MORINGA

The 'Tree of Life'

aka - 'drumstick tree', 'horseradish tree'

There is good reason moringa has been nicknamed 'Tree of Life'. Not only is it capable of growing in conditions too severe for most other plants, each part of the plant is packed with a wide array of vitamins, nutrients, and antioxidants.

As research grows supporting the promise of this new plant communities around the world are recognizing the vast benefit it can bring to diversity-poor growing areas.

Nutrition At A Glance:

Excellent source of:

- Vitamin K
- Beta-carotenoids
- Vitamin C
- B vitamins

Vitamins

Amounts Per Selected Serving		%DV
Vitamin A	2945 IU	59%
Retinol	0.0 mcg	
Retinol Activity Equivalent	147 mcg	
Alpha Carotene	0.0 mcg	
Beta Carotene	1767 mcg	
Beta Cryptoxanthin	0.0 mcg	
Lycopene	0.0 mcg	
Lutein+Zeaxanthin	734 mcg	
Vitamin C	13.0 mg	22%
Vitamin D	~	~
Vitamin E (Alpha Tocopherol)	0.0 mg	0%
Beta Tocopherol	~	
Gamma Tocopherol	~	
Delta Tocopherol	~	
Vitamin K	45.4 mcg	57%
Thiamin	0.1 mg	6%
Riboflavin	0.2 mg	13%
Niacin	0.8 mg	4%
Vitamin B6	0.4 mg	20%
Folate	9.7 mcg	2%
Food Folate	9.7 mcg	
Folic Acid	0.0 mcg	
Dietary Folate Equivalents	9.7 mcg	
Vitamin B12	0.0 mcg	0%
Pantothenic Acid	0.0 mg	0%
Choline	8.8 mg	
Betaine	~	

1 cup moringa, raw

INTRODUCTION

Native to Africa and Asia, moringa can be found in tropical and subtropical regions throughout the world. Though there are 13 species of moringa which exist, the most widely cultivated species is Moringa oleifera; otherwise known as 'mother's best friend'.

Due to its rather wispy, scraggly nature it is an unimpressive plant at first site. It has also known as the 'drumstick tree' based on its shape (see picture) or 'horseradish tree' for the similar tasting roots of the plant. (1) Though a recent surge of research is being conducted historical records suggest moringa has been used for medicinal purpose for thousands of years (2,3).

The leaves are the most nutrient dense portion of the plant and can be eaten as spinach or any other green leafy plant. Though boiling is a common means of cooking the leaves, many of the available nutrients are sapped from the leaves when the water is separated from the boiled leaves and discarded (see cooking suggestions). Both the leaves and the seeds/ seed oil are an excellent source of vitamin C, the B vitamins, vitamin A/ beta-carotene, vitamin K, and protein. (2) The protein content is of particular benefit as leafy green protein sources very hard to find - particularly in developing countries!

Gram for gram moringa has 5-7 times more vitamin C than oranges, 4-5 times more vitamin A than carrots, and 3x's more iron than spinach. (2,3) Moringa also contains high amounts of manganese and magnesium.

See charts to the right for specific vitamin and nutrient listings.

1 cup moringa, raw

Nutrition Facts

Serving Size 42 g

Amount Per Serving	
Calories 25	Calories from Fat 3
	% Daily Value*
Total Fat 0g	1%
Saturated Fat 0g	0%
Trans Fat	
Cholesterol 0mg	0%
Sodium 4mg	0%
Total Carbohydrate 5g	2%
Dietary Fiber 1g	3%
Sugars 0g	
Protein 2g	

Vitamin A	59%	• Vitamin C	22%
Calcium	6%	• Iron	5%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

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Betaine	~	

Note: %DV refers to the percentage of daily value, and is a guide to the nutrient content of one serving of food. These percent daily values are based on a 2,000-calorie diet for healthy adults and efforts to reach 100% should be made on a daily basis in order to maintain good health.

