



***Allium cepa*: A traditional medicinal herb and its health benefits**

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Abstract

Allium cepa is highly valued for its therapeutic properties. It has been used as a food remedy from time immemorial. Research shows that onions may help guard against many chronic diseases. That's probably because onions contain generous amounts of the flavonoid quercetin. Studies have shown that quercetin protects against cataracts, cardiovascular disease, and cancer. In addition, onions contain a variety of other naturally occurring chemicals known as organosulfur compounds that have been linked to lowering blood pressure and cholesterol levels. Although rarely used specifically as a medicinal herb, the onion has a wide range of beneficial actions on the body and when eaten (especially raw) on a regular basis will promote the general health of the body. The bulb is anthelmintic, anti-inflammatory, antiseptic, antispasmodic, carminative, diuretic, expectorant, febrifuge, hypoglycaemic, hypotensive, lithontripic, stomachic and tonic. When used regularly in the diet it offsets tendencies towards angina, arteriosclerosis and heart attack. This is used particularly in the treatment of people whose symptoms include running eyes and nose. The onions ability to relieve congestions especially in the lungs and bronchial tract, is hard to believe until you have actually witnessed the results. The drawing of infection, congestion and colds out of the ear is also remarkable. The onion will relieve stomach upset and other gastrointestinal disorders and it will also strengthen the appetite. Pharmacologically known as *Allium cepa*, onion is found in every household. The purple skinned onion tastes great. Additionally, it has several health benefits and is part of many home remedies and beauty solutions.

Key words: *Allium cepa*, sexual debility, appetizer.

Introduction

Allium cepa is usually thought of as a vegetable, It is also has a long history of medicinal use. Mainly the fleshy bulb that grows below the ground is used medicinally as well as for food but other parts of the plant also has a place in the traditional medicines. *Allium cepa* is the common onion. Although it is usually thought of as a vegetable, *A. cepa* also has a long history of medicinal use. Onions are perennials that are cultivated for food worldwide. There are many varieties. Most onion bulbs are white, yellow, or red. The green stems and leaves are hollow and can reach 3 ft (1 m) in height. The plants bear small flowers that are usually white or purple. The fleshy bulb that grows below the ground is used medicinally as well as for food. Onion is believed to have a positive effect on the circulatory system. It has been used as a diuretic to reduce swelling. It is also thought to help reduce arteriosclerosis by lowering blood cholesterol levels and preventing the formation of blood clots. Onion has been used to treat diabetes and is reputed to lower blood sugar levels. Externally; fresh onion juice is used to prevent bacterial and fungal infections. It can be applied to wounds and stings on the skin, used to remove warts, used to stimulate hair growth, and even used to reduce unwanted skin blemishes. Warm onion juice dropped in the ear is said to help relieve earache. Baked onion is used to draw pus from abscesses. Modern scientific research supports many of the traditional uses for onion. Onion contains thiosulphinate, a compound that is effective in killing many common bacteria, including *Salmonella typhi*, *Pseudomonas aeruginosa*, and *Escherichia coli*. This finding supports the folk use of onion to treat wounds and skin infections and possibly its use for an upset stomach. Even more supportive are small clinical studies on humans that show that both fresh onions and commercial onion extracts actually lower blood cholesterol levels, lower blood pressure and help prevent the formation of blood clots. Although these studies have been done on only a small number of people, they are consistently supported by additional data from animal and test-tube studies. Onions are perennials that are cultivated for food worldwide. There are many varieties. Most onion bulbs are white, yellow, or red. The green stems and leaves are hollow and can reach 3 ft (1 m) in height. The plants bear small flowers that are usually white or purple. The fleshy bulb that grows below the ground is used medicinally as well as for food. Onions are members of the lily family. Onion is believed to have a positive effect on the circulatory system. It has been used as a diuretic to reduce swelling. It is also thought to help reduce arteriosclerosis by lowering blood cholesterol levels and preventing the formation of blood clots. Onion has been used to treat diabetes and is reputed to lower blood sugar levels. Externally; fresh onion juice is used to prevent bacterial and fungal infections. It can be applied to wounds and stings on the skin, used to remove warts, used to stimulate hair growth, and even used to reduce unwanted skin blemishes. Warm onion juice dropped in the ear is said to help relieve earache. Baked onion is used to draw pus from abscesses. Modern scientific research supports many of the traditional uses for onion. Onion contains thiosulphinate, a compound that is effective in killing many common bacteria, including *Salmonella typhi*, *Pseudomonas aeruginosa*, and *Escherichia coli*. This finding supports the folk use of onion to treat wounds and skin infections and possibly its use for an upset stomach. The main properties of onion include antimicrobial activity, cardiovascular support, hypoglycemic action, antioxidant/anticancer effect, and asthma protection. More research is needed in the area of asthma treatment, although certain compounds are said to inhibit bronchoconstriction. The bulb contains certain sulfur compounds that are known to be antimicrobial. The onion also may be of benefit in cardiovascular disease, as it possesses hypolipidemic effects and has antiplatelet actions, retarding thrombosis. But

