

Benefits Of Moringa Oleifera Plant As A Functional Food In Health And Diseases

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Abstract: Moringa oleifera plant has many health benefits for humans. Various parts of the Moringa plant is edible. It is a multipurpose plant, as the leaves, pods, fruits, flowers, roots and bark of the tree can be utilized. The various constituents of the Moringa are known to have, among other properties, anti-diabetic, anti-hypertensive, anti-inflammatory, anti-microbial, anti-viral, anti-parasitic, anti-tumor, and anti-aging activities. With all the health benefits of moringa, it can easily be termed as the most nutritious plant on the face of the earth. There are no side-effects of moringa tree leaves which have been proved till date. At the same time it can be consumed by small children and adults alike. Therefore, it could be consumed as tea and along with porridge, pastas, breads, etc., to reap the everlasting health benefits of the extraordinary moringa.

[Abdulsalam, Abdullah, Ajani, Olajide Ezekiel, Jacinta A. Opara, M. A. Abdulkadir. **Benefits Of Moringa Oleifera Plant As A Functional Food In Health And Diseases.** *Rep Opinion* 2018;10(10):44-47]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). <http://www.sciencepub.net/report>. 7. doi:[10.7537/marsroj101018.07](https://doi.org/10.7537/marsroj101018.07).

Keywords: Benefit; Moringa; Oleifera; Plant; Functional Food; Health; Diseases

Introduction

Moringa oleifera often referred to as the ‘miracle tree’ because of its uniquely diverse array of nutritional, medicinal, and purifying properties, has been known for centuries in certain African, Asia and Caribbean countries (Anwar, Latif & Ashraf et al, 2007). In Nigeria especially in the north where it is commonly grown, the Hausa people call it ‘Zogale’. Other common names are; Ben-oil tree, horse radish tree, Drumstick tree (referring to the large pods). It is mostly planted around local houses and used as a fence. It is reported to aid in the treatment of more than 300 diseases and chronic conditions. Moringa is estimated to have more than 90 nutrients and 46 types of antioxidants, with no known side effects (Lockett & Calvert, 2000).

In the Ancient world, they regarded the tree as a ‘Cure all tree’, An ‘Elixir of long life’, ‘The tree of life’ e.t.c. The leaves, flowers, pods, roots, bark of stems and roots, gum, seeds and oil are all used to help with a long list of ailments and health problems such as: diabetes, scurvy, intestinal worms, diarrhea, headache, earache, toothache, skin rashes and abrasions, wounds, ulcers, bronchitis, anemia, sore throats, rheumatism, lower back pain, liver and spleen problems, kidney pain, asthma, epilepsy, rabies, prostate and bladder problems, tumours, tuberculosis and more. This sounds like a cure for everything except death (Sanchez-Machado, Nunez-Gastelum & Reyes-Moreno et al, 2010).

What is particularly unique about Moringa is the fact that every part of the plant, including its bark, leaves, flowers, and roots serves a unique purpose in promoting human health (Fuglie, 1999). Its seeds, for

instance, contain up to 40 percent of a non-drying, edible oil known as ‘Ben Oil’ that is rich in antioxidants and similar in its nutritional profile to olive oil. The clear, sweet, odourless oil also has an indefinite shelf life, as it does not turn rancid like many other oils (Price, 1985). Perhaps the most utilized component of Moringa is its leaves, which can be dried and ground up into a nutrient-dense, tart-flavored powder. Moringa powder contains seven times the amount of vitamin C typically found in oranges, four times the amount of vitamin A in carrots, 36 times the amount of magnesium in eggs, 25 times the amount of iron in spinach, 50 times the amount of vitamin B3 in peanuts, and 50 times the vitamin B2 in bananas (<http://www.mb.com.ph/articles/215853/moringa-the-miracle-plant>).

