

Maringa – Culinary Advantages

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Abstract: *Moringa oleifera* is the most widely cultivated species of the genus, *Moringa* which is the only genus in the family *Moringaceae*. The English common name of *moringa* is drumstick tree. In the modern development of food technology there is no use of *moringa*, because maximum of us doesn't know the benefits and the medical stability of *moringa*. This particular paper is to upgrade the knowledge about the use of *moringa* in culinary art. *Moringa* contain high nutritive value including carbohydrate, antioxidants etc. It also uses as a medicine to control various health problem as like low blood sugar, cholesterol etc. It also has a multi use productivity as every parts are used for various purpose.

Key word: High nutritive value ,Medical substance ,Multi use productivity

I. Introduction

Moringa plant is beginning to gain more popularity as a new “superfood” for its highly nutritious profile and powerful anti-inflammatory, antioxidant, and tissue-protective properties among many other health benefits. *Moringa oleifera*, also known as horseradish tree, ben tree, or drumstick tree, is a small tree from India, Pakistan, and Nepal that has been used for generations in Eastern countries to treat and prevent diseases such as diabetes, heart disease, anemia, arthritis, liver disease, and respiratory, skin, and digestive disorders. *Moringa* has become popular as a natural leaf powder supplement, although the pods, roots, bark, flowers, seeds, and fruits are also edible. In some areas immature seed pods are eaten while the leaves are widely used as a basic food because of their high nutrition content (Thurber and Fahey 2009, Mbikay 2012, Razis et.al. 2014)

Seeds, leaves, oil, sop, back, root and flowers are widely used as traditional medicine. *Moringa* leaves contain vitamins, minerals, amino acid and fatty acid (Mayo et. al. 2011, Teixeira et. al. 2014, Razis et. al. 2014) The leaves contain various types of antioxidant compound such as ascorbic acid, phenolios and carotenoids . (Alhakmani et. al. 2013, vongsok et. al. 2014) Various preparation of *M. Oleifera* are used for anti inflammatory, anti hypertensive, diuretic, anti microbial, anti oxidant, anti diabetic, anti hyper lipidimic, anti neoplastic, anti pyretic, anti ulcer cardioprotectant and hepatoprotectant activity. *M. Oleifera* leaves are used in treating hyperglycemia and hyperlipidimic. (Mbikay 2012, Razis et. al. 2014)

II. Observation

F. Anwer, M. Ashraf, M I Bhanger (2005) published in the gournal of the American oil chemists that the hexane extracted oil content was present in *M. Oleifera* seeds.

T.S.Anjorin, P. Ikokoh, S. Okolo (2010) observed in laminal , petiole, seed pod, seed shell, seed kernel of *Moringa* containing Ca, Mg, Fe, and Cu.

p. siddhuraju, k Becker (2003) explained that water aqueous methanol and aqueous ethanol extracts of freeze dried leave of *Moringa oleifera*, Lam have medical scavenging capacities and anti oxidant activities.

P.M. Aja (2014) showed that the methanotic leaf extract of *Moringa* has more chemical constituents then the seed with octadecenoic acid (20.8%) as the highest in the leaf and oleic acid (84%) in the seed.

2.1 Pharmacological action

Antimicrobial:- leave, root, bark and seed of *M. Oleifera* have antimicrobial activity against bacteria (bacillus cerous, candida albicans, strephylococcus epidermidis, bacillus subtilis, shigella shinga, shigela senei and Aspergillus miger). It is reported that *M. Oleifera* exhibits antifungal activities on yeast, Dermatophytes and Hetminthes.

Anti inflammatory activity :- It has been observed that *M. Oleifera* root extract containing Aurantiumlde acetate having anti inflammatory activity.

Anti cancer activity :- *M. Oleifera* leaves and seeds extracts shows anti tumour activity. This carbonate and iso thiocynet related compound which act as inhibitor of tumour promoter teleocidine of tumous promoter teleocidine B-4 induced Epstein barr various activation in Raji cells.

Anti fertility activity :- Aqueous extract of *M. Oleifera* was found anti fertility activity which is supported by Prakash et.al. and Nath D. Et.al.

Hepato protective activity :- It is observed in rat that *M. Oleifera* is shown hepato protective effect.

Anti oxidant activity :- Bajpai et.al reported the anti oxidant activity of M. Oleifera due to presence of Kaemferol. Sultana B . et.al . Verma a.k. et.al. and singh B.N. et.al. had also reported anti oxidant activity of leaves and roots of M. Oleifera.

