The Health benefits of Moringa: A Modern Miracle Tree

In northern India, in the foothills of the Himalayas, the moringa has long graced the region with its miraculous fruit. Ribbed pods, each a foot in length, hang in clusters from this tree's wiry branches. These pods, called drumsticks, have attracted the attention of mankind for millennia and for good reason.

While the aptly nicknamed drumstick tree has a rather slender appearance, it is anything but frail. A tropical native, this prolific powerhouse has spread its roots across Africa, Asia, the Middle East, and the Caribbean. And now, it seems to have anchored itself in American soil.

Part of a new wave of exotic vegetables, *Moringa oleifera* is a botanical platypus. A member of the order Brassicales, it's a distant relative of both the cabbage and the papaya. Its roots taste so much like its cousin horseradish, that it's also earned the nickname the "horseradish tree". Its fruit, a popular Indian vegetable, looks like a cross between an okra and a pole bean with the flavor of asparagus. Its cooked flowers mimic mushrooms in taste, while its leaves hint at spinach and lettuce. Its immature seeds are used like peas and if fried when mature, resemble peanuts.

In fact, it's hard to find a part of moringa that isn't edible. Even the bark is sometimes taken internally for diarrhea. But that doesn't come as a surprise to the locals, who consider it a living pharmacy. Moringa has proven to be a multipurpose arsenal that dispenses some of the best secrets nature has to offer. For centuries, it has been used in Ayurvedic medicine to treat a host of ailments including

anemia, bronchitis, hyperglycemia, scurvy, and skin infections.

Today, several research studies seem to validate this knowledge. In a study conducted by Jaiswal et al. (2009), on diabetic rats, moringa leaf extract was shown to significantly reduce high blood glucose levels. Within 14 days, it also eliminated the presence of sugar and protein in the urine, two important warning signs of uncontrolled diabetes. In another study, moringa leaf extract was shown to notably reduce body weight, total cholesterol, and triglyceride levels in rats with high levels of fat in their blood. Moreover, it not only lowered bad cholesterol (LDL) but also elevated the good kind (HDL) (Rajanandh et al., 2012).

Furthermore, the leaf extract triples as a potent mosquitocide. At different stages of the life cycle, moringa killed *Anopheles stephensi*, a major carrier of malaria in India. These effects may be due to the rare and unique combination of phytochemicals found in moringa, including beta-carotene, zeatin, quercetin, beta-sitosterol, caffeoylquinic acid, and kaempferol.

Overall, the tree possesses numerous anti-inflammatory, antioxidant, antibacterial, and antifungal effects, among others.

Drought hardy and disease resistant, moringa is a godsend during the dry season, when little food is available. The fresh leaves and branches serve as an excellent source of forage. Indeed, a Nicaraguan study confirms moringa’s ability to boost milk production in cows without affecting its taste, smell, or color.

The leaves also offer a spectrum of nutrition, rich in vitamins A, B, and C, as well as protein, calcium, and iron. They are so nutritious in fact, that they contain more vitamin A than carrots, more vitamin C than oranges, more calcium than

milk, more iron than spinach, more potassium than bananas, and more protein than either milk or eggs! A traditional item in pickles and curries, the raw leaves are also perfect for salads.

As a result, moringa could play a key role as a wholesome food source in impoverished nations, where malnutrition is often rampant. The World Health Organization has stressed the importance of amino acids and protein for growing children. Luckily, moringa leaves are rich in these nutrients, with the added benefit of omega-3 fatty acids and a host of protective phytochemicals.

When mixed in with different cereals, children regained normal weight and health status in 30 to 40 days, while the United Nations Industrial Development Organization's recipe for malnourished children took 80 days.

"[It] is a very healthy satisfying food that meets all nutritive needs. It is cheap to produce, can be cooked or eaten raw, sold in the market, or dried as a powder to be sold over long distances," added Nikolaus Foidl, a world leading agricultural researcher on moringa.

Foidl has been studying the tree for over a decade in conjunction with the University of Hohenheim in Stuttgart, Germany. He has traveled to many countries, including Senegal, Honduras, Guinea Bissau, and Argentina, promoting the miracle tree's cultivation by working with the locals.

In Nicaragua, he helped farmers utilize the leaf extract as a growth spray for other crops.

"Moringa leaves contain the growth factors gibberellin, kinetin, and some lower levels of auxin. We got up to a 25% increase in sugarcane and turnips, onions, and radish."