certain lipid-reducing and blood pressure-lowering effects in humans have not yet been clinically proven. Some studies have been performed concerning diabetes treatment by onion with promising results in animal experimentation. Although more research is needed on the use of onion as a treatment for diabetes in humans, many articles describe onion's benefits in improving glucose levels. The onion also is a proven antioxidant and may be helpful in treating certain cancers. More clinical research is needed to understand the many medicinal benefits of onion.

Botanical Source

The common onion is a biennial garden plant, having a scape, which appears the second year, 2 to 4 feet high, being naked, smooth, straight, stout, swollen at the base, and fistulous, bearing at the top a round umbel of greenish-white flowers. The leaves are round and fistulous, of a shining green color, acute, and shorter than the stem. The part employed is the bulb.

Description

The onion is a tunicated bulb, compressed or round, or oblong in figure, invested with a shining, thin, dry membrane, of a reddish or white color. It is less pungent to the taste than garlic, with some degree of sweetness, and a peculiar, well-known odor. Onion bulbs are of various shapes and sizes, usually globular, the layers being juicy.

Scientific classification

Kingdom: Plantae

Division: Magnoliophyta

Class: Liliopsida

Order: Asparagales

Family: Alliaceae

Genus: *Allium*

Species: *A. cepa*

Edible Parts: Flowers, Leaves, Root, Seed.

Action and Medical Uses

Onion possesses properties allied to those of garlic, but in a milder degree, and the absorption of its oil and influence upon the system is somewhat similar to that of the oil of garlic. Onions do not agree with all persons, especially dyspeptics, in whom they favor the production of flatus, which, however, is a common symptom among all those who eat largely of them; boiling, in a great measure, deprives them of this property. Sugar and onion-juice form a syrup, much used in domestic practice, for *cough* and other affections of the air-tubes among children. A roasted onion employed as a cataplasm to suppurating tumors, or to the ear in *otitis*, has proved beneficial. A saturated tincture of onions made with good Holland gin, has been found serviceable in *gravel* and dropsical affections. A cataplasm of onions pounded with vinegar, applied for a number of days, and changed 3 times a day, has been found to cure corns and bunions.

Green Onion as Alternative Medicine

- ❖ It is mainly used as a traditional medicine for common cold.
- ❖ It stimulates the respiratory tract and helps in expelling sputum (phlegm).

- ❖ It contains essential oils that stimulates the sweat glands and promote sweating.
- ❖ It normalizes blood pressure.
- ❖ It increases appetite.
- ❖ It helps prevent diarrhea.
- ❖ It is rich in sulfur, an essential element that kills or inhibits fungus infections.
- ❖ It inhibits cancer cell growth especially colon cancer. Green onion's anti-colon cancer properties are well known among traditional healers around the world.
- ❖ It contains vitamin A and C. The white part of it has calcium, too.
- ❖ It is a good appetizer.