Cardio vascular activity :- It is found that M. Oleifera leaves containing thiocarbamate and iso thiocyanate glycosides are responsible for the hypotensive activity . Hydroalcoholic extract of M oleifera leaves have cardio protective effect.

Anti epileptic activity :- M. Oleifera leaves also have a anti convulsant activity.

Anti asthmatic activity :- Alcoholic extracts of M. Oleifera seeds kernels were found spasmolytic in bronchospasm .

Anti diabetic activity :- Aqueous extracts of M. Olifera leaves shows anti diabetic activity on glucose tolerance in wistar rats.

Anti urolithiatic activity:- Aqueous extracts of bark of M. Oleifera shows reduction of weight of stone in kidney

.Diuretic activity :- Hot water infusion of flowers, leaves, roots, seeds and bark of M. Oleifera shows increased urine output.

Anti helminthic activity :- Ethanolic extract of M. Oleifera leaves are shown anti helminthic activity .

Anti ulcer activity :- Aqueous extracts of M. Olifera leaves exhibits anti ulcer activity in various animal models on albino rats.

Wound healing activity :- Aqueous extracts of M. Olifera leaves is shown wound healing property on swiss albino mice.

Analgesic activity:- Methanolic extract of M. Oleifera root, Bark shown analgesic activity in mice.

CNS activity :- Moringa Oleifera leaves extract is also useful in Alzheimer's disease.

2.2 NUTRITIVE PROPERTISE OF MORINGA OLEIFERA

Moringa oleifera is called store house of important nutrients. The leaves contain Ca, K, Zn, Mg, Fe and Cu . vitamins like batacarotene of vitamin A, vitamin B, folic acid, pyridoxine and nicotinic acid, vitamin C, D and E also present in M. Oleifera.

Phyto-chemicals viz, tannins, sterols, tarpinoids, flavonoids, saponins, and anthraquinone, alkaloids and reducing sugar present along with anti cancer agent like glycosinolates, isothiocynates, glycoside compounds and glycerol 1-9 octadecanoate.

Moringa leaves also have a low calorie value and can be used in the diet of obese. The pods are fibrous and are valuable to treat digestive problems and in colon cancer. Pods contain 46.78% fibre and 20.66% protein . the pods and flower also contain similar amount of palmitic, linolenic, linoleic and oleic acid.

Moringa contains calcium which is essential for growth and development, while 8 oz milk contains 300-400 mg, moringa leaves contain 1000 mg. Moringa powder contains 4000 mg Ca. It can be used as substitute of Fe tab. , hence as a treatment of anaemia because it contains 28mg Fe. Zn also present in moringa which is essential for growth of sperm cells and is also necessary for the cynthensis of DNA and RNA. M. Oleifra leaves showed around 25.5 to 31.3 mg of Zn/kg which is the daily requirement of Zn in the diet.

Linoleic acid, linolenic acid and oleic acid of moringa have the ability to control cholesterol.it is a substitute for olive oil.

2.3 USE OF MORINGA OLEIFERA, LAM

Culinary uses

in south India it is used to prepared a variety of sambar and fried . In other part of India, especially in west Bengal and also neighbouring country like Bangladesh , it is made into a variety of curry dishes by mixing with coconut, poppy seed and mustard or boiling. It is used curry, sambar, kormas and dals, although it is used to add flavour to cutlets etc.

In Maharashtra, the pods are used in sweet and sour curries. In Gujarat and Rajasthan the pods are used to cook a spicy curry. Moringa leaves are used in salads, in vegetable curries, as pickles and for seasoning. In west Bengal flower are cooked with besan to make pakodas and plain fried.The leaves are used as tea. Nnam (2009) reported that M. Oleifera leaves were eaten as vegetable soup and in complementary baby food. In Zimbabwe the leaves and young pods are eaten like a vegetable. The leaves are known to have a high contain of protein, minarets and vitamin. The leaves are an excellent source of the sulphur containing amino acids, methionine and cystin. (price 2007)

Medicinal uses

Moringa oleifera is used for the treatment of typhoid and malaria mostly leaves (83%), about 12% and 5% used the steams and the roots respectively in this purpose. It is also used to treat ear infection, particularly 18.9% stem and 5.7% roots. Moringa is used in the treatment of eye infection particularly leaves and roots. This

plant is also used in the treatment of high BP diabetes, common cold, male impotency and skin diseases.[Price (2000) and Fahey (2005)]

Economic uses

Moringa oleifera is a fast growing tree planted in India used in pepper industry. The wood provides a pulp that is considered suitable for pepper wrapping, textiles and cellophane.

