
A REVIEW ON: MORINGA OLIFERA

Vighe Pratiksha*¹, Nehe A. R.*²

^{1,2}Vidya Niketan Institute Of Pharmacy And Research Center, Bota, Tal-Sangamner,
Dist-Ahmednagar, Maharashtra, India.

ABSTRACT

Moringa oleifera, commonly known as the "drumstick tree" or "miracle tree," is a versatile plant native to Africa and Asia. Renowned for its exceptional nutritional content, nearly all parts of the tree are edible, with the leaves containing high levels of vitamins such as C and A, calcium, and potassium. Beyond its nutritional value, moringa is prized for its potential medicinal properties, including anti-inflammatory and antioxidant effects. The plant's seeds yield valuable oil used in cooking and skincare. Moringa's rapid growth, adaptability to various climates, and resistance to drought contribute to its significance in reforestation efforts. With a global impact on addressing malnutrition, moringa continues to be a subject of interest in both traditional medicine and sustainable agriculture. Moringa oleifera, a fast-growing deciduous tree, belongs to the Moringaceae family. Its compound leaves, composed of small leaflets, contribute to its distinctive appearance. The tree's green pods, often referred to as drumsticks, house seeds used for oil extraction. Moringa's adaptability allows it to thrive in diverse environments, from arid regions to tropical climates. Aside from its nutritional and medicinal uses, moringa plays a role in water purification; the seeds contain compounds that can clarify water by binding to impurities. This multi-faceted plant has garnered attention for its potential to combat malnutrition, particularly in impoverished areas, as it offers a sustainable source of essential nutrients. While moringa's benefits are promising, research is ongoing to further understand and harness its diverse applications for health, agriculture, and environmental sustainability. Moringa oleifera, known for its resilience and nutritional richness, has a remarkable array of applications. Beyond its leaves, seeds, and pods being edible, the plant's flowers are also used in traditional medicine. Moringa's medicinal potential includes anti-diabetic properties, cardiovascular health support, and anti-inflammatory effects. Studies suggest its role in promoting wound healing and even potential anti-cancer properties, though more research is needed. The plant's high protein content, especially in the leaves, makes it a valuable supplement, particularly for vegetarians and vegans. Furthermore, moringa is considered a "cash crop" due to its economic value—both in local markets and as an export commodity. Its ability to grow in nutrient-poor soils enhances its agricultural significance, contributing to soil improvement. As interest in sustainable agriculture grows, moringa's diverse benefits continue to position it as a promising resource for addressing various global challenges.

I. INTRODUCTION

(Moringa oleifera) comes from the sub-Himalayan region, Asia, Africa and Arabia and is increasingly popular in the West countries. There are different names for moringa in different countries and regions, but in India it is more commonly known as the 'stick tree'. The Filipinos refer to this plant as "Mulunggay" in Tagalog, which is similar English term "Moringa". No matter what you call Moringa oleifera — also known as "drum stick." tree', 'tree of life' and 'miracle tree' - it is one of the most nutritious plants in the world. It has a wide range of nutritional and bioactive substances compounds, including essential amino acids, carbohydrates, fiber, vitamins, minerals and phytonutrients that make this plant powerful. Native to northern India and eastern Africa, you'll find the two most abundant here popular species in these areas, although there are 13 different species in total. Although this is the latest research, several types of this popular plants are commonly highlighted. "Among 13 species, current studies are limited to Moringa oleifera, Moringa stenopetala, Moringa concanensis and Moringa peregrina," says Jerlyn Jones, MS, MPA, RDN, Registered Dietitian, Certified LEAP Therapist and Owner of The Lifestyle Dietitian. Moringa dates back to ancient times and was used in phytomedicine and Ayurvedic healing for centuries. "Advantages of Moringa was recognized long ago when it was used in Ayurvedic medicine 4,000 years ago," says Isabel Smith, MS, RD, CDN, an integrative nutritionist and founder of Isabel Smith Nutrition. Moringa was already used by the ancient Greeks, Romans and the ancients Mauryan warriors from India who are said to have consumed moringa leaves give them more energy and strength, especially during war. Today, moringa trees are grown and consumed all over the world.



Fig.1. Moringa Olifera

Taxonomy

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida Order: Brassicales

Family: Moringaceae

Genus: Moringa

Species: oleifera

Common name: alunggay

Scientific name: Moringa oleifera

Protein: 9.4 g (per 100 g)

Calcium: 185 mg (per 100 g)

Vitamin c: 51.7 mg (per 100 g)

Rank: Species

II. WHAT IS MORINGA?

Every part of the Moringa plant is edible. "Moringa oleifera leaves, seeds, bark, roots, sap and flowers are widely used in traditional medicine and the leaves and immature seed pods are used as food products," says Jones. The most used part of the plant is the edible leaves, and in the United States the dried leaves are sold as dietary supplements either in powder or capsule form.