Such a bountiful increase should not be ignored, especially in areas where food shortage is an issue. Foidl, who has the

financial support of the Austrian government, first came across the tree by accident.

He recounted, “By chance, I had a *Jatropha* plantation with rows of moringa as windbreaks and the damn cows were always breaking down my fences to get to them. So I wondered, what is so special about this tree that the cows are willing to risk injury?”

That question has now led to a new understanding of moringa’s multifaceted potential. As a vigorous hardy grower, it surprisingly does not require much water or many soil nutrients once established. This makes it one of the most valuable tropical trees in terms of overall utility.

Like the leaves, the flowers, too, are edible when cooked, and are packed with calcium and potassium. As a bonus, they are not only incredibly fragrant, they also support native bee populations.

Moringa roots and bark, on the other hand, are used with caution. The bark contains the toxic chemicals moringinine and spirochin, which can alter heart rate and blood pressure. However, they do show promise in the medical field. The inner flesh of the root is less toxic, and roots of young plants are picked for a hot sauce base while the resin is added as a thickener. Interestingly, blue dye can be obtained from the wood, which is also used in paper production.

The famed moringa drumsticks contain all nine essential amino acids that humans must obtain exclusively from their diet. Oftentimes, the drumsticks are chopped into logs, boiled, and split into thirds lengthwise. The fibrous rind is inedible–rather it’s the soft jellied pulp and seeds that are sought after. These can be scooped out or scraped away by the teeth.

Hidden within the drumsticks are even more remarkable seeds. Loaded with protein, they also contain special non-toxic polypeptides that act as natural Brita filters. When ground

into powder and mixed with water, they cause sediments to clump together and settle out. Then when strained through a cloth, they provide cheap access to clean water. Amazingly, just two seeds are enough to purify a dirty liter.

“It has been widely used at the village level in Africa to transform river water into drinking water,” shared Foidl. “I had a project working with the seeds in a wastewater treatment plant in Nicaragua (wastewater from 4,000 people). It was very effective– about 99.5% separation of turbidity in 30 minutes.”

In turn, the seeds themselves yield a valuable yellow oil called ben oil. Sweet, clear, and odorless, it doesn’t spoil easily– perfect for perfumes, cosmetics, and lubrication. It has also found use in cooking due to its high levels of healthy unsaturated fats.

For such a versatile tree, it’s almost hard to believe that moringa is easily grown via seeds or cuttings. Foidl remarked, “It grows virtually better than willow.”

Fresh seeds have the best chance at germination with a success rate of around 60-90%, provided that they have not been in extended storage, and require no special pretreatment. Seeds should be planted ½ inch deep in well drained, neutral to slightly acidic sandy loam and kept moist. Seedlings readily sprout within one to four weeks and do not transplant well due to their long taproot. As an alternative, branch cuttings can be used– these will be genetically identical to the parent tree. For best success, select hardwood cuttings that are 12 inches long and 1-4 inches thick, planting 1/3 of the length below soil.

Given its tropical nature, it is no surprise that moringa has quickly established roots in the southern states, particularly in Florida, California, and Texas where there are large Asian communities. In northern climates, however, the tree can be treated as either a summer annual or as a potted perennial.

Moringa can be overwintered indoors where it will often go dormant and shed its leaves, only to re-sprout in spring.

As agriculture becomes more expensive, managing the long-term productivity of the land is essential. Moringa solves this issue through a practice called high density planting. The trees are grown closely together to increase the yield per given area, while at the same time reducing the need for herbicides. Because moringa grows rapidly, it crowds out and suppresses neighboring weeds.

“The optimal density is 1 million plants per hectare (10 x 10 cm spacing), where the losses of plants per cut are around 1% and the losses are compensated through vigorous sprouting,” explained Foidl. “Moringa is cut at a height of 15 to 25 cm for vigorous regrowth.”

This practice allows for cutting every 35 days, totaling 10 harvests per year. In fact, 120 tons of dry matter can be harvested per hectare a year, 10 times more than corn and several times more than soy. As a result, there is a constant supply of fresh food, with little need for storage.

Moringa is in a unique position to address the issues of hunger, malnutrition, poverty, and lack of clean water all at once, something no other plant can boast. It is even more valuable considering it is found widely throughout the tropics, in the regions where it is needed most, making this ancient tree a true modern day miracle.

Sources:

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