

# The Fruit & Vegetable Bible

Health & nutritional information for  
juices, smoothies or raw food



Andrew Williams, Ph.D.



# Fruit & Vegetable Bible

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For Juices, Smoothies and Natural Goodness

By Andrew J. Williams, Ph.D.

A Preview: The first 5 Chapters

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# Alfalfa Sprouts

## Introduction to Alfalfa Sprouts

Alfalfa is a legume belonging to the pea family (Papilioaceae), species *Medicago sativa*, and the mostly commonly grown crop in the world. Due to the high quantities of protein found in it, it is employed as food for all types of farm animals. Stems, leaves and sprouts from the seeds are all used for human consumption.

Alfalfa has many other qualities that make it a highly valuable plant besides its nutritional content. Its nitrogen-fixing abilities make it great for crop rotation to revitalize soil for other crops. Planted in partnership with grasses, it prevents soil erosion. Dried alfalfa is pulverized into meal and added to poultry and livestock feed. It is an indirect source of honey as bees collect large amounts of nectar from its flowers. It is also deemed to be an insectary, a place where insects are nurtured. Since it shelters predatory and parasitic pests it offers protection to crops planted near it. The quick harvesting plant thrives throughout the year, regardless of the temperature or climate, all over the world.

Alfalfa sprouts (also commonly called alfalfa grass) are immature shoots derived from alfalfa seeds. They are usually consumed within four to seven days after germinating. They are thin thread-like, white structures with petite green tops. The germination process for human consumption requires just water, a jar and some seeds. Just one tablespoon of seeds produces almost three cups of sprouts. Being small in size, the crunchy sprouts are jam-packed with nutrients and have only eight calories with no fat in each cup.

## History of Alfalfa Sprouts

Alfalfa has been cultivated as a forage plant since antiquity and is a native of Asia Minor and Caucasus Mountains. It was grown by the Greeks, Persians and the Romans. Lucerne, Lucerne grass, Chilean clover and buffalo grass are some of its other common names.

It is believed that the name alfalfa originated in medieval times from the Iranian language. It was known as “*aspastor*” or “*ispist*” before being altered to “*al-fac-facah*” in Arabic. The Arabic name translates into “father of all foods”, a reference to its high nutritional value. The final change in the name after the plant was introduced to Spain. The Spanish, being horsemen valued the plant highly and considered it to be the best horse feed. They started by calling it “*alfalfez*” and finally it became alfalfa. The Spanish colonizers introduced alfalfa to the Americas and the name has remained unchanged ever since.

## Health Benefits of Alfalfa Sprouts

Alfalfa has been utilized as a herbal medicine for more than fifteen hundred years. Chinese physicians used the baby alfalfa leaves as treatment for digestive tract disorders and kidneys. Ayurvedic medicine recommends alfalfa for the treatment of bad digestion. A cooling poultice was also produced from its seeds to treat boils.

Alfalfa sprouts are one of the most potent sources of phytoestrogens. These valuable substances from plant foods can help in cutting down the risk of heart disease, cancer and osteoporosis<sup>1</sup>. They may even be advantageous in decreasing symptoms of menopause. Dr. Michael T Murray author of *The Condensed Encyclopedia of Healing Foods* also states that alfalfa sprouts have substances called saponins, which play a role in lowering LDL (bad cholesterol) while increasing HDL (good cholesterol) and may enhance immunity. Saponins are also believed to enhance the immune system by augmenting the activity of T-lymphocytes and interferons, body's natural killing machines of harmful invaders. The anti-inflammatory features of saponins aid in lowering the inflammatory progression of arthritis and chronic inflammatory ailments.

Alfalfa sprouts are a potent source of dietary protein, which raw-food advocates turn to when seeking to replace traditional protein sources. The three grams of protein in each serving make alfalfa the most consistent raw source of this essential macronutrient. One serving also provides one gram of fibre, which is equivalent to 3% of an adult's daily requirement. People suffering from digestive problems like chronic constipation or diverticular disease can benefit greatly by including alfalfa sprouts in the daily diet. The high quantity of protein and fibre combined with no saturated fat, cholesterol or sugar and only eight calories in a 33-gram serving, make alfalfa sprouts the perfect diet food.

Other than aiding in lowering the bad cholesterol, alfalfa sprouts can help in averting and treating atherosclerosis (plaque build-up in arteries of the heart) leading to hardening of the arteries. This is a serious disease which can lead to fatal problems, so before embarking on an alfalfa supplemented diet, discuss with your doctor the best course of action. It is also believed that alfalfa sprouts can be used as a complementary treatment for type-2 diabetes as it has no sugar. The canavanine, an amino acid analogue found in alfalfa sprouts is recognized to be helpful in combating leukemia, fibrocystic breast tumors, colon and pancreatic cancers.

## Nutritional Value of Alfalfa Sprouts

Alfalfa sprouts generally tend to be very rich in nutrients since they house most of the energy the plant needs to grow and develop. They have elevated quantities of vitamins A, B, C, E and K. Sprouts are among nature's most concentrated suppliers

of vitamin K. Vitamin K is critical for optimal platelet function and it helps to inhibit excessive bleeding (check with your doctor if you are taking anticoagulants as vitamin K may hinder the drug's efficiency).

Alfalfa sprouts also contain free amino acids, organic acids, non-protein amino acids like canavanine, strachydrine, isoflavonoids, coumarins, saponins, in addition to steroids like b-sitosterol, stigamsterol, campeterol etc. Minerals like potassium for healthy muscles, calcium to build bones and magnesium along with chlorophyll and carotene are all part of the health benefiting nutritional make-up of alfalfa sprouts.