III. BENEFITS OF MORINGA

Modern medicine continues to confirm many of its nutritional and health benefits. Here are the main health benefits of moringa and creative ways to use it:

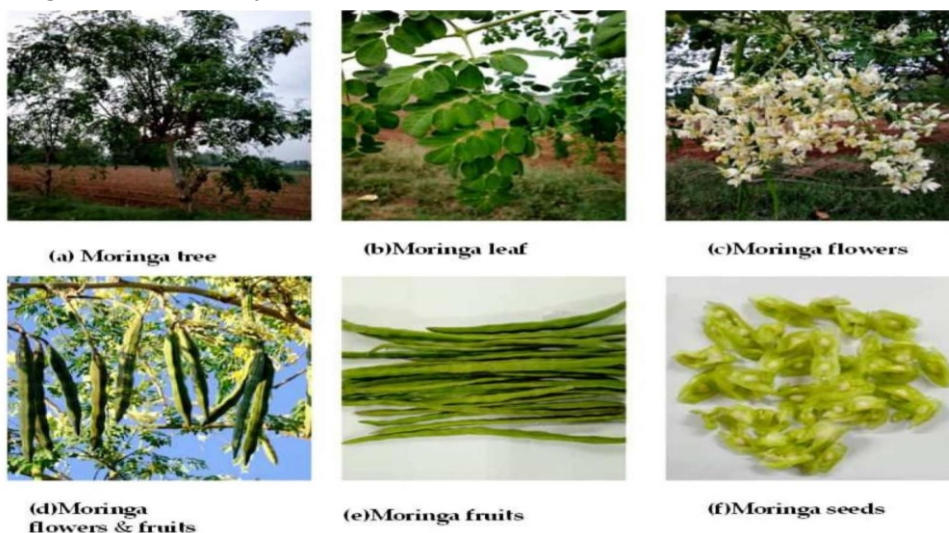


Fig.2.

1. It is extremely nutritious

"Moringa leaves are one of the most vibrant green plants on the planet, packaged with protein, essential amino acids, 27 vitamins and 46 antioxidants," says Lisa Curtis, founder and CEO of Kuli Foods. This includes key nutrients like calcium, iron, B vitamins, potassium, magnesium and vitamin C. Overall moringa is rich in macro- and micronutrients and other bioactive compounds that are vital for the normal functioning of the body and the prevention of many diseases.

2. Fights inflammation

Inflammation is a physiological reaction that occurs in the body protects against infection and restores damaged body tissue. "It contains moringa inflammation-fighting nutrients including phytonutrients, antioxidants and antibacterial compounds," says Smith. Together, these mighty

compounds fight inflammation in the body by targeting free radicals (compounds that damage cells) and consequently reduce oxidative stress, inflammation and fights diseases. "Two important compounds are quercetin, and strong antioxidant and anti-inflammatory agent and isothiocyanates, which help with detoxification and have anti-inflammatory effects," says Smith. One study suggests that these specific compounds found in moringa may help reduce low-grade inflammation associated with chronic diseases.

3. It can increase your sex drive

Did you know that stress can negatively affect sexual function?

He can destroy libido by increasing cortisol and decreasing feel- the good hormone, dopamine. Sexual function is a very complex process which it engages the brain, hormones, emotions, nerves and muscles that are very sensitive to stress. Many herbs are known to be considered aphrodisiacs

have long been used to boost libido – and moringa may be one of them. "Animal studies have found that moringa can increase testosterone levels and to lower cortisol and thereby boost libido," says Smith. According to one animal studies, moringa leaves may have beneficial effects on the male sex dysfunction caused by stress. Jones adds that "human studies are needed before firm conclusions are drawn."

4. You will feel more energized

If you're looking for an energy boost that's caffeine-free, you might want to consider moringa in your morning routine. "It is rich in vitamins and minerals, especially iron and vitamins C and D, which participate in nutrients energy metabolism," says Jones. Moringa also contains B vitamins which helps maintain long-term energy and supports a healthy metabolism processes. And the great news is that you won't be stuck with power outages, nervousness or anxious feelings, which are common side effects of caffeine drinks.

5. May support cognition and mood

An extract from plants such as moringa and its effect on enhancing cognition and mood continues to be intensively studied. Moringa can enhance cognitive abilities due to its amino acid and vitamin profile. "It contains tryptophan, a precursor to serotonin, or the happy hormone," says Smith. This feeling- the good hormone works in the reward centers of your brain and "gets better learning, motor function and memory," says Curtis. You will find both vitamins C and E in moringa, powerful antioxidants that help reduce oxidative damage to the brain, a major player in the development of some cognitive disorders.

6. Balances blood sugar levels

This edible plant can keep your blood sugar stable for the better. "Moringa is believed to help balance blood sugar due to its chlorogenicity acids and isothiocyanates," says Smith. Chlorogenic acid can potentially control blood sugar levels by regulating the uptake or release of cells glucose (sugar) after a meal. Smith adds that "studies have supported using moringa to support blood sugar balance with positive effects on fasting blood sugar, insulin level, HbA1c and total blood glucose control in those consuming moringa powder."

