use of the Moringa's coagulants at national and international levels. Furthermore it can also be used to combat the problem of malnutrition in infants. As In India day by day problem of malnutrition is growing rapidly, with the use of extracts of Moringa we can fight with this problem. On the other hand it is heavily needed to educate society about the benefits of Moringa, so that they can use the tree in various forms, and can get its benefits. As I feel that Morina tree is a 'Gods boon to mankind'.

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