## How to Use Alfalfa Sprouts

Alfalfa sprouts can be used in a number of ways. They can be incorporated into soups, sandwiches or salads. Sprouts may be consumed raw or blended into smoothies. Juice of sprouts is mild flavoured so it can easily be combined with other favourite juices to make a healthy, refreshing drink. A few quick ways of getting full benefit of alfalfa sprouts includes:

- Divide pita bread in half and separate into two parts. Chop up one tomato, ½ a cup of alfalfa sprouts and ½ a cup of lettuce, and mix all ingredients in a bowl. Season with your favourite salad dressing and stuff into the bread, for a hardy nutritious snack.
- Mix alfalfa sprouts with scrambled eggs immediately before serving.
- Toast alfalfa sprouts by spreading them on a cookie sheet and placing them in an oven for 1-2 minutes. This will give the sprouts a crispy texture while eliminating any bacteria that may be there. Sprouts prepared may be added to salads, wraps or sandwiches.

## Growing your own sprouts

Alfalfa sprouts are easy to grow with a small quantity of seeds producing a lot of sprouts, approximately in a ratio of 1 to 7.

- Add one tablespoon of seeds into a large jar.
- Add enough water so it is approximately one inch above the seeds.
- Cover the jar with a cheese cloth and secure using a rubber band.
- Allow the seeds to soak overnight, draining the water in the morning.
- Rinse the seeds twice a day for the next 4 - 5 days, while keeping the jar away from direct sunlight.

## Clinical Trials with Alfalfa Sprouts

Some preliminary studies indicate that alfalfa sprouts may be beneficial in helping to normalize serum cholesterol levels in patients suffering from type II hyperlipoproteinemia. Preparations of alfalfa extracts neutralize the cholesterol while it is still in the stomach and before it reaches the liver, in this way excreting it from the body without any harmful effects<sup>2, 3</sup>.

Numerous trials have been carried out in laboratories which indicate that the plant estrogens in alfalfa might be helpful for menopausal women<sup>4, 5</sup>.

In rats fed a disease-causing fungus, Alfalfa in the diet helped the rats to remove more of the fungus from their bodies. It is theorized that this happens because one of the saponins from alfalfa damages cell membranes of the fungi.

## Resources

<sup>1</sup>The Condensed Encyclopedia of Healing Foods by Michael T. Murray

<sup>2</sup> Levy S. New product newswire. *Drug Topics*. 1999; 19:22.

<sup>3</sup> Dewey D. Cholestaid. *NuPharma* . January 1, 2001.

<sup>4</sup>Kurzer MS, Xu X. Dietary phytoestrogens. *Annu Rev Nutr* . 1997; 17: 353-381.

<sup>5</sup>De Leo V, Lanzetta D, Cazzavacca R, et al. Treatment of neurovegetative menopausal symptoms with phytotherapeutic agent [in Italian; English abstract]. *Minerva Ginecol* . 1998;50:207-211

# Apples

The apple tree is a member of the Rosaceae family belonging to the genus *Malus*. It is related to almonds, pears, and apricots. The tree can reach heights of six to fifteen feet, depending on soil, weather conditions, and the variety. Flowers of the apple tree are pink-white in colour and have five petals. It is among the most commonly cultivated fruit trees on the planet, with over 7,500 recognised cultivars.

It is believed that apple trees originated in Asia where its distant relative *Malus sieversii* can still be found growing in the wild. Apples are referred to in mythology and associated with many cultures including Greek, Roman, Norse, Muslim, and Christian folklore. According to Norse mythology, magic apples keep people young forever. The story of Adam and Eve in the Bible is often associated with apples, even though apples are never specifically mentioned. Pomona, a Roman goddess, tended her orchards and presented gifts of apples to her favourite subjects as a reward for flattering acts. In more recent history, Isaac Newton came up with the law of gravity after seeing an apple drop from a tree.

Different varieties of apples are bred for varying purposes. These include cooking, eating fresh, and for the production of cider and vinegar. Wild apples can be grown easily from seeds, but domestic varieties are usually propagated by grafting. In 2010, the apple genome was decoded, allowing for an enhanced understanding of how to control pest problems and selectively breed apples.

China is the largest grower of apples, producing more than thirty million tonnes in 2010. United States is the second largest apple producer adding over 6% to the world's production. Other major apple producers include Turkey, Italy, India, and Poland. There are many health benefits associated with the consumption of apples. They are sometimes labelled "nature's toothbrush" due to the belief that they clean teeth and help in massaging gums.

## History of Apples

Theory has it that apples originated in central and southern part of China, as this area is home to the *Malus* species. Over the course of time, seeds were spread by birds in the entire Northern Hemisphere. Crab apples arose from these, bitter-fruited varieties. It is also believed that the edible apple (*Malus domestica*) is a complicated hybrid arising out of the wild, primitive apple species.

Around 2500 BCE, apple cultivation was common in Persia and northern Mesopotamia. The apple trees not only provided culinary delights but were also admired for their ornamental beauty in the gardens of Persia. Wealthy citizens of ancient Rome and Greece enjoyed apples as a dessert and for use at banquets. With advanced horticultural knowledge, the Greeks understood grafting techniques

and were able to propagate special varieties in their orchards. Theophrastus, a Greek writer, noted "Seedlings of . . . apples produce an inferior kind which is acid instead of sweet . . . and this is why men graft." The Roman writer, Pliny, detailed more than twenty varieties in his journal, *Natural History*. As the Roman Empire expanded, apple orchards were established throughout Europe and Britain.

In North America, apple orchards constituted an important portion of farms in the seventeenth and eighteenth centuries. They were cultivated mainly for the production of hard cider, which at that time was the drink of choice seeing as water was not considered safe to drink. The whole family enjoyed apple cider, and any surplus was used as barter for goods or services needed.

## **Health Benefits of Apples**

Consumption of apples is associated with numerous health benefits, among them being the prevention of cancer and heart disease, sugar control, lowering of cholesterol, protection against inflammation, and assist in weight loss. The flavonoid phloridzin is only found in apples and is said to protect against osteoporosis in post-menopausal women and enhance bone density. Boron is another element found in apples which promotes bone strength. The phytonutrient quercetin, also found in apples, offers protection against Parkinson's and Alzheimer's diseases. Other phytonutrients found in apples include phenolic acids which protect the apples from attacks by fungus, bacteria and viruses, as well as providing antioxidant and anti-cancer benefits.