1. Leaf:



Fig.3. Leaf

7. It has anti-aging properties

Although there is no shame in aging, moringa is full of antioxidants like flavonoids and polyphenols, which can fight premature aging wrinkles and keep your skin youthful, according to research. “Yours compounds have strong anti-inflammatory and anti-aging effects skin care benefits are promising, but more research is needed,” says Jones.

8. It can lower blood pressure

If you are struggling with high blood pressure, add moringa to your diet regularly can change, especially if your routine includes exercise and a nutrient-dense diet. Moringa powder has antihypertensive properties because it contains quercetin. “This antioxidant is being depleted oxidative stress on the heart and helps stabilize blood pressure control systems in the body,” says Curtis. If you are taking blood pressure medication, you’ll want to talk to your healthcare provider before considering moringa as it may affect your blood pressure too low.

9. It can help with digestion

If you struggle with digestive issues such as constipation, the fiber found in moringa can help you stay regular. “It also contains soluble fiber insoluble fiber,” says Curtis. Both forms of fiber have many health benefits benefits, especially for digestion. Soluble fiber dissolves in water and reverses gelling, it slows down digestion and keeps you fuller for longer while being insoluble fiber adds bulk to the stool and makes it easier to pass digestive tract, thereby reducing constipation. Not only that, moringa the nutritional profile includes compounds that help promote beneficial bacteria in the gut.

10. It can improve cholesterol levels

Healthy cholesterol levels are essential for preventing heart disease. The the good news is that "moringa has the potential to lower cholesterol" says Smith. According to one study, moringa has a hypo-cholesterol emic effect (lowering lipid level) and anti-atherescotic (prevents the accumulation of plaques in artery walls) activities that promote a healthy heart.



Fig.4. Benefits of moringa

IV. DIFFERENT WAYS TO USE MORINGA POWDER

Moringa is one of the lesser-known green leafy vegetables. It has distinct green, spinach flavor. Other superfoods could be tastier. This nutrient-dense superfood is a staple in various countries including India, Africa, Asia, South America etc. Vegetable mallet which grows on this tree, it is popularly eaten in India. It is generally used in curries and stews. The leaves of these trees are extremely healthy and nutritious. Moringa is high content of protein, iron, vitamins A, B, C, D and E, calcium, potassium, magnesium and selenium. These nutritious leaves can

be used for cleansing and detoxification of our body. You can eat them fresh tree by cooking them or buying moringa powder online and consuming it often. Now we know it will be hard to get fresh Moringa leaves. So buying moringa powder online is your best choice. Plus, when you buy organic moringa powder, it is easy to use and consume.

Benefits of Moringa Leaf:

- 1) Improves digestive health
 - 2) Great for hair and skin
 - 3) Strengthens the immune system
 - 4) Helps maintain healthy cholesterol levels
 - 5) Reduces inflammation
 - 6) Strengthens bones
 - 7) Helps in weight loss
 - 8) Increases energy
2. **Flower**



Fig.5. Flower

• **Surprising benefits of Moringa flowers**

During each flowering season, moringa is brewed in our house. Moringa trees are grown both on agricultural land and in home gardens. There are many of them nutritional properties that contain moringa and cooked moringa flowers considered a rich source of energy for sickness in villages. Scientific studies have shown that the plant "Moringa Oleifera" contains a unique healing property. Moringa flowers, seeds and leaves contain hosts of bioactive compounds that are useful in the treatment of various diseases such as high cholesterol, liver problems, diabetes, obesity, etc. The scientific facts about the nutrition of moringa flowers were not known to us ancestor. But still they named this tree as a miracle tree from their own experience. Now let's talk about the benefits of moringa flower detail.

Health Benefits of Moringa Flower

Below are the nutritional benefits of Moringa flower;

Modern medicinal value

- Moringa flowers contain many medicinal properties. These These compounds can be a great advantage for modern medicine compounds are natural and less toxic.
- Moringa flowers have very little or no side effects and show improved safety profile compared to synthetic therapeutic agents used in modern medicine.

Increases milk production in nursing mothers

- Moringa flowers are edible, in terms of nutrition, this flower is consumed after processing. For some, the taste is close to mushrooms. They contain calcium and potassium. Many researchers have proven this moringa flowers help in increased milk production during breastfeeding mothers.
- A study published in the Belitug Nursing Journal claimed that treatment postpartum mothers with a regimen of moringa flower extract increases prolactin activity in milk production along with improved sleep duration for the child.

- It is confirmed that nursing mothers with a history of significant reduction moringa flower can be used as a supplement in the production of postpartum milk to increase milk production.

Reduces inflammation and swelling

- Extracts from the seeds, leaves, bark and core of moringa flowers are generally known and proven to contain bioactive substances which reduces inflammatory responses in humans.
- Moringa flower has been shown to suppress inflammation and a process that differs from other parts of the plant.
- Moringa flower extract reacts with the main ingredients which is produced by the outer membrane of bacteria and inhibits their ability to disrupt the body's defenses and cause inflammation. Many researchers are still looking for other useful properties of flowers, which are not yet known.
- Researchers concluded that moringa extract, especially from the flower, they have a significant ability to protect the liver against acute chemically induced injuries.