According to Melesse, Bulang & Kluth (2009) even the World Health Organisation (WHO) has undertaken scientific researches on Moringa plant, and has come to a conclusion that it is extremely nutritional and medicinal. The benefits have also been documented in some medical and nutritional journals. Little wonder many pharmaceutical companies all over the world are seriously working on the plant to make a fortune from it by extracting its active ingredients to produce drugs for both human and animal benefit. Moringa tree and the leaves have been used to combat malnutrition, especially among infants and nursing mothers (Adedapo, Mogbojuri & Emikpe, 2009). Various non-governmental organizations in particular - Trees for Life, Church World Service and Educational Concerns for Hunger Organization - have advocated Moringa as ‘natural nutrition for the

tropics' (Ethan & Huff (2012). Leaves can be eaten fresh, cooked, or stored as dried powder for many months without refrigeration, and reportedly without loss of nutritional value. 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.

Fresh leaves

Of all the products of the tree the leaves are used the most (Ramachandran, Peter & Gopalakrishnan, 2000). They become tougher as they get older so it is best to pick the growing tips and young leaves. Remove the leaves from the woody stem, as this will not soften during cooking. The leaves can be used in the same way as spinach. An easy way of cooking them is to steam 2 cups of freshly picked leaves for a few minutes in one cup of water, seasoned with an onion, butter and salt or other seasonings according to taste.

Dried leaves

The Moringa leaves can be either freeze dried or dried at room temperature. That is, when drying, do not place leaves in direct sunlight so that the vitamins on the leaves does not get depleted. Once it is completely dried, it can now be ground into powder and stored for many months without any significant loss of nutritional or therapeutic values (Fuglie, 2001). You can sift the powder to remove leaf stems. This powder can then be added to sauces at the same time as other condiments or vegetables are added.

Flowers

The flowers can be cooked and mixed with other foods or fried in batter. They can also be placed in hot water for five minutes to make a kind of tea. They are also a good source of nectar for honey producing bees.

Pods

The pods can be eaten from when they first appear to when they become too woody to snap easily (up to 30cm long). They are cooked like other green beans and have a similar flavour to asparagus. Even the pods that have become too woody can be boiled until they are tender. They are opened and the white flesh is scraped out and returned to the boiling water. This can be used in soups and stews. The immature pods are highly nutritious, containing all the essential amino acids together with other vital nutrients (Munyanziza, 2003). The immature pod contains green peas that can be eaten raw together with salad.

Seeds

The seeds are often referred to as peas and can be used from the time they appear until they turn yellow and their shells begin to harden. To cook, remove from the pod with their soft winged shells intact and as much white flesh that can be scraped out from the pod. Put the peas and flesh into a strainer and wash them to remove the sticky, bitter film that covers them, or boil

them for a few minutes then drain and boil again in fresh water. They can then be used as any other green pea. When the seeds are mature, their coating hardens and becomes bitter. This can be pressed for oil extraction. If a press is not available the seeds can be browned or roasted, ground, added to boiling water and the oil floats to the surface. The seeds contain 35% oil and this is used for cooking purposes. The oil does not turn rancid and also burns without smoke (Kasolo, 2010).

Roots

A sauce similar to horseradish sauce can be made from the roots when the seedling is only 60cm tall. The root bark should be completely removed as it contains harmful substances, then the root is ground up and vinegar and salt are added. However, it should not be eaten in excess. It is best to store the sauce in a refrigerator (Anjorin, 2010).

Moringa as a Functional Food in Health and Diseases

According to Okwori, Onu and Onagwa (2009) the term 'functional food' was coined in the mid-1980s with the belief and interest that some selected foods can promote health, and that there are certain everyday foods that provide health benefits beyond basic nutrition. To them, diet supplements are products that are taken to complement the usual diets or make up for what is lost daily, whether directly or indirectly. Human research and clinical trials have shown that plant-based diets can reduce the risk of some terrible diseases. Fahey, (2005) ascertained that research has shown that various parts of the moringa tree can be effective in a significant number of health concerns. Here is a quick look at a few of them:

- ✓ Moringa is rich in Vitamin A. It contains four times more Vitamin A or beta-carotene than carrots. It is known to nourish the eyes, therefore, people suffering from poor eyesight should include moringa in their diet. Hence, it is a weapon against blindness.