Antioxidant protection is important to human health because the free radicals produced in the human body are atoms with odd number of electrons. Electrons prefer to travel in pairs, so the odd numbered free radicals are on the look-out for electrons from cells within the body. When a free radical takes electrons from a cell in the body, it changes the cell, and instead of having a permeable membrane that allows passage of food, oxygen and waste, the cell becomes rigid and starves to death. If the free radicals steal electrons from the cell's mitochondria, it shuts them down and again the cell dies. Cell death occurring in this way leads to aging and illnesses.

Apples also have pectin, the material responsible for allowing jelly to solidify. Pectin helps to decrease LDL, the bad cholesterol in the body, thus helping to prevent heart diseases. The high fibre content in apples stops the absorption of LDL in the colon. The dietary fibre gives a feeling of being full for longer durations, which helps dieters lose weight faster, and it helps diabetics to keep blood sugar levels stable. It is also believed that flavonoids such as quercetin and Naringin are found in apples, and these may be responsible for halting lung and breast cancers.

## Nutritional Value of Apples

Apples are a favourite fruit for health and fitness conscious individuals. A rich source of antioxidants and phytonutrients, apples are a 'must eat' for optimal health. A medium sized apple, roughly three inches in diameter, has 95 calories. It also contains 4.4 grams of dietary fibre, which makes up 18% of daily recommended intake for women and 12% for men. It also provides 21 grams of carbohydrates, which aid in metabolising fats and enables the nervous system to work at optimal levels.

About 10% of an apple is made up of carbohydrates while another 4% constitutes vitamins and minerals. Over 80% of the fruit is water. Apples float because they have a lot of air trapped in them. Removing the apple peel and core eliminates half of the vitamin C and dietary fibre. The apple pips have a bitter taste and contain traces of cyanide, but not enough to cause any harm. However, if you are juicing a lot of apples for young children, I do recommend you core the apples first.

Apples have a large variety of vitamins including folates, niacin, pantothenic acid, pyridoxine, riboflavin, thiamin, vitamins A, C, E and K. Electrolytes found in apples include sodium and potassium while the minerals include calcium, iron, magnesium phosphorus, and zinc. Phyto-nutrients carotene-B, Cryptoxanthin-B, and Lutein-zeaxanthin also make up part of an apple's nutritional profile.

## How to Use Apples

There are numerous ways to enjoy apples, starting with the old fashioned approach of just biting into a whole apple and working around the core.

Applesauce topped with cinnamon is one way to get all the nutrients apples have to offer, and whether one buys the grocery store variety or prepares it at home, it tastes great either way.

In addition to apple juice, apple cider is a traditional drink served in the holiday season at Thanksgiving and Christmas time.

Apple juice served hot or cold, mulled or spiced, is one of the best ways for young and old alike to drink the juice of apples. Apple cider can be used instead for those who savour something a little stronger. The varieties of apples that have a higher tannin and acid content are especially grown for cider production.

Apples make great additions to certain types of salads. They complement a wide variety of ingredients like pecans, walnuts, cheddar and gorgonzola cheese, as well as citrus and poppy seed vinaigrette. Apples can be preserved as jams, turned into a jelly, dried or cooked in sweet and savoury dishes, and made into a pies or compotes.

## Apple Tips

To keep apples from turning brown in salads, lightly brush cut slices with lemon juice.

To stop whole peeled apples from becoming discoloured, add some peeled slices to cold water with a little salt added to it, and then place the whole peeled apples in the water.

Discolouration from aluminium utensils can be eliminated by boiling apple peels with the utensils in a large pot for a few minutes.

## Clinical Trials with Apples:

Because apples have been enjoyed the world over since ancient times, there are obviously plenty of health benefits associated with them. Many studies have been carried out over the years to test these claims. According to one paper published in 2008, flavonoids in a diet reduce the risk of heart disease<sup>1</sup>. Other studies concluded that consuming quercetin, a flavonoid found in ample supply in apple peels, can aid in eliminating chronic inflammation which contributes to cardiovascular disease<sup>2</sup>.

In a separate study, it was suggested that quercetin provided protection against such atmospheric pollutants like cigarette smoke. This is achieved by cutting down on the number of free radicals that are exposed in tissue<sup>3</sup>. Australian researchers found that consuming apples can lower the risk of asthma in people in their late twenties to early forties<sup>4</sup>. Another study carried out in 2000 by Butland et al<sup>5</sup> found that there was a definite link between lung function and the quantity of apples consumed in a week. Consumption of five or more apples a week showed a better overall lung function.

Apple juice plays a positive role in memory. It was found that mice consuming two to three cups of apple juice performed better in a maze with less oxidative brain damage<sup>6</sup>. It is thought that this is due to the large number and quantities of antioxidants available in apple juice, which prevents damage caused by free radicals. In humans, fruits like apples have been linked with a reduction in degenerate conditions like Alzheimer's<sup>7</sup>.

## Resources

<sup>1</sup>Tribolo, S. et al, (2008) Comparative effects of quercetin and its predominant human metabolites on adhesion molecule expression in activated human vascular endothelial cells, *Atherosclerosis*, Vol. 197, Issue 1, Pages 50-56.

<sup>2</sup>Wach, A. et al (2007), Quercetin content in some food and herbal samples, *Food Chemistry*, Vol. 100, Issue 2, Pages 699-704.

<sup>3</sup> <http://news.bbc.co.uk/1/hi/health/610068.stm>

<sup>4</sup>R.K Woods et al (2003) Food and Nutrient Intakes and Asthma Risk in Young Adults, American Journal of Clinical Nutrition, Vol. 78, Issue 3, Pages 414-421.