3. Fruit



Fig.6. Fruit

• **Overviews**

Moringa is a plant native to India and other countries. Contains proteins, vitamins, and minerals, which is useful in the fight against malnutrition. Moringa is an important food source in some parts of the world. It can be cultivated cheap and easy and retains much of its nutritional value when dried. As an antioxidant, appears to help protect cells from damage. Moringa can also help reduce inflammation and reduce pain. Moringa is used for asthma, diabetes, breastfeeding and many other purposes, but there is no good scientific evidence to support these uses.

Uses and Efficacy:

Insufficient evidence for

• **Asthma.**

Early research shows that taking 3 grams of moringa twice a day for 3 weeks reduces severity of asthma symptoms and improves lung function in adults with mild to moderate asthma.

• **Diabetes.**

The effect of moringa on diabetes control is not clear. Some early research shows this taking moringa tablets along with a type of medicine called sulfonylureas does not improve blood sugar control as measured by hemoglobin A1C levels. But it seems to lower fasting and postprandial blood sugar compared to sulfonylureas alone in people with diabetes. Other research also shows that taking moringa chopstick leaves with food can also lower postprandial blood sugar levels in humans with diabetes not taking diabetes medication.

HIV/AIDS.

- Early research shows that taking moringa leaf powder with each meal for 6 months may increase body mass index (BMI) but does not appear to improve immune function.
- High levels of cholesterol or other fats (lipids) in the blood (hyperlipidaemia). The cholesterol-lowering effect of moringa is unclear. Early research of poor quality shows mixed results. More research is needed. Breast feeding.

Breast-feeding.

- Research on the effects of moringa on increasing breast milk production is mixed. Some early research shows that moringa increases milk production after one week of use, while other early research shows no benefit. It's not clear whether moringa is beneficial with long-term use.
- A condition caused by poor diet or the body's inability to absorb nutrients. Early research shows that adding moringa powder to food for 2 months helps improve weight in malnourished children.

Symptoms of menopause.

- Early research shows that adding fresh moringa leaves to food for 3 months improves menopausal symptoms such as hot flashes and sleep problems in healthy postmenopausal women.
- Vitamin A deficiency. Early research shows that adding moringa powder to infant cereals does not improve vitamin A levels in infants with low levels of vitamin A.
- Mild form of gum disease (gingivitis).
- Athlete's foot (Tinea pedis).
- Contraception.
- Cancer.
- Certain infections (opportunistic infections) in people with HIV/AIDS.
- Constipation.
- Dandruff.
- Diarrhea.
- Headache.
- Heart disease.
- Heart failure and fluid build-up in the body (congestive heart failure or CHF).
- High blood pressure.
- Increase in sexual desire in healthy people.
- Intestinal infection by parasites.
- Kidney stones.
- Low levels of red blood cells in people with long-term illness.
- Obesity.
- Osteoarthritis.
- Hyperactive thyroid gland (hyperthyroidism).
- Seizure disorder (epilepsy).
- Skin infection.
- Snake bite.
- Gastric ulcers.
- Swelling (inflammation) of the stomach (gastritis).
- Warts.
- Wound healing.
- Other conditions.

4. Seeds:



Fig.7. seeds

Benefits of moringa seeds for health, skin and Hair:

- The benefits of moringa seeds will leave you looking for ways to include them this nutrient-dense superfood in your diet.
- Vitamin B6, beta carotene, vitamin C, magnesium and protein are rich in these seeds. This tree has a high nutritional density and can appeal skin problems and improve digestive health and vision. protein, iron and vitamins present in the seeds maintain energy levels and to provide energy. This article discusses the benefits of moringa seeds, their nutritional values profile how to use them for maximum benefit and any potential side effects. See how moringa benefits your health, skin, and hair. Save

Before we jump into the why, let's talk about the what. What are moringa seeds?

Moringa has slender green pods that hang down from its branches. It is from these pods that the moringa seeds are removed. They can be consumed either boiled or roasted.

What are the nutrition facts of moringa seeds?

Let's learn about the nutritional value of moringa seeds. Following are ranges for different macronutrient compositions from 100 grams dry weight of seeds:

Nutrients	Ranges
Fat	34.7 to 40.4 grams
Proteins	29.4 to 33.3 grams
Carbohydrates	16.5 to 19.8 grams
Fiber	6.8 to 8.0 grams
Moisture	5.7 to 8.9 grams

Benefits of moringa seeds for health:

Lower blood sugar levels:

One of the significant properties of moringa seeds is its ability to reduce blood glucose levels. It therefore acts as an antidiabetic agent. A 2012 study tested the effects of moringa on diabetic rats. The rats were treated with moringa extract for 21 days and at the end of this period, there was a significant decrease in the blood glucose level from rats. This shows that moringa seeds show optimal blood sugar control and may benefit people with high blood sugar.