- ✓ It is also a rich source of Vitamin C many times more than oranges.

- ✓ Normally milk is said to be a rich source of calcium but the amount of calcium present in moringa leaves is by far higher than in milk.

- ✓ The moringa leaves are said to contain two times the protein present in milk.

- ✓ Bananas are a rich source of potassium. But moringa leaves contain several times more potassium than bananas. Along with potassium, zinc is also found in large quantities in moringa.

- ✓ If moringa leaves were to be eaten by one and all, the world will be free of anemia as it contains three times more iron than spinach.

- ✓ With all the junk food eaten these days, many people face problems of high cholesterol. Moringa helps in balancing the cholesterol levels in the body.

✓ Essential Amino acids are also found in moringa.

✓ It also contains omega-9 fatty acids, which have been proven to reduce the body's resistance to insulin and severity of symptoms of diabetes. Overall, it can alleviate the symptoms of diabetes and reduce the severity of the body's reaction to diabetes. Moringa is also said to balance sugar levels, hence it is helpful in the fight against diabetes.

✓ It is a nutrition booster and is known to promote a feeling of well-being in people. Therefore it can be used to counter anxiety and depression.

✓ It also contains powerful antioxidants that can naturally supplement and maintain the smooth functioning of the body's immune system. The body's natural defense mechanism increases with the consumption of moringa in the daily diet pattern. Since it is an immunity-stimulant, it is prescribed for AIDS afflicted patients.

✓ Moringa helps in regulating sleep cycles. People suffering from insomnia find the use of moringa beneficial.

✓ The cell structure of the body is stimulated by the moringa leaves. Hence, moringa leaves can be consumed to stimulate metabolism.

✓ Its seeds are used for their antibiotic and anti-inflammatory properties to treat arthritis, rheumatism, gout, cramp, sexually transmitted diseases and boils. The seeds are roasted, pounded, mixed with coconut oil and applied to the problem area. Seed oil can be used for the same ailments.

✓ Roasted seeds and oil can encourage urination.

✓ They can also be used as a relaxant for epilepsy.

✓ It is also said to have digestive powers.

✓ If you are looking for non-sugar based energy, then moringa leaves is the answer. Thus, it will also help in the weight loss process.

✓ It is especially useful for lactating mothers. Flower juice improves the quality and flow of mothers' milk when breast feeding. The consumption of moringa has shown dramatic increase in the quantity of breast milk.

✓ Researchers recently concluded that a compound in moringa inhibits the growth of cancer cells. The secret lies in the fact that it is rich in Catechin Polyphenols, particularly epigallocatechin gallate (EGCG) which is a powerful antioxidant. Besides inhibiting the growth of cancer cells, it kills cancer cells without harming healthy tissues.

✓ It is also famous for its anti-bacterial properties.

✓ The paste of the moringa leaves is said to beautify the skin and is hence applied by women regularly. The flowers and oil from the pods (Ben oil)

are used to produce soaps and body creams. Hence, it said to have anti-aging properties.

✓ It protects the liver and kidneys. If eaten raw, pods act as a de-wormer and treat liver and spleen problems and pains of the joints.

✓ Due to high protein and fibre content, they can play a useful part in treating malnutrition and diarrhoea.

✓ It can also be used as a water purifier.

Conclusion and Recommendation

Moringa oleifera is a plant with numerous benefits especially in the treatment of human and animal health. Every part of Moringa, including the seeds, flowers and roots, are very useful in tackling many diseases. Hence, it is a multipurpose plant. Moringa is a nutritional power house of minerals, antioxidants and amino acids. There are no side-effects of moringa tree leaves which have been proved till date. At the same time it can be consumed by small children and adults alike. Therefore, it is high time many people have started using it as tea, in salads, porridge, pastas, breads, etc., to reap the everlasting health benefits. Moringa is said to have almost all the vitamins found in fruits and vegetables, even in larger proportions. With all the health benefits of this miracle herb, it can easily be termed as the most nutritious herb on earth. It is therefore recommended for everybody who desires sound health of body and mind.