<sup>5</sup>B. K Butland et al (2000), Diet, Lung Function, and Lung Function Decline in a Cohort of 2512 Middle Aged Men, Thorax, Vol. 55, Issue 2, Pages 102-108.

<sup>6</sup>F. Tchantchou et al (2005), Apple Juice Concentrate Prevents Oxidative Damage and Impaired Maze Performance in Aged Mice, Journal of Alzheimer's Disease, Vol 8, Issue 3, Pages 283-287.

<sup>7</sup>Q. Dai et al (2006) Fruit and Vegetable Juices and Alzheimer's Disease: The *Kame* Project, The American Journal of Medicine, Vol. 119, Issue 9, Pages 751- 759.

# Asparagus

Asparagus is a member of the Asparagaceae family, originally the lily family. Other members of this family include: garlic, onions, turnips, and leeks. It is a hardy perennial plant with more than two hundred species known to exist all the way from Siberia to South Africa. Many of the species grown in Africa are used for ornamental purposes, providing tantalizing greenery in floral presentations, while the most common garden variety *Asparagus officinalis* is cultivated for consumption. The name “asparagus” originates from the Greek word *asparagos* (originally the Persian *asparag*) meaning “sprout” or “shoot”. The term *officinalis* means ‘of the dispensary’ in Latin, a reference to the medicinal properties of asparagus.

The wild asparagus usually has rather thin shoots, even thinner than a pencil, and it is significantly different than the variety found in the local grocery store. Selective breeding techniques have led to a variety with thicker shoots which contain more edible flesh. The ancient Greeks valued asparagus highly, but the Romans were the first cultivators of the vegetable.

Asparagus is grown by sowing the seeds in beds during early spring, and allowed to grow for one full year before harvesting. The new plants have compressed buds in the middle known as the crown, and many hanging roots. While green asparagus is the most commonly seen variety in the supermarkets, purple and white varieties also exist. The white asparagus is delicate and difficult to harvest, and the purple variety is smaller in size with a fruitier taste. Nutrition wise they are all very similar.

A carefully planted and cared for bed can continue to generate the vegetable for up to 20 years without the need to replant. The first plants are not usually harvested until three years old. This is to allow them to develop a strong fibrous root system. Once the harvesting is completed, the remaining spears develop into ferns, which then produce red berries that provide nutrients needed for the next year’s crop.

Asparagus contains a distinctive compound which gives off a very characteristic smell in urine when metabolized. The younger shoots have a greater concentration of this sulphuric compound, and eating them gives an even stronger odour. While practically all people develop the odour in their urine after eating asparagus, most do not have the ability to detect it. No harmful effects arise due to the odour or the breakdown of the sulphuric compound.

## History of Asparagus

According to most accounts, asparagus originated in the Middle East, where it still grows along the sand dunes and in river valleys. From here it spread into Europe

and further west. Asparagus has a long history; it is believed that the Chinese were acquainted with the plant as far back as 4,000 years. Egyptians were growing asparagus more than 2,000 years ago, for its medicinal attributes. In fact, they valued it so highly that Pharaoh Ikhnoton and Nefertiti proclaimed it to be food of the gods, and so made offerings of asparagus in rituals to their deities.

There are records of Romans and Greeks growing asparagus in the first century. M. Porcius Cato, the Elder, wrote a detailed description of asparagus in his book 'De Agricultura' approximately 160 BCE. He described methods of growing the plant in home gardens, sowing times, duration, best ways to harvest the vegetable, weed control, and how to remove the dried fern from asparagus. They valued the vegetable for its distinctive flavour and supposed medicinal qualities. The Romans went so far as to start freezing the plant so that it could be enjoyed out of season. High-speed chariots and runners were employed to transport it to the snow laden Alps, where it stayed frozen until needed. Asparagus fleets guaranteed the delivery of the delicacy to all parts of the Empire.

Asparagus is pictured in murals found in Pompeii and was deemed to be a fine delicacy. Around the year 1100, Byzantine physicians declared asparagus as a medicinal plant for the first time, and derived the name *Asparagus officinalis*. The diuretic effect of the plant was employed to eliminate hip pains. At this time it was also considered to be an aphrodisiac and dedicated by the Romans to Venus, the goddess of love and beauty.

Asparagus was not used much during the middle ages but recaptured its popularity during the 16th century when it gained acceptance in Europe's royal courts. France's Louis XIV called asparagus the "king of vegetables" and ordered the construction of greenhouses so that he could enjoy it year-round. In the 17th century, cultivation started in England where it was called sparrowgrass. Colonists carried it to the New World, where it was initially known by the same name.

## Health Benefits of Asparagus

The medicinal value of *Asparagus officinalis* has been known since ancient Roman and Greek times. Dioscorides, a Greek physician in the first century, advocated asparagus root extracts for flushing out the kidney, jaundice, and sciatica. It was also referred to in the Gerard's Herbal for cleansing the system without causing dryness, increasing sperm, and to promote desires. In Ayurvedic medicine it is used in female infertility, and in Asian medicine it is given for diarrhoea, coughs, and nervous system issues.

In modern times, *Asparagus officinalis* is considered a strong diuretic and used for treating urinary problems like cystitis. It is also used in treating rheumatic problems, and also known to work as a gentle sedative and a laxative.

Furthermore, it is beneficial in treating a number of ills, including arthrosis and tuberculosis.

The high content of glutathione found in asparagus is a strong antioxidant that is known to enhance the immune system, cut down inflammation, and preserve liver health. Glutathione breaks down carcinogens and free radicals which are responsible for causing cell damage, and also detoxifies the body. This is why it can be beneficial in fighting against certain cancers like bone, breast, larynx, and colon. The folate in asparagus works in conjunction with vitamin B12 to ward off cognitive decline. It also contains elevated levels of asparagines, an amino acid which serves as a natural diuretic helping to eliminate body's excess salts. This is particularly beneficial for people suffering from oedema (build-up of fluids in body tissues), and those with high blood pressure.