May lower cholesterol levels:

Moringa oleifera is known for its positive effects on our cholesterol and lipid profiles providing cardiovascular benefits. In 2003, a study was conducted on rabbits that were fed moringa (200 mg/kg/day) for 120 days. The results of this study showed rabbits have lower serum cholesterol and triglyceride levels. These rabbits showed decreased liver lipid profiles and heart. The study immediately concluded that moringa contains cholesterol and lipid-lowering properties.

Promote heart health:

Moringa seeds show properties that can protect our cardiovascular system. It helps protect our heart from the complications that arise having hypertension. This was proven by a study that was conducted in France in 2016 on hypertensive rats. A study tested the cardiac effects of moringa seeds powder on hypertensive rats for 8 weeks. The results showed that their blood pressure values did not change much, but they showed an improvement of cardiac diastolic function and reduced levels of triglycerides in their cardiac system.

Data from the study concluded that moringa seeds have beneficial effects it affects our heart structure and supports overall heart health.

1. Anti-inflammatory and antioxidant properties:

A 2016 study was conducted on moringa seeds that tested positive for natural products like cannabidiol and moringin. A study showed that moringa the seeds have a large amount of anti-inflammatory and antioxidant substances properties that play a vital role in the healing processes of many diseases(7). Another study conducted in 2011 also tested the anti-inflammatory and antioxidant effects of moringa seeds. The anti-inflammatory test was It was performed on rats by inducing edema and an antioxidant test was performed to test the reducing power, chelating effect on iron ions (Fe²⁺) and free radical purification of moringa seeds (8). Both tests were positive results that demonstrated the fact that moringa seeds exhibit both anti- anti-inflammatory and antioxidant properties.

Support brain health

Moringa seeds increase our mental focus and improve our brain health. Our brain needs a constant supply of nutrition in order to function at an optimal level. Some of the best foods for a healthy brain are amino acids, omega-3s, and antioxidants and vitamin E (9). Thus, moringa seeds are a rich source of all these nutrients supports brain health and improves mood.

Support liver health

Moringa seeds have amazing properties for reducing liver damage and overall support liver health.

A study conducted in 2010 tested the effectiveness of moringa seed extract on the liver fibrosis in rats. Liver fibrosis was induced in rats twice a week for 8 weeks. On at the same time, they were given moringa seed extract daily. At the end of 8 weeks, the study showed that moringa seeds treated liver damage and counteracted the induced liver fibrosis in rats (10). and may also have anti-cancer properties.

Act as a sleep aid

One of the many benefits of moringa seeds is its ability to aid in healing insomnia (11). The oil extracted from moringa seeds is a rich source of many vitamins and minerals and contains essential amino acids that stimulate sleep hormones. This oil has a calming effect and helps you sleep longer and better its antidepressant properties.

Improvement of eyesight

Moringa seeds are also known to improve eyesight or help treat poor vision as it is rich in vitamin A (12). There is not much research relevant to this topic, but there have been countless testimonials of people who used moringa seeds for their vision improvement. They claim to experience an improvement in their vision even afterwards they spend a significant number of hours at their computers.

Strengthening the immune system:

There are several nutrients that individually help protect our bodies from disease and infection.

Moringa seeds are full of all these nutrients like protein, vitamin A, C, E, zinc and a significant amount of antioxidants. Various studies done on moringa seeds prove that all these nutrients together make moringa seeds an excellent defense mechanism for the body (13, 14).

Treat anemia

Moringa seeds are rich in iron, a nutrient responsible for maintaining healthy red blood cells count in our blood. Iron deficiency leads to anemia. A person who has an iron deficiency may not only be anemic but may also have other symptoms such as constant fatigue, weakness, headaches, shortness of breath and poor cognitive abilities (15). A 2016 study reviewed the nutritional value of moringa and noted that moringa oleifera is a rich source of iron and their consumption increases iron absorption which helps overcome iron deficiency and treat anemia (16).

Treat ulcers

Moringa seeds have great anti-ulcer properties. Plus their wound healing properties (17) also play an important role here. Traditionally, it was widely consumed in India and Pakistan to treat stomach ulcers (18). A recent study was done on rats that were given stomach ulcers and moringa leaf extract was administered regularly. A

study showed that regular moringa extract they helped reduce ulcers and the secretion of acid pepsin was reduced (19).

What are the benefits of moringa seeds for our skin?

Below are some of the many benefits of fenugreek seeds for our skin

Slow down aging

Moringa seeds contain an oil that is extracted and used in the cosmetic industry. Certain health and beauty websites claim that this oil has been "highly regarded" in their industry ever since. contains excellent anti-aging properties. They further go on to say that oil contains several nutrients and antioxidants that reduce damage caused by free radicals on the skin (20). Moringa seeds are also known to contain collagen, which helps reduce skin wrinkles and blemishes, thus promoting younger looking skin looking skin.