Traditional uses

Moringa oleifera is medical and functional food. It possesses highly therapeutic and pharmacological values. So its consumption in daily diet could possible reduce the risk of various degenerative diseases.

III. Research discussion

The sticks commonly known as drumsticks are mainly used for cooking specially in various Indian cuisine. This particular veggie offers all type of nutritional advantages and in addition cures numerous health conditions. Drumstick, from the stems, leaves and seeds are recognized to have got therapeutic qualities. Here are some health advantages of drumsticks.

Moringa contains high nutritive value. The leaves are an excellent source of many vitamins and minerals. One cup of fresh, chopped leaves (21 grams) contains the following

- **Protein:** 2 grams.
- **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.

The diets of people in developing nations sometimes lack of vitamins, minerals and protein. In these countries, *Moringa oleifera* can be an important source of many essential nutrients.

It also contain high level of antioxidants. one study in women found that taking seven grams (1.5 teaspoons) of moringa leaf powder every day for three months significantly increased blood antioxidant levels . Moringa leaf extract may also be used as a food preservative. It also increases the shelf life of meat by reducing oxidation.

A 2014 study published in the *Journal of Food Science and Technology* tested the effects of moringa along with amaranth leaves (*Amaranthus tricolor*) on levels of inflammation and oxidative stress in menopausal adult women. Knowing that levels of valuable antioxidant enzymes get affected during the postmenopausal period due to deficiency of “youthful” hormones, including estrogen, researchers wanted to investigate if these superfoods could help slow the effects of aging using natural herbal antioxidants that balance hormones naturally.

Over time, high blood sugar raises the risk of many serious health problems, including heart disease. For this reason, it is important to keep blood sugar within healthy limits. In one study, 30 women took seven grams of moringa leaf powder every day for three months. This reduced fasting blood sugar levels by 13.5%. It is essential as a protective mechanism, but may become a major health issue when it goes on for a long time. Sustained inflammation is believed to be involved in many chronic diseases, including heart disease and cancer. Many fruits, vegetables, herbs and spices have known anti-inflammatory effects. These include turmeric and pomegranates.

High amounts of cholesterol in the blood have been linked to an increased risk of heart disease. Many plant foods can effectively reduce cholesterol. These include flaxseeds, oats and almonds. Both animal and human studies have shown that *Moringa oleifera* may have similar cholesterol-lowering effects.

Moringa oil is 20 times the cost of vegetable oil so the motivation is definitely there for diluting the oil with something cheaper. The natural goodness of Moringa oil dates back thousands of years ago. The Romans recognised the natural properties of Moringa oil and used it extensively in perfumes. The Egyptians also recognised its natural protective properties and used it on their skin to protect themselves from the harsh desert conditions.

The Moringa oleifera tea is an excellent energy drink. The tea is loaded with antioxidants and vitamins that will help clear your mind and boost energy levels. You can prepare a tea by steeping a handful of dry leaves in hot water for a few minutes. Dried Moringa leaf tea creates a refreshing and nutritious energy boost you will come to appreciate.

IV. Conclusion

Moringa leaves and seed contain high amount of glycosides, phenols, steroids, flavonoids which are medicinally important because of the anti microbial activity. Moringa seeds have high nutritional value as reflected in the appreciable amount of nutrients determined thus it can be included in diets to supplement human's daily nutritional needs. The high inhibitory activity of Moringa leaves against some selected gastro intestinal pathogens implies that it may be useful in treating gastro intestinal infections particularly those caused by the organism under study. The leave of *Moringa oleifera* has a high potential for use as an antimicrobial agent against gastro intestinal pathogens then the seeds. However, the seed can be used as a food supplement to increase the nutritional composition of foods lacking protein, carbohydrate and lipid .

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 in human nutrition. Leaf extracts exhibit the greatest antioxidant activity, and various safety studies in animals involving aqueous leaf extracts indicate a high degree of safety. No adverse effects were reported in association with human studies. Five human studies using *Moringa oleifera*, have demonstrated anti-hyperglycaemic (ant diabetic) and anti-dyslipidemic activities. These activities have been confirmed using extracts as well as leaf powders in animal studies. A rapidly growing number of published studies have shown that extracts of *Moringa oleifera* leaves possess a wide range of additional biological activities including antioxidant, tissue protective (liver, kidneys, heart, testes, and lungs), analgesic, antiulcer, antihypertensive, radio protective, and immunomodulatory actions. Standardization of moringa products is an issue. However, the results of this study involving *Moringa oleifera* are very promising.

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