References

1. Adedapo, A.A., Mogbojuri, O.M. & Emikpe, B.O. (2009). Safety Evaluations of the Aqueous Extract of the Leaves of Moringa oleifera in Rats. *Journal of Medicinal Plant Research*. (3) (8)586-591.
2. Anjorin, T. (2010). 'Mineral Composition of Moringa oleifera Leaves, Pods and Seeds from Two Regions in Abuja, Nigeria'. *International Journal of Agriculture and Biology*. (1560-8530), 12 (3), p. 431.
3. Anwar, F., Latif, S. & Ashraf, M., et al. (2007). Moringa oleifera: A Food Plant with Multiple Medicinal Uses. *Phytoteraphy Research* (21) (1) pp.17-25.
4. Ethan, A. & Huff, (2012). Discover the Many Health Benefits of Moringa, the Ultimate Survival 'Super food'.
5. Fahey, Jed W. (2005). Moringa oleifera: A Review of the Medical Evidence for its Nutritional, Therapeutic, and Prophylactic Properties. Part 1. *Trees for Life Journal*. 1:5 a forum on beneficial trees and plants. <http://www.TFLJournal.org/article.php/p/200512011249315> 86. Retrieved on 7/6/2013.

6. Fuglie, L. J. (2001). New Uses of Moringa Studied in Nicaragua. ECHO Development Notes.<http://www.echotech.org/network/modules.php?name=News & file=article & sid=194>. Retrieved on 7/6/2013.
7. Fuglie, L. J. (1999). The Miracle Tree: Moringa oleifera: Natural Nutrition for the Tropics. Church World Service, Dakar. 68 pp.; revised in 2001 and published as The Miracle Tree: The Multiple Attributes of Moringa, pp172. http://www.echotech.org/bookstore/advanced_search_result.php?keywords=Miracle+Tree. Retrieved on 7/6/2013.
8. (<http://www.mb.com.ph/articles/215853/moringa-the-miracle-plant>). Retrieved on 7/6/2013.
9. Kasolo, J. (2010). Phytochemicals and Uses of Moringa oleifera Leaves in Ugandan Rural Communities. Journal of Medicinal Plant Research. (1996-0875), 4 (9), p. 753.
10. Lockett, C. T. & Calvert, C.C. (2000). Energy and Micronutrient Composition of Dietary and Medicinal Wild Plants Consumed during Drought. Study of Rural Fulani, Northeastern Nigeria.
11. Melesse, A., Bulang, M. & Kluth, H. (2009). Evaluating the Nutritive Values and in Vitro de Gradability Characteristics of Leaves, Seeds and Seedpods from Moringa. Journal of the Science of Food and Agriculture (89) (2)281287.
12. Munyanziza, E. (2003). Evaluation of Moringa oleifera for Food Security and Environmental Rehabilitation in Tanzanian Rural Areas. Journal of Tropical Forest Science (0128- 1283), 15 (3), p. 450.
13. Okwori, E., Onu, R.O. and Onagwa, G.I. (2009). Benefits of Garlic as a Functional Food in Health and Diseases. West African Journal of Physical and Health Education. Vol.13 pg 220-227.
14. Price, M.L. (1985). The Moringa Tree. ECHO Technical Note. Educational Concerns for Hunger Organization, N.Ft. Meyers, FL. <http://www.echotech.org/technical/technotes/moringabiomasa.pdf>. Retrieved on 7/6/2013.
15. Ramachandran, C., Peter, K.V. & Gopalakrishnan, P.K. (2000). Drumstick (Moringa oleifera): A Multipurpose Indian Vegetable Page [276] of 276-283.
16. Sanchez-Machado, D.I, Nunez-Gastelum, J.A, Reyes-Moreno, C., et al. (2010). Nutritional Quality of Edible Parts of Moringa oleifera. Food Analytical Methods 33 175-180.

10/25/2018