Acts as a rich moisturizer

The oil extracted from moringa seeds contains a significant amount essential fatty acids such as omega-9 fatty acids, making it one of the best natural moisturizers for skin Not only does it retain moisture, but also gives the skin a natural glow (21). This property of moringa with seeds is very popular in the cosmetic industry. Moringa oil is used in a number of cosmetic products. Moringa seed oil is highly valued in the cosmetics industry. It finds its use in several products like

Anti-aging creams

Soaps and body lotions

Hair products

Massage and aromatherapy oils

Face and body creams

Perfumes and deodorants

Body oils and scrubs

Moringa seed oil is also exceptionally good at removing dirt and grime skin and hair, making it a very effective cleanser (22).

What are the benefits of moringa seeds for our hair?

We all want beautiful hair, but all the best hair care brands on the market are full chemicals and costs a bomb. So what is the best natural alternative to get healthy and shiny hair? Moringa, of course! We just learned about all the different benefits of moringa seeds for our health and skin and us know how nutrient rich moringa is. The same nutrients also provide tremendous benefits for hair too. The iron present in moringa helps prevent hair loss and promotes healthy hair growth. Zinc in moringa improves hair quality by healing damaged hair follicles. Moringa is full essential amino acids that help build and repair cells. There are several other nutrients present in moringa that help build soft and healthy hair by giving us stronger hair and promotes better hair growth. Although not much research is available Now that you know how moringa benefits your hair, here is another important use of moringa seeds its use in water treatment, for its purification and purification from toxins. Read on to learn more.

How to use moringa seeds for water treatment?

Moringa seeds have been widely used in several developing countries for cleansing and purification river water. They reduce the concentration of bacteria in the water, making it safe for us to drink or use for domestic purposes. Moringa seed powder acts as a coagulant and sticks to bacteria and toxins in the water and sinks to the bottom. This process filters out about 90 to 99% of impurities present in water (23). A study was conducted in Sudan in 1987 to test the effectiveness of moringa as a pollutant agent removal during surface water treatment. Water treatment was done with moringa seed powder as a coagulant. An 80-99% reduction in turbidity was observed within the first 2 hours treatment (24).

How to eat moringa seeds and how much?

Moringa seeds can be popped like popcorn with a little butter and enjoyed as a snack or boiled like peas and eaten with food. Any way you want to eat them, always make sure you only consume a few seeds at a time (per day). Roasted moringa seeds are a great crunchy on-the-go snack that you can make easily at home.

What are the benefits of moringa for women?

Kovalenko says, "Moringa has a number of health benefits for women, including improving bone density and health, reducing inflammation and providing a rich source antioxidants. However, as with any new supplement, consultation is recommended before adding moringa to your diet with a health professional."

Can Moringa Treat Joint Pain?

Possible. Applying moringa leaf paste on the joints can help reduce pain. Its anti-inflammatory properties may also help relieve arthritis symptoms (26)

Side Effects of Moringa Seeds:

There is insufficient evidence of the side effects of consuming moringa seeds. So that helps take certain measures. Most importantly, pregnant women are asked to consult their doctor about consuming moringa. It is also not advisable to consume these seeds in large quantities, as they are purified the properties are very strong and the stomach may take some time to get used to the food

such a strong product.

5. Root:

The roots of the moringa plant offer a concentrated form of many of them chemical compounds that are found in the rest of the plant and can provide therapeutic benefits for many conditions and diseases. Caution should be practiced using the roots of the moringa plant due to higher the chemical concentration found in these parts of the plant; in addition, the roots sometimes contain traces of a paralyzing agent called spirochin which can be dangerous to sensitive persons or if taken in extremely large quantities.

Moringa has roots in traditional medicine

The restorative and health-promoting effects of moringa root have been exploited Ayurvedic practitioners in India have been treating a wide range of ailments for centuries. The roots are particularly useful in the treatment of circulatory disorders system including minor cardiovascular problems. In small doses of moringa the roots can be used to stimulate appetite and improve function

digestive tract, so it is useful for people with stomach problems and irritability intestinal syndrome. In addition, the roots have been used in controlled doses treat impotence, sexual dysfunction, problems of the female reproductive tract and induce menstruation. In poultice form, the roots are used for spasms and arthritic pain. Moringa roots are diuretic and may have some antiseptic properties even when used locally.



Fig.8. roots

Modern medical use

Moringa roots have been studied by medical researchers to determine their effectiveness against a number of ailments. There is solid evidence that moringa root contains elements that can fight epithelial ovarian cancer and to provide new hope for cancer patients. In addition, they have scientific studies have shown that moringa root

extracts can help reduce or eliminate kidney stones by allowing the body to flush calcium and phosphates from the kidneys more efficiently. General studies have also shown overall improvement in the kidneys function in subjects treated with moringa root extracts. Moringa roots can be used as anti-inflammatory agents with solid results laboratory rats showing reduced swelling and improved swelling healing and other artificially induced inflammations. Finally, an analgesic and hypnotic the effects of moringa root compounds have undergone rigorous scientific testing and have been found to be useful in supplementing pharmaceuticals, allows patients to experience longer and less interrupted sleep in pain medicines.