MAJOR HEALTH BENEFITS

The vitamin C in the moringa plant acts as a major antioxidant and assists in the formation of collagen as well as the prevention of scurvy. The high levels of vitamin K are essential for the blood coagulation and other clotting enzymes which promote wound healing (2,3,4). In addition, vitamin K promotes bone formation and should be considered essential for proper growth.

High levels of manganese are also an essential component of the antioxidant system. Beta-carotene function mainly in the vision cycle and in cell differentiation and bone growth. The large percentage of carotenoids in moringa are of particular importance when considering that vitamin A/carotenoid deficiencies can cause irreversible vision loss and in some cases permanent blindness. The presence of these high amounts of vitamins and nutrients are the basis for moringa's claims of possessing anti-inflammatory, antioxidant, antimicrobial, antifertility, anticancer, antihepatotoxic and antiulcer activities (8). New researcher also describes the role of moringa in combatting insulin resistance in diabetic patients though more research is needed (7). A continuing body of research also demonstrates many of the antihypertensive, diruetic, and cholesterol lowering activities of moringa (4).

CULTIVATION & STORAGE

One of the fastest growing trees in the world, moringa can grow to approximately 3-5m in just a single year from seed planting and can reach 5-10 meters over the course of a lifetime (9). Unlike most trees, it is grown for food rather than forestation. Though moringa typically grow to become large trees in the wild, researchers have shown

CULTIVATION & STORAGE (CONT)

that moringa trees can also be planted close together as a field crop, at a spacing as close as 10-15 centimeters for cultivation purposes(2).

The cultivation of these plants does nothing to hinder the fruitful nature of the moringa plant. A single tree grown under good conditions can, for instance, bear more than 1,000 pods a season and can supply leaves year round if the climate is conducive (4,5). Moringa trees are particularly plentiful near riverbeds and streams, though they are also capable of growing in poor, sandy soil (1,2).

A major benefit of adding moringa as a crop variety is the decomposing plant matter and fallen leaves from the moringa tree, which serve as a fertilizer for the surrounding soil (1,2).

In considering the storing capacity of the seeds, studies indicate no difference exists between storing at room temperature or refrigerated (6). However, studies do show that the efficacy of water purification declines over time indicating the seeds should be used in a timely manner. 1 month appears to be the optimal storage duration for the moringa seeds though the oils can be separated and stored for longer period (1,6). The seeds are appear to be most efficiently stored in paper bags or a similar type of loosely-covered container at room temperature.

PREPARATION & COOKING

The edible portion of the moringa plant include the pods, leaves seeds and roots. The pods produce seeds that contain oil (50-60% content), which can be used to treat cuts and scrapes or as a cooking oil. (1,3) Left-over pods can be added to water to act as an organic water purifier (sucks out impurities), though its important to remember the seeds must be fresh to be effective (0-30 days).

The leaves can be cut, dried, and milled into a fine powder for use as a nutritional supplement. The powder can be added to soups or sauces for added nutritional content.

In addition, the leaves can be cooked just as spinach or any other leafy green with optimal nutrient benefit coming when the water of the cooked greens is also consumed. The leaves and flowers may also be brewed as tea and the bark and root used for medicinal purposes. Roots are also commonly boiled and used as tea.

BEYOND THE EDIBLE

Due to the size of wild moringa trees they are often used as shade plants. In addition, moringa wood can be used for making paper, lamp burning oil, and oil lubricants (2). Moringa fodder is used as livestock feed,.

Perhaps the most important elements of seed remains are as an organic water purification system. When added to non-purified water, the pulp of pods binds bacteria, dirt, and other microorganisms allowing them to bind and condense, sinking to the bottom of the water vessel.

In addition functioning as a human antioxidant, the antioxidant properties (carotenoids, flavenoids, ascorbic acid) could allow the plant to be sold for commercial use as they offer an increased shelf life when mixed with fatty foods that would otherwise spoil (4). A recent study also showed that the methanol extracts of Moringa can be used as an easily accessible source of natural antioxidants in the food and pharmaceutical industries and could be considered a future means of economic growth. (6)

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