## Nutritional Value Asparagus

Asparagus is a gold mine of nutrients that contribute to good health. Being a low calorie food, with only twenty calories in every 100 grams of fresh vegetable, it is the perfect complement to any weight loss program. In fact, most of those calories are burned off while digesting the vegetable itself. Out of the 100 grams, 2.1 grams make up dietary-fibre, which benefits ailments like constipation, regulating blood sugar, and lowering LDL (the bad cholesterol). A high fibre diet lowers the risks of colon-rectal cancer by putting an end to absorption of toxic compounds from food.

Asparagus spears are also a rich source of antioxidants like lutein, zeaxanthin, carotenes, and *cryptoxanthins*. The flavonoids help to eliminate the body of free radicals and possibly protect it against neuro-degenerative diseases, cancer, and viral infections. Asparagus also provides 14% of the RDA of folic acid. Folates are needed for DNA synthesis, and help to prevent neural tube defects in newborn babies.

Asparagus shoots are a good source of the B-complex vitamins like thiamine, riboflavin, niacin, pyridoxine and pantothenic acid. They also contain antioxidant vitamins like Vitamins C, A, and E. This group of vitamins help the body to build resistance against infectious diseases and remove harmful, inflammatory free-radicals. The ample amounts of vitamin K in asparagus promotes bone health, limits the brain neuron damage, and plays a positive role in patients with Alzheimer's disease.

Regular consumption of asparagus also supplies the body with important minerals like copper and iron, and trace amounts of calcium, manganese, potassium, and phosphorus. Copper is used in red blood production, and iron is needed for cell respiration and formation of red blood cells. Manganese is used as a co-factor for

superoxide dismutase, an antioxidant enzyme. Potassium helps to control the heart rate and blood pressure by negating the effects of sodium.

## How to Use Asparagus

To attain peak flavour, it is best to use asparagus at the time of purchase, as the spears begin to lose taste and moisture immediately after harvest. To prepare the vegetable, start by washing it with cool running water and trim roughly one inch off of the end (if you bend the asparagus, it usually breaks off where the shoot starts to become less woody). You can add the woody stems and peelings to cooking water. This makes the water quiet palatable and is great for using as a stock for soups.

Asparagus may be eaten raw, steamed, grilled, boiled, roasted, stir-fried, or even worked into casseroles and salads. The key to cooking asparagus perfectly is to “cook it briefly.” Waterless methods of cooking are best for preserving the nutritional value and antioxidant power of the vegetable.

Asparagus blends well with a number of different ingredients, but it can be tasty on its own dressed with only lemon juice, olive oil, salt and pepper. It can be served raw as crudités with a dipping sauce. In a salads, it is best to hold the asparagus back until it's time to serve and then add it at the very last minute. Adding it too soon, will result in the high acidic content of salad dressings turning the spears an unsightly yellow. Fresh chives, thyme, tarragon, and savoury added to asparagus helps to enhance the flavour of its shoots.

## Clinical Trials

While traditional Chinese and Korean medicine has used *Asparagus cochinchinensis* Merrill (ACE) as a treatment for inflammatory diseases, a 2009 published study showed ACE to be an effective anti-inflammatory agent and having therapeutic value against immune-linked cutaneous infections<sup>1</sup>.

In another study published in 2006, it was found that plants like asparagus are a good source of anti-diabetic compounds. Extracts from asparagus helped to increase production of insulin. This can provide opportunities in new treatments for diabetic patients<sup>2</sup>.

## Resources

<sup>1</sup><http://www.ncbi.nlm.nih.gov/pubmed/18691647>

<sup>2</sup>[http://www.youtharia.com/clinical\\_studies/asparagus\\_adscendens](http://www.youtharia.com/clinical_studies/asparagus_adscendens)

# Basil Leaves

## Introduction to basil leaves

Basil is a highly fragrant herb that is most commonly used for seasoning purposes. It is associated more with Mediterranean cooking but is also very common in Asian cuisine but is cultivated all over the world. It has become the most easily recognizable plant since pesto, a blend of basil, pine nuts and parmesan cheese gained popularity. There are over 60 kinds of basil and all differ from each other to some extent in taste and physical appearance. In appearance basil resembles peppermint a bit, which is understandable since they belong to the same family (Lamiaceae).

Sweet basil (*Ocimum basilicum*), has forceful, sweet flavor and strong aroma, while the other varieties offer flavors that resemble their names: anise basil, lemon basil, and cinnamon basil. Holy basil (*Ocimum tenuiflorum*, also known as *Ocimum sanctum* and tulsi), is considered a holy plant in Hindu religious tradition and is worshiped in the mornings and evenings. The name 'tulsi' denotes "the incomparable one". The plant is considered to be a strong protector and is frequently planted around temples and placed with the dead. Basil is thought to be a love token and is planted on graves in Egypt, Iran and Malaysia.

The origin of basil's scientific name is partially explained by Greek mythology. Ocimus was responsible for organizing contests in honor of Pallas (ruler of Paralia or Diacria) and had fifty sons. It is claimed that when Ocimus was killed at the hands of a gladiator, basil appeared. The remaining part of the name is drawn from Medieval Latin form of the Greek word "*basileus*" meaning "King"

## History of Basil

It is believed that basil's origins lie in the tropical areas of Thailand, Pakistan and India and has been cultivated there for over thousands of years. The first recorded account of basil probably goes back to its cultivation in Egypt, for possible use in embalming.

Basil has a very colorful history associated with it which dates as far back as the third century B.C.E. During the ancient times and up to the time basil was introduced to England somewhere near the 1500s, it was believed that crushed basil placed under a rock would give rise to serpents. Due to this legend, the common name of the herb comes from the Latin word "*basilicum*", a mythological giant of a serpent. It was further believed that if ingested, basil would make scorpions grow in the brain. Basil was taken to North America in the early 1600s.