Other uses

Harvested roots from Moringa Oleifera trees serve a wide range of uses purposes. Moringa Oleifera roots are important agents of healing and nutrition. The roots are used to make medicines, perfumes, natural pesticides, fertilizers, cleaning products, animal feed and many others important products. Moringa Oleifera roots can also be used for culinary purposes. When Moringa Oleifera seedlings are 60 centimeters tall or less, their roots can be used to create a special sauce. The bark of the tree is removed and the vinegar and salt are removed it is added to ground roots and bark. The resulting sauce is very similar horseradish and is used as a spice or condiment. Sauce can also be served medical purposes. Malnourished people are encouraged to eat sauce made from the roots of Moringa Oleifera because it contains a high amount fiber, protein, vitamins and minerals known to promote rapid recovery. Moringa Oleifera Roots contributes to society in various ways. They make powerful medicines and their sauce is considered nutritious delicacy. Moringa Oleifera is sure to be cherished by generations Come.

Medicinal Uses of Moringa Oleifera Root:

Antimicrobial / Biocidal Bacterial

Tooth decay/toothache

Viral

Cold

Parasites

trypanosomes

Other / Not assigned to specific

External abrasions/ulcers Fever

Asthma

Circulatory/endocrine disorders Cardiotonic

Diuretic

Hepatorenal

Digestive disorders Diarrhea

Dysentery

Flatulence

Inflammation Rheumatism

Edema

Nervous disorders Antispasmodic

Epilepsy

Hysteria

Headache

An abortifacient for reproductive health

Aphrodisiac

Astringent skin disorders

Rubefacient

Vesicant

General disorders/conditions of Gout

Hepatomegaly

Back/kidney pain

Scurvy

Splenomegaly

List of chemicals present in the roots:

Chemical Hi ppm

1-BETA-D-GLUCOSYL-2,6-DIMETHYL-BENZOATE

4-(ALPHA-L-RHAMNOSYLOXY)-BENZYL GLUCOCYANATE 10000

BENZYL ISOTHIOCYANATE, GLUCOTROPAEOLINE 500

PHYTOSTEROLS, PTERYGOSPERMIN

SPIROCHINE, ALKALOIDS 1000, BENZYL-AMINE,

MORINGINE,

Side effects:

When taken by mouth:

Moringa is probably safe when the leaves, fruit, and seeds are eaten as food. Moringa leaf and the seeds are possibly safe for short-term use as medicine. Products containing moringa leaves have been used for up to 6 months. Products containing moringa seeds have been used for up to 3 weeks.

Moringa root and root bark are probably dangerous. The roots and root bark contain toxic substances.

When applied to the skin:

There is not enough reliable information to know whether or not moringa is safe. Effects can be.

Precautions and warnings:

When taken by mouth:

Moringa is probably safe as long as it is the leaves, fruit, and seeds eaten as food. Moringa leaf and seeds are possibly safe when used as medicine, short period. Products containing moringa leaf have been used for up to 6 months. Products containing moringa seeds have been used for up to 3 weeks.

Moringa leaves can be safely used while breastfeeding for up to 4 months. It isn't enough reliable information to know if other parts of moringa are safe to use for breastfeeding. Stay on the safe side and avoid using.

Children:

Moringa leaf is possibly safe when taken by mouth short-term. The moringa leaf was used with apparent safety in children for up to 2 months.

Hypothyroidism:

Interaction:

Mild interaction

Be careful with this combination

- Drugs altered by the liver (cytochrome P450 3A4 (CYP3A4) substrates) interacts with MORINGA
- Some drugs are changed and broken down by the liver. Moringa may change how quickly the liver breaks down these drugs. This could change the effects and side effects of these drugs.
- Levothyroxine (Synthroid, others) interacts with MORINGA
- Moringa can reduce the amount of levothyroxine that the body absorbs. Taking moringa together with levothyroxine may reduce the effects of levothyroxine.
- Medicines transported by pumps in cells (P-glycoprotein substrates) interacts with MORINGA. Some drugs are transported in and out of cells by pumps. Moringa may change how these pumps work and change the

amount of medicine that stays in them body. In some cases, it can change the effects and side effects and medicines.

Less interaction

Be careful with this combination

- Medicines for diabetes (medicines for diabetes) interact with each other with MORINGA
- Moringa can lower blood sugar. Taking moringa with diabetes medications can cause your blood sugar to drop too low. Monitor your blood sugar tightly.

Dosage

- Moringa is an important food source in some parts of the world. Immature the green pods (drumsticks) are prepared similarly to green beans, while the seeds they are removed from the more mature pods and cooked like peas or roasted like nuts. The leaves are boiled and used as spinach and also dried and powder for use as a spice.
- Moringa is also available in supplements. Moringa leaves and seeds have the most of them often used by adults in powders or extracts in doses of 6-10 grams mouth daily. Talk to your healthcare provider to find out what the dose might be best for a specific condition.