Topical Application of Green Onion

For Sore Throat

Cut the green onion's white part into pieces. Put it in a cloth bag and steam it for a hot compress. You can also mix the green onion with grated ginger and some salt. Wrap the hot bag in a towel or gauze and place it over the throat, chest, soles, palms, back, and armpits. It promotes perspiration and lowers the heat and pain. This method is known since the ancient times, and it is as good as commercially sold plasters.

For Swollen Feet

Boil the whole green onion for a few minutes. Grind it and mix with a little water just enough to make a paste, and then place it to the swollen part of your feet. This simple method is used since hundreds of years ago by our ancestors.

Side Effects of Onion

The toxicity of large doses of onion has been unresolved, but the stomach may be affected. Frequent contact with onion seeds has been reported as an occupational allergen.

Dosage

Most human studies that have shown an effect from onions used at least 25 grams per day and often two to four times that amount. Though some studies have found cooked onions acceptable, several studies suggest that onion constituents are degraded by cooking and that fresh or raw onions are probably most active. If a tincture, syrup, or oil extract is used, 1 tablespoon three times per day may be necessary for several months before effects are noted.

Toxicology

Certain sulfur compounds (eg, propanethial-s-oxide) escape from the onion in vapor form and hydrolyze to sulfuric acid when it is cut, causing the familiar eye irritation and lacrimation. Corneal swelling from onion exposure has been reported. Using a sharp knife also minimizes the crushing of onion tissue and liberation of volatiles, and cutting an onion under running water avoids lacrimation. Ingestion of onion seems relatively safe, as the *German Commission E* lists no contraindications, side effects, or interactions from the plant. With large intake, the stomach may be affected, and frequent contact with onion rarely may cause allergic reaction. The onion seeds have been reported as an occupational allergen. Onion toxicity is only associated with high intake. A review of onion discussing ingestion of large amounts of the bulb finds toxicity unresolved.

Food Value of Onion

Onion which derived its name from the Latin *Onio* and French *Oignon*, has been described by some one as the dynamite of all natural foods. Compared with other fresh vegetables, it is relatively high in food value, moderate in protein content and is rich in calcium and riboflavin. There is considerable variation in composition between different varieties and it also varies with the stage of maturity and the length of storage. The odor in onion is due to organic sulphur compounds, and is produced only when they are cut or injured, by enzyme action on a water-soluble amino acid. Heating, freezing and drying prevent the enzyme action. That is why cooking produces a different odor, flavor and pungency. The pungent flavor is appreciated by many people in many countries. The strong odor lingers for a considerable amount of time after consumption. It is said to be due to small particles retained in the mouth which cannot always be removed by brushing. Onion is one of the vegetables which has the best keeping quality. The dried cured bulbs may be kept for several months without deterioration and can stand rough handling.

Food value of onion

Values per 100 gms edible portion

Moisture	86.6%	Calcium	47 mg
Protein	1.2%	Phosphorus	50 mg
Fat	0.1%	Iron	0.7 mg
Minerals	0.6%	Vitamin C	11 mg
Fibre	0.4%	Carbohydrates	11.1%

Medicinal uses of onion

Due to the anti-inflammatory agents in onions they help reduce the severity of symptoms associated with conditions such as the pain and swelling of the osteo- and rheumatoid arthritis, the allergic inflammatory response of asthma, and the respiratory congestion associated with common colds. The onions anti-inflammatory effects are not only due to their vitamin C and quercetin, but other active components called isothiocyanates have made onions a good ingredient for soups and stews during cold and flu season. WHO recommends the use of fresh onion extracts for treating coughs, colds, asthma, bronchitis and also relieving hoarseness. The World Health Organization also supports the use of onions for the treatment of appetite loss and preventing atherosclerosis. Similar to garlic, the regular consumption of onion lowers blood pressure and the serum levels of cholesterol and triglyceride, while increasing HDL levels. As a result, it prevents atherosclerosis and diabetic heart disease, and reduces the risk of heart attacks or strokes. Onions are considered as one of the small number of vegetables which reduce heart disease risk. This beneficial effect is attributed to its vitamin B6, which lowers homocysteine levels, an important risk factor for heart attacks and strokes. Onions are natural anti-clotting agents due to their sulfur content. In ancient Greece, large quantities of onion were consumed in order to lighten the balance of blood. The high amount of fructo-oligosaccharide in onions stimulates the growth of healthy bacteria and suppresses the potentially harmful bacteria in the colon such as *Bacillus subtilis*, *Salmonella*, and *E. coli*. Sulfides in onion extracts provide protection against tumor growth especially stomach and colon cancer. Roasted