During the Middle Ages medicine men of the times thought basil was poisonous. This was based on the fact that basil could not grow in the vicinity of Rue, a woody plant with strong smell and bitter flavor whose oil was used in medicines. Rue was believed to be poisonous to the enemy and anything that could not grow in its vicinity was naturally considered to be poisonous.

## Health Benefits of Basil

Basil's extracts have been used to cure many ailments throughout history starting with simple problems like the common cold, stomach issues to more complex problems like heart disease, certain form of poisoning and malaria. Oils extracted from the plant are employed in manufacture of herbal toiletries. More recently basil has been found to be effective against a host of different ailments.

The Orientin and vicenin, two flavonoids found in basil protect cells and chromosomes from radiation and oxygen related damage. Additionally it protects against undesirable bacterial growth. Studies indicate that the explosive oil components in basil namely estragole, linalool, cineole, sabinene, eugenol, limonene and myrcene are responsible for inhibiting growth of pathogenic bacteria that no longer respond to the most commonly used antibiotic drugs<sup>1, 2, 3</sup>.

Many over the counter anti-inflammatory medicines like aspirin, ibuprofen and the frequently used acetaminophen work by inhibiting the function of the enzyme cyclooxygenase. The oil component eugenol blocks the very same enzyme. This ability to block the enzyme makes basil an anti-inflammatory herb capable of providing relief from conditions like rheumatoid arthritis and inflammatory bowel conditions.

Basil's high concentration of carotenoids like beta-carotene (also called "pro-vitamin A" because it gets converted to vitamin A) is a very powerful antioxidant which protects epithelial cells from damage caused by free radicals. It also keeps free radicals from oxidizing cholesterol in the blood vessels. Since cholesterol accumulates in the blood vessels only after it has been oxidized, basil averts the development of atherosclerosis which can lead to heart attack or stroke. Free radicals also contribute to ailments like osteoarthritis, asthma, and rheumatoid arthritis. The beta-carotene reduces the development of these diseases while halting further damage.

The magnesium in basil helps muscle and blood vessels to relax. This improves blood circulation and cut down on the risks of heart muscle spasms, and irregular heart rhythms. Other more traditional benefits of basil include its use as a diuretic to flush out kidneys, relief from flatulence and fullness.

## Nutritional Value

Basil has very few calories and is a very low in saturated fats, cholesterol and sodium. It is a good source of protein, dietary fibre and many minerals and vitamins essential for good health. It is an outstanding source of Vitamin A, E, C, K, B6, Folate, Riboflavin and Niacin. It is also a very good source of minerals like Calcium, iron, magnesium, phosphorus, potassium, zinc, copper and manganese.

The various varieties of basil differ in their specific nutritional content, but the average Recommended Daily Value of some nutrients found in 100 grams of basil in general include:

- Iron: 40%
- Calcium: 18%
- Protein: 3 grams
- Vitamin A: 100%
- Vitamin K: 345%
- Vitamin C: 30%

## Uses of basil

Being a herb, basil is most commonly used fresh in cooked foods. It is best when added at the very last stages of cooking, or used as garnish on top of a dish after it has finished cooking. This ensures that all nutrients remain intact and also over cooking basil destroys its flavor. The herb has refrigerator life of a few days, but it can be kept in a freezer for longer durations after blanching in boiling water very quickly. Although basil is commonly available in dried form, it loses most of its flavor in this form and what remains is quite different from the original fresh taste.

Everyone one is familiar with basil's use in pesto and its addition to tomato sauces. It is also great when combined with mozzarella and tomatoes sprinkled with olive oil for a traditional Caprese salad. It can be chopped or blended with soft butter and poured over steaks, roast chicken or boiled potatoes.

A few other unconventional ways to use basil include:

- Basil is proven to keep flies, mosquitoes and roaches away. Many chefs are known to keep basil plants in the kitchen to keep free from pests and fresh smelling.
- A number of basil varieties produce attractive flowers and buds. These stems look great when employed in flower arrangements.
- Basil provides a very appealing aroma when used in scented candles and soaps.
- It makes a great potpourri ingredient.
- Some varieties are very well suited for hedging and border purposes in gardens.

## Clinical Trials

Basil has been the subject of numerous studies trying to establish how its nutritional components functions. While many of these studies are carried out *in vitro* and other on animals, its benefits to human ailments is gaining acceptance. Holy basil in particular contains powerful antioxidants and enjoys a safe GRAS status in the U.S. Clinical studies involving basil's effect on ulcers and controlling blood sugar levels in type II diabetics show some promise<sup>4, 5</sup>.

In some initial clinical trials, asthma patients treated with five hundred milligrams of holy basil thrice daily, improved breathing and cut down on the frequency of attacks<sup>7</sup>. In another study carried out in Thailand, the effectiveness of three different varieties of basil leaf oils was tested for treatment of acne. It was found that oils from sweet basil and holy basil were effective against acne<sup>5</sup>.

## Resources

<sup>1</sup> Bozin B, Mimica-Dukic N, Simin N, Anackov G (March 2006). "Characterization of the volatile composition of essential oils of some lamiaceae spices and the antimicrobial and antioxidant activities of the entire oils". *J. Agric. Food Chem.* 54 (5): 1822-8. doi:10.1021/jf051922u. PMID 16506839.

<sup>2</sup>Chiang LC, Ng LT, Cheng PW, Chiang W, Lin CC (October 2005). "Antiviral activities of extracts and selected pure constituents of *Ocimum basilicum*". *Clin. Exp. Pharmacol. Physiol.* 32 (10): 811-6. doi:10.1111/j.1440-1681.2005.04270.x. PMID 16173941.

<sup>3</sup>de Almeida I, Alviano DS, Vieira DP, *et al.* (July 2007). "Antigiardial activity of *Ocimum basilicum* essential oil". *Parasitol. Res.* 101 (2): 443-52. doi:10.1007/s00436-007-0502-2. PMID 17342533.