V. CONCLUSION

Since there is insufficient evidence for detailed physicochemical and phytochemical evaluation of the whole Moringa plant. Therefore, the task now is to make all herbal samples comply with the World Health Organization (WHO) guidelines and limits of testing procedures. In this study, we carried out a comprehensive study on the physicochemical properties and main components of the entire Moringa plant to examine its properties, safety and ways of use. The information produced by this study will provide information that will assist in the accurate identification and identification of this medicinal plant. Moringa leaves are known to be effective in treating tooth decay, colds, fever, diarrhea, gas and edema. It is also recognized that most drugs are beneficial, while others are dangerous; Therefore, WHO supports and encourages countries to identify and ensure designed safety for public and private healthcare [53]. This study shows that Moringa leaves contain important medicinal substances such as carbohydrates, saponins, tannins, steroids, flavonoids, coumarins, quinine, phenolic compounds and alkaloids.

VI. REFERENCE

- [1] <https://krishijagran.com/health-lifestyle/surprising-benefits-of-moringa-flowers/>
- [2] <https://www.linkedin.com/pulse/dr-morenga-roots-chandrasekar-aleman>
- [3] Srinivasan, M. Ascorbic acid oxidase from drumstick, *Moringa pterygosperma*. *Biochem J* 1936 ; 30 (11) : 2077 - 2084. View abstract.
- [4] Suarez, M., Entenza, J. M., Doerries, C., Meyer, E., Bourquin, L., Sutherland, J., Marison, I., Moreillon, P., and Mermod, N. Expression of a plant-derived peptide harboring water-cleaning and antimicrobial activities. *Biotechnol. Bioeng.* 1-5- 2003;81(1):13-20. View abstract.
- [5] Suarez, M., Haenni, M., Canarelli, S., Fisch, F., Chodanowski, P., Servis, C., Michielin, O., Freitag, R., Moreillon, P., and Mermod, N. Structure-function characterization and optimization of a plant-derived antibacterial peptide. *Antimicrob. Agents Chemother.* 2005;49(9):3847-3857. View abstract.
- [6] Subadra, S. and Monica, J. Retention and storage stability of beta-carotene in dehydrated drumstick leaves (*Moringa oleifera*). *International Journal of Food Sciences & Nutrition* 1997;48(6):373.
- [7] Sulaiman, M. R., Zakaria, Z. A., Bujarimin, A. S., Somchit, M. N., and Moin, S. Evaluation of Moringa oleifera Aqueous Extract for Antinociceptive and Anti-Inflammatory Activities in Animal Models. *Pharmaceutical Biology* 2008;46:838-845.
- [8] Sultana, B., Anwar, F., and Ashraf, M. Effect of extraction solvent/technique on the antioxidant activity of selected medicinal plant extracts. *Molecules.* 2009;14(6):2167-2180. View abstract.

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- [9] Thomas, B. Pathogenic trial (drug proving) of Moringa- Oleifera. National Journal of Homeopathy 2005 ; 7 (5) : 357-360.
- [10] Thurber, M. D. and Fahey, J. W. Adoption of Moringa oleifera to combat under-nutrition viewed through the lens of the "Diffusion of innovations" theory. Ecol. Food Nutr 2009;48(3):212-225. View abstract.
- [11] Verma, A. R., Vijayakumar, M., Mathela, C. S., and Rao, C. V. In vitro and in vivo antioxidant properties of different fractions of Moringa oleifera leaves. Food Chem Toxicol 2009;47(9):2196- 2201. View abstract.
- [12] Verma, R., Trivedi, M., Keshwani, H., Choksi, P., and Sangai, N. Ameliorative effect of three medicinal plants (P. fraternus, Terminelia a., and Moringa oleifera) on arsenic trioxide induced alteration of lipid peroxidation and protein contents in chicken liver homogenate: an in vitro study. Acta Pol.Pharm 2007;64(5):417-421. View abstract.
- [13] Viera, G. H., Mourao, J. A., Angelo, A. M., Costa, R. A., and Vieira, R. H. Antibacterial effect (in vitro) of Moringa oleifera and Annona muricata against Gram positive and Gram negative bacteria. Rev Inst.Med Trop Sao Paulo 2010;52(3):129-132. View abstract.
- [14] Villasenor, I. M., Finch, P., Lim-Sylianco, C. Y., and Dayrit, F. Structure of a mutagen from roasted seeds of Moringa oleifera. Carcinogenesis 1989;10(6):1085-1087. View abstract.
- [15] Villasenor, I. M., Lim-Sylianco, C. Y., and Dayrit, F. Mutagens from roasted seeds of Moringa oleifera. Mutat.Res 1989;224(2):209-212. View abstract.
- [16] Vlahov, G., Chepkwony, P. K., and Ndalut, P. K. (13)C NMR characterization of triacylglycerols of Moringa oleifera seed oil: an "oleic-vaccenic acid" oil. J Agric.Food Chem. 2-27- 2002;50(5):970-975. View abstract.
- [17] Warhurst, A. M., McConnachie, G. L., and Pollard, S. J. T. Characterisation and applications of activated carbon produced from Moringa oleifera seed husks by single-step stream pyrolysis. Water Research 1997;31(4):759.