onions are good for earaches. They have also been recommended for treating headaches, snakebites, hair loss and infertility in women. In many parts of the world, onions are used to heal blisters and boils. Products containing onion extract (such as Mederma) are used to treat scars, they also relieve itching secondary to allergy. In homeopathy, *Allium cepa* is used for rhinorrhea and hay fever. Onions are believed to be effective in diabetes. Its Allyl propyl disulfide and chromium can decrease fasting blood glucose levels, improve glucose tolerance, and lower insulin levels. Onions may be especially beneficial for women, who are at increased risk of osteoporosis during the menopause. Onion's gamma-L-glutamyl-trans-S-1-propenyl-L-cysteine sulfoxide (GPCS) inhibits the osteoclasts (the cells which break down bone) activity and fights osteoporosis. Onion syrup is useful in extracting renal stones. Onions are also a recommended treatment for edema due to their diuretic effect. They also promote the menstrual periods.

Health Benefits of Onion

Several parts of the plant have a place in the traditional medicines. The seeds of onion increase semen and relieve dental worms and urinary diseases. The stalks of onion are a source of Vitamin A, thiamin and ascorbic acid are used in both tender and mature stages.

Respiratory Disease :- Onion is said to possess expectorant progenies. It liquefies phelgm and prevents its further formation. It has been used as a food remedy for centuries in cold, cough, bronchitis and influenza. Equal amounts of onion juice and honey should be mixed and three to four teaspoon of this mixture should be taken daily in these conditions. It is one of the safest preventive medicine against common cold during winter.

Tooth Disorders :- Latest researches of Russian doctors have further confirmed the bactericidal properties of onion. According to these findings, if a persOn consumes one raw onion every day by thorough mastication, he will be Protected from a host of tooth disorders. The Russian Doctor, B.P. Tohkin, who has contributed to this research, has expressed the opinion that chewing raw onion for three minutes is sufficient to kill all the germs in the mouth. Toothache is often allayed by placing a small piece of onion on the bad tooth or gum.

Anemia :- Onions are noted for their easily assimilate iron content. They are, therefore, beneficial in the treatment of anemia.

Heart Disease :- Recent researches in the West have established onion as an effective preventive food item against heart attack. Dr. N.N. Gupta of the K.G. Medical College, Lucknow, in 1966, and a panel of doctors in England in 1968 have stated that onion has been found helpful and beneficial in diseases of the heart. According to .them these benefits are due to the presence of essential oil, aliypopyl disulphide, catechol, protocatechnic acid, thiopropiono atdehyde, thiocyanate, calcium, iron, phosphorus and vitamins in onion. Dr. N. Radhakrishnan, Principal of the Trivandrum Medical College and Dr. K. Madhavan Kutty have established, after seven years of research, that to get rid of coronary heart or blood pressure disorders and one should take 100 gms. of onion per day. The onion are very valuable in heart diseases as they correct thrombosis and also reduce blood cholesterol.

Sexual Debility :- Onion is one of the most important aphrodisiac foods. As an aphrodisiac, onion stands second only to garlic. It increases libido and strengthens the reproductory organs. The white variety of onion should be peeled off, crushed and fried in pure butter. This mixture

acts as an excellent aphrodisiac tonic if taken regularly with a spoon of honey on an empty stomach. The powder of black gram when dipped in the juice of onion for seven days and then dried, produces a mixture called kanji. This also acts as an aphrodisiac.