<sup>4</sup><http://www.uofmhealth.org/health-library/hn-4597000#hn-4597000-uses>

<sup>5</sup>Mountain Rose Herbs.com, "Holy Basil (Tulsi) Herb Profile"

[http://www.mountainroseherbs.com/learn/Holy\\_basil.php](http://www.mountainroseherbs.com/learn/Holy_basil.php)

<sup>6</sup><http://www.healthline.com/natstandardcontent/holy-basil>

<sup>7</sup><http://www.peacehealth.org/xhtml/content/cam/hn-4597000.html>

# Beets with Leaves & Stem

## Introduction to Beets

Beets are also referred to as blood turnips and are members of a flowering plant belonging to the *Beta vulgaris* species. Beets are mainly cultivated for their roots but the green tops are edible also. There are nine other members of the Beta genus, all having the common name beet however *Beta vulgaris* is the most commercially important variety. The root provides ecological value by providing food for a variety of animals, and it holds commercial and important nutritional value for humans.

There are four major cultivar groups. The *garden beet* is mainly used as a vegetable whose roots and leaves are edible. The *sugar beet* is used for sugar production, the *mangel-wurzel* is grown as food for livestock and the *Swiss chard* is cultivated for its edible leaves. Approximately 30% of the world's production of sugar is derived from beets.

Beet roots are typically deep purple colour but white and golden varieties are also available. The leaves have a slightly bitter taste while the round root is sweet tasting. Due to the high level of sugar content in beets, they are very tasty even when consumed raw, but usually they are cooked or pickled.

The world's top Paralympic gold medallist, David Weir credits his success to drinking beet juice regularly. It is believed that nutrients in beets boost stamina. World's top commercial growers of beets include USA, Russia, Poland, Germany and France.

## History of Beets

The beets we see today have evolved from wild sea-beet, a native along coasts from India all the way to Britain. The earliest recorded mention of beets is seen in the 8<sup>th</sup> century B.C.E in Mesopotamia. According to Roman and Jewish sources beets were already domesticated by the 1<sup>st</sup> century B.C.E. in the Mediterranean basin. It was the leaves of the very first domesticated varieties that were used for consumption. Remains of beet have been unearthed at the 3<sup>rd</sup> century Saqqara pyramid located at Thebes, Egypt, and burnt beets have also been discovered at a Neolithic site in the Netherlands. It is believed that the name of the vegetable is derived from the Greek letter beta, as the inflated root looks like the Greek B.

Romans cultivated beets intensely and their recipes included cooking beets with wine and honey. Apicius, a well-known gourmet of the times, used them in broths and even suggested using them in salads dressed with mustard, vinegar and oil in his book entitled "The Art of Cooking". Initially beets were more valued for their

medicinal properties rather than for food value. They were used as treatment for fevers, wounds and various skin disorders, and constipation. In those days the beet root was longer and thin, resembling a carrot. The rounded shape more common now, did not come into existence until the 16<sup>th</sup> century.

Beet root grew in popularity during the Victorian times when it was used in cakes and puddings in addition to soups and salads. In the middle 1700s Andreas Marggraf, a German chemist identified sucrose in beets. Later one of his students constructed a sugar beet processing factory which was operational from 1801 until its destruction in the Napoleonic Wars. After World War II, the pickled forms of the vegetable were used most frequently. Beets were introduced to North America by the colonists, and were well established by the 18<sup>th</sup> century. George Washington is known to have used beets to carry out experiments at Mount Vernon.

## **Health Benefits of Beets & Stems**

Root beets and their greens are a treasure trove of health benefiting nutrients with powerful antioxidant characteristics. Betacyanin is the pigment that gives beet root its rich colour, but more importantly it is an antioxidant. Antioxidants along with the carotenoids and flavonoids are believed to play a role in reducing the oxidation of LDL (bad cholesterol) and preventing its deposits in the arteries. This helps to protect the walls of blood vessels, and reduce blood pressure & cut down on heart attack risks. The betacyanin also helps to rid the body of dangerous toxins while averting development of cancerous tumors like leukemia, lung, colon, skin, breast, liver and prostate. The carotenoids, zeaxanthin and lutein in raw beets aid in maintaining the health of the retina.

The folic acid in beet roots is necessary for normal tissue growth and the development of a baby's spinal cord. It also aids in preventing spinal cord defects like spina bifida. The iron is great for mothers to be also, as it provides an energy boost to mothers experiencing fatigue during pregnancy while preventing anaemia.

Silica in the beet root helps the body to fully absorb calcium, which is needed for healthy bones, thereby lowering the risks of osteoporosis. Even though beets contain a lot of sugar, it has almost no fat and few calories. Its low (2.9) Glycaemic Load means its conversion to sugars is very slow, thus making it a good candidate for keeping sugar levels stable. The high content of nitrates in beets helps to postpone progression of dementia. The nitric oxide produced in the blood upon consumption of beets helps to increase blood flow to the brain.

Beetroot was used as an aphrodisiac by ancient Romans. Science tells us that the high content of boron in beets is directly linked with human sex hormone production. Being a high fibre food, consumption of beets aids in digestion and colon cleansing. The oxalic acid in raw beets dilutes inorganic calcium remnants in

the body. Remains of inorganic calcium are linked with many chronic diseases like arthritis, eye problems, arteriosclerosis, heart disease and kidney stones.

## **Nutritional Value of Beets & Greens**

Each 100 gram serving of beetroot only has 38 kcal, but 1.7 grams of protein, 1.9 grams of fibre and 7.6 grams of carbohydrates. It has almost no fat (0.1g) and only 0.1 grams of sodium. The same one hundred gram serving provides 8% of the Recommended Daily Amount of vitamin C, 75% Folic Acid, 11% potassium, 7% iron, 3% zinc and 4% magnesium for the average adult women. A mere three baby beetroots provide one out of the five recommended portions of vegetables and fruit.

The greens of beets are a great source of carotenoids, flavonoids, antioxidants, and vitamin A. These compounds are found in greater quantities in the green than in the root of the beet. Vitamin A is needed for hearty mucus membranes, skin and good vision.

## **How to Use Beets**

Prepare beets by rinsing them under cold water, while being careful not to tear the skin. Beet juice can stain the skin, so use gloves; if hands still get stained, then just rub lemon juice on the affected area to remove the stain. To ensure that you get the maximum nutritional benefits from beets, it is best not to over-cook them. Steaming the vegetable for fifteen minutes preserves their nutritional value and flavour.

Beets bleed quite a bit when put in water. To limit bleeding and preserve maximum amounts of nutrients, it is best to leave at least 1 inch of the greens on top and the entire root intact. Then boil them whole and unpeeled. Once soft, remove from heat and allow them to cool sufficiently so they can be handled with ease. Now roots and if desired the stems too may be removed and the skin just rubbed off. In this condition they can be diced, chopped, sliced or even grated for use in desired recipes.

To roast beets, remove the greens and root and peel the beet. Next, slice them and place them in a roasting pan topped off with a light coating of oil. Sprinkle salt, dried thyme, oregano, and dill to taste and roast at 400° F for approximately 25 - 30 minutes. Other methods of cooking beets include steaming, sautéing, or just consuming raw.

Beet greens are not only edible but very healthy also. Greens should be prepared soon after purchase to gain full benefit of their nutrients. Wash the greens thoroughly under cold running water then chop coarsely. Place in a sauce pan with

about half an inch of water. Greens cook down a lot so make sure you start with plenty of them! Squeeze the juice from one lemon in the cooking water and add salt to taste. Cook over high heat without cover, once the water is all evaporated and the greens soft, they are ready to be eaten.

Juicing beet roots is one of the best ways to get the full benefit of nutrients in this vegetable. Whether on their own or in combination with other ingredients, they provide a refreshing way to quench your thirst. Here is a great tasting recipe you should try.

### **Zesty Beet, Pineapple & Cucumber Juice**

- 1 small beet root (may even use a couple of inches of the greens)
- 1 small cucumber
- 1 cup of pineapple pieces

#### **Directions:**

- Clean the beet root thoroughly, ensuring that all the dirt has been removed.
- If the cucumber is waxed, peel it, otherwise just wash it and it is ready for use.
- Remove the pineapple skin and chop into pieces, (only one cup is required, the remaining may be saved for later use.)
- Press all fruits through a juicer and serve chilled in tall glasses.

## **Clinical Trials**

There are numerous clinical trials that back the health benefits of beet roots. One such study published in the online journal of American Heart Association '*Hypertension*' discovered beets lowered blood pressure within 24 hours of drinking beet root juice<sup>1, 2</sup>. This is good news for people with high blood pressure as it provides a natural way to control blood pressure and perhaps one day limit the use of medicines.

In a separate study, it was found that the betacyanin in beet roots slows the growth of breast and prostate tumours by over 12 percent<sup>3</sup>. This is great news because the slowdown of cancer translates into more time for treatment of the cancer before it gets to the fatal stage.

Drinking beet root juice enhances stamina to exercise up to 16% longer. A University of Exeter study found that the nitrates in beet root juice reduce the oxygen intake, thus making exercise less tiresome. This level of reduction in oxygen intake cannot be attained by any other known means. Other than athletes, this finding can benefit the elderly and those suffering from metabolic, respiration, and cardiovascular diseases<sup>4</sup>.

## **Resources:**

<sup>1</sup><http://www.qmul.ac.uk/media/news/items/smd/31048.html>

<sup>2</sup><http://www.nutritionj.com/content/11/1/106>

<sup>3</sup><http://www.ncbi.nlm.nih.gov/pubmed/21434853>

<sup>4</sup>[http://sshs.exeter.ac.uk/news/research/title\\_37371\\_en.html](http://sshs.exeter.ac.uk/news/research/title_37371_en.html)

## The End?

I hope you enjoyed this short preview of the Fruit & Vegetable Bible. While it only contained the first three chapters, the full book contains 46.

The full book includes all of the following fruit, vegetables and herbs:

- Alfalfa Sprouts
- Apples
- Asparagus
- Basil Leaves
- Beets With Leaves & Stem
- Blackberries
- Blueberries
- Broccoli
- Brussels Sprouts
- Cabbage
- Cantaloupes
- Carrots
- Cauliflower
- Celery
- Cilantro & Coriander Seeds
- Cranberry
- Cucumber
- Dandelion Greens
- Fennel
- Figs
- Garlic
- Ginger
- Grapefruit
- Grapes
- Green Beans
- Jicama
- Jerusalem Artichoke
- Kale
- Kiwifruit
- Lemon
- Lettuce
- Mint
- Onion
- Oranges
- Parsley
- Pears
- Pineapple
- Radishes
- Raspberries
- Spinach
- Strawberry
- Tomatoes
- Turmeric
- Turnips
- Watermelon
- Wheatgrass

## Where can you buy this book?

The book is currently available on Amazon in both Kindle format and paperback.

Kindle Format: <http://smarturl.it/fvb-k>

Paperback: <http://smarturl.it/fvb-p>

Or, if you prefer, you can visit your local Amazon and just search for the book by its “ASIN” number (the unique number Amazon assign a book).

The ASIN for the Fruit & Vegetable Bible is **B00JVPLDVO**

**NOTE: Those are number 0 in the ASIN, not the letter O.**

## Juicing the Rainbow

If you like my book, you will probably find my website interesting too.

<http://JuicingTheRainbow.com>

Juicing the Rainbow is not just a site about juicing. You will find some delicious juicing and smoothie recipes, but you'll also find a lot of additional information on the health benefits of fruit and vegetables, as well as traditional uses for healing and good health. Pop by and say hello!

In addition, you can sign up here for a free weekly newsletter offering tips, advice and recipes:

<http://juicingtherainbow.com/juicing-tip-newsletter/>

To your good health and happiness,

Andrew Williams