Skin Disorders :- Onion is irritating to the skin and stimulates the circulation of blood in the mucous membrane. Warts also sometimes disappear if rubbed with cut onions. Roasted or otherwise, onions are applied as a poultice to boils, bruises, wounds, etc., to bring the boils to maturity by its heaty sensation.

Ear Disorders :- Onion juice dipped on cotton wool and put into the ear is a popular Russian remedy for ringing sound in the ears. Dropped hot in the ear, it relieves earache.

Cholera :- Onion is an effective remedy for cholera. About 30 grams of onion and seven black peppers should be finely pounded in a pestle and given to the patient of cholera. It allays thirst and restlessness and the patient feels better. It also lessens vomiting and diarrhea immediately. An addition to little sugar to the recipe will increase its effectiveness.

Urinary System Disorders :- Onions are highly beneficial in the treatment of urinary system disorders. For burning sensation in urine, six grams of onion should be boiled in 500 ml. of water. It should be removed from the fire when half the water has evaporated. It should then be strained, allowed to cool and given to the patient as a drink. It will relieve the burning sensation in urine. Onion rubbed in water and mixed with 60 grams of sugar will be useful in retention of urine. It will bring about free urination within a short time.

Bleeding Piles :- Onions are valuable in bleeding piles. About 30 grams of onions should be finely rubbed in water and 60 grams of Sugar added to it. It should be taken twice daily by the patient. It will bring relief within a few days.

- ❖ A multi-faceted heart-blood medicine
- ❖ Taking 12 gms of onion juice mixed with the same quantity of honey for 21 days increases virility.
- ❖ Boosts beneficial HDL cholesterol
- ❖ Thins the blood
- ❖ Eating onion helps to clear phlegm from the throat and mouth. Teeth becomes white, it sharpens the memory and strengthens the nerves.
- ❖ Lowers total blood cholesterol
- ❖ Retards blood clotting
- ❖ Regulates blood sugar
- ❖ Kills bacteria
- ❖ Drinking the mixed juice of onion and memordica charantia (karela) cures severe indigestion.
- ❖ Eating white onion with raw sugar and some turmeric powder daily in the morning and evening time cures jaundice.
- ❖ Giving onion with raw sugar to children help them to gain height.
- ❖ The onion after being crushed and boiled clears phlegm.
- ❖ One spoonfull of onion juice eliminates the worms in the stomach of children.
- ❖ Applying onion juice on the hair eliminates lice.

Medicinal Importance and Application

Health benefits of Onion include substantial relief from number of diseases such as common cold, asthma, bacterial infections, respiratory problems, angina, and cough. Onions are also known to repel blood thirsty insects. In other words, you may say that onions are godsend gifts. Onions are known to possess curative value from ancient time. Even the World Health Organization confirms that onions are best for people with less appetite and those suffering from atherosclerosis. Health experts acknowledge the fact that onions do provide great respite to patients having chronic asthma, allergic bronchitis, common cough and cold syndrome. Health benefits of onion are available due to presence of sulphur compounds and quercetin, in traces of essential oils. These are very effective antioxidants that aid in neutralizing the free radicals present in the human body. Onions have been used from many centuries by human beings for medicinal purposes. Onion also contains mineral components such as calcium, magnesium, sodium, potassium, selenium and phosphorus. The antibacterial properties of onion teemed with antifungal uses have made it a household name. The onion plant can be grown on well-drained and moist soil. You can even grow them in your own backyard or garden and reap its health benefits. They form an important part of culinary preparations. They are also known as 'companion plants', for other types of vegetables.

Some of the valued health benefits of onions are as follows:

- **Good Oral Health:** Onions are often used to prevent tooth decay and oral infections. Chewing raw onions for 2 to 3 minutes could possibly kill all the germs present in the mouth area.
- **Treatment for Heart Ailments:** Onions aids in thinning of the blood, which in turn prevents the red blood cells from forming clumps. These blocks could lead to heart disorders or cardiovascular diseases.
- **Glowing Skin:** Onion juice mixed with honey or olive oil is said to be best treatment for acne condition.
- **Treatment for Cough:** Consuming equal mixture of onion juice and honey can relieve sore throat and cough symptoms.
- **Used as Insect Repellent:** You can apply onion juice to reduce the pain caused due to honey-bee bite. Fresh onion juice or paste can be used for external applications for insect bites and scorpion stings.
- **Boost Sexual Drive:** Onions are said to increase the urge for healthy sexual life. One table spoon of onion juice along with spoonful of ginger juice, taken trice a day can boost the libido and sex drive.
- **Treatment of Anaemic Condition:** Even anaemic conditions can be improved by eating onions along with jaggery and water.
- **Relieves Stomach Ache:** Onions have anti-inflammatory and anti-bacterial properties that give relief to upset stomach and related gastro syndromes.
- **Treating Urinary Disorders:** For those suffering from burning sensation during urination, onions can provide considerable relief. The patient should drink water boiled with 6 to 7 gm of onion.
- **Prevention of Cancer:** Onions are rich in active compounds that successfully inhibit the development of cancerous cells.

- Relieving Earache: A few drops of onion juice may actually prove immensely beneficial to individuals suffering from acute earache. The ringing sound in the ear may be cured by applying onion juice through cotton wool.
- According to Peace Health, onions have been useful for treating various human diseases such as tumours, persistent coughs and cold. Medicine practitioners consider this plant form as a perfect home remedy for relieving disease syndromes. Peace Health further states that onion consumption can help in prevention of stomach and breast cancer.
- Onions Consist of Sulphur Rich Compounds- The medical studies reveal that these sulphur compounds stop biochemical chain formations that could possibly lead to an asthmatic condition. Onions facilitates the melting of phlegm in a patient suffering from severe cough. Fresh onion juices are said to be applied to patients who become unconscious, for bringing vigour and energy back into the patient.

Conclusion

Onions secretes a lot of phytoncids killing pathogenic microbes, this is why it is widely used as remedy for catarrhal diseases: flu, angina, suppurative lung inflammation, catarrh and cough. Onion is used for the treatment of bronchial asthma. Onion prevents from prostatic hypertrophy. Even in ancient Egypt onion decoction was considered an aphrodisiac. Onion prevents atherosclerotic plaques. Onions reduce blood coagulation, prevents atherosclerosis and other cardiovascular diseases. One onion bulb can have the same effect as cardio aspirin. This vegetable improves kidney function and absorbs nitrogen from blood. Onion also has an anticarcinogenic effect. It stimulates digestion and regulated bowels function removing active microorganisms. As we see, onion is very beneficial to your health. Medical properties of onion exceed those in many drugs, which normally have side effects. Several parts of the plant have a place in traditional medicines. The seeds of onion relieve dental worms and urinary diseases. The stalks of onion are a source of Vitamin A, thiamin and ascorbic acid. They are used in both tender and mature stages.

References

- [1] Chevallier, Andrew. *Encyclopedia of Medicinal Plants*. London: Dorling Kindersley, **1996**.
- [2] PDR for Herbal Medicines. Montvale, N. J.: Medical Economics Company, **1999**.
- [3] Peirce, Andrea. *The American Pharmaceutical Association Practical Guide to Natural Medicines* New York: William Morrow and Company, **1999**.
- [4] Hwang, Y. H., et al. *Archives of Environmental Health* 57, **2002**: 78-84.
- [5] Racchi, M., et al. *Journal of Agricultural and Food Chemistry* 50 (February **2002**): 1272-1277.
- [6] Onion. Review of Natural Products. Available from Wolters Kluwer Health, Inc. Accessed April 17, **2007**.
- [7] Hedrick. U. P. *Sturtevant's Edible Plants of the World*. Dover Publications **1972** ISBN 0-486-20459-6.
- [8] Grieve. *A Modern Herbal*. Penguin **1984** ISBN 0-14-046-440-9.
- [9] Chiej. R. *Encyclopaedia of Medicinal Plants*. MacDonald **1984** ISBN 0-356-10541-5.
- [10] Simons. *New Vegetable Growers Handbook*. Penguin **1977** ISBN 0-14-046-050-0.