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NUTRITIONAL BENEFITS OF ONION

Onion is an important and indispensable item and can be found in almost every kitchen around the world. It is an important condiment and vegetable for Indians. The green leaves and bulbs are eaten either raw or used in the preparation of several recipes. It holds a great position in the Indian food market on account of its special characteristics of pungency and indispensability. This article focusses on the nutritional benefits of this important condiment.

Onions are used in soups, sauces and for seasoning foods. The small bulbs and shallots are pickled in vinegar or brine. Onions, and other allium species (over 900 types of onion), are highly valued herbs possessing a lot of culinary and medicinal values. Some of their beneficial properties can be seen after long-term usage.

Onion is useful for the prevention of cardiovascular disease, especially since it diminishes the risk of blood clots. Onion protects against certain infections and stomach cancer. Onion improves lung function, especially in asthmatics. The more pungent varieties of onion appear to possess the greatest concentration of health-promoting phytochemicals.

Scientific history of onion

The onion (*Allium cepa*), which is also called a bulb onion, common onion and garden onion, is the most widely cultivated species of the genus *Allium*. The genus *Allium* also contains a number of other species that are cultivated for food, such as the Japanese bunching onion (*Allium fistulosum*), Egyptian onion (*A. proliferum*) and Canadian onion (*A. canadense*).



Onions cultivated in a field

The name wild onion is applied to a number of *Allium* species. The vast majority of cultivars of *A. cepa* belong to the 'common onion group' (*A. cepa* var. *cepa*) and are usually referred to simply as onions. The aggregatum group of cultivars (*A. cepa* var. *aggregatum*) includes both shallots and bulb onions.

In onion, sulphur is a constituent of secondary compounds, that is, allin, cycloallin and thiopropanol. These secondary compounds not

only govern the taste, pungency and medicinal properties of onion but are also important for resistance against pests and diseases.

In overall cropping pattern, onion occupies about 0.1 per cent of gross cropped area (area under all crops in the country) and about 7 per cent of total area under all vegetable crops.

Maharashtra ranks top in onion production. Other major onion growing states in the country are Guja-

Table I

Production of Onion in India During 2012-13*

State	Production ('000 tonnes)	Share (per cent)
Maharashtra	4660.00	28.57
Karnataka	2395.90	14.69
Madhya Pradesh	2150.69	13.19
Andhra Pradesh	1458.80	8.94
Bihar	1308.63	8.02
Gujarat	704.38	4.32
Rajasthan	670.80	4.11
Haryana	518.48	3.18
Uttar Pradesh	455.81	2.79
Orissa	419.09	2.57
Total	14,742.58	—

*Third advance estimate
Source: National Horticulture Board (NHB)

rat, Orissa, Karnataka, Tamil Nadu, Madhya Pradesh, Uttar Pradesh and Andhra Pradesh. Onion represents the only item amongst fruits and vegetables where Indian figures are prominent than the world's production and export.

Some nutritional highlights of onions

1. Onions are a very good source of vitamin C, B6, biotin, chromium, calcium and dietary fibre. In addition, they contain a good amount of folic acid and vitamin B1 and K.
2. One hundred grams of serving provides 44 calories, mostly as complex carbohydrates, with 1.4gm of fibre.
3. Onions contain an enzyme called alliinase, which is released when an onion is cut or crushed and causes our eyes to water.
4. They also contain flavonoids, which are pigments that give vegetables their colour. These compounds act as antioxidants, have a direct antitumor effect and have immune-enhancing properties.
5. Onions contain a large amount of sulphur and are especially good

for the liver. As a sulphurous food, they mix best with proteins, as they stimulate the action of the amino acids to the brain and nervous system.

Onions are a rich source of quercetin

1. It is the richest dietary source of quercetin, a potent antioxidant flavonoid (also found in shallots, yellow and red onions), which is found on and near the skin and is particularly linked to the health benefits of onions.

2. Quercetin thins the blood, lowers cholesterol, raises good-type HDL cholesterol, prevents blood clots, fights asthma, chronic bronchitis, hay fever, diabetes, atherosclerosis and infections and is specifically linked to inhibiting human stomach cancer.

3. It is also an anti-inflammatory, antibiotic and antiviral. It is also a sedative. So far, there is no better food source of quercetin than onion skins.

Detoxify your body with onions

1. Onions contain a variety of organic sulphur compounds that provide health benefits.

2. Sulphur-containing amino acids are found in onions as well as garlic and eggs.

3. These specific amino acids are called methionine and cystine. Amongst other things, they are very good at detoxifying our body from heavy metals.

4. In fact, they are able to latch on to mercury, cadmium and lead and escort them out of the body.

5. Onions also contain vitamin C, which is excellent at detoxifying the body and is effective in removing lead, arsenic and cadmium. So increasing consumption of onions can help our body to get rid of these harmful metals.

Onions and heart

1. To help keep our blood free of clots, and make the most of the health benefits of onions, eat them both raw and cooked.

2. Prescribing onions to heart patients is a routine thing amongst cardiologists.

3. Here are some of the things that onions can do for our heart:

- (i) Boost beneficial HDL cholesterol
- (ii) Thin the blood
- (iii) Retard blood clotting
- (iv) Lower total blood cholesterol
- (v) Lower triglycerides
- (vi) Lower blood pressure.

Cancer prevention

1. Studies have revealed that the antioxidants present in onions can protect us against cancer by reducing the DNA damage in cells caused by free radicals.

2. All onions and onion relatives (garlic, leeks, chives and scallions or spring onions) are rich in organo-sulfur compounds, which have been shown to help prevent cancer in lab animals.

3. In fact, an onion extract was found to destroy tumour cells in test tubes and arrest tumour growth when the cells were implanted in rats.

4. The onion extract was shown to be unusually nontoxic, since a dose as high as forty times that of the dose required to kill the tumour cells had no adverse effect on the host.

5. In addition, shallots have been shown to exhibit significant activity against leukaemia in mice.

Other health benefits of onions

1. Onions have also been shown to have a significant blood sugar lowering action, even comparable to

some prescription drugs.

2. The active compound that seems to be responsible for lowering glucose works by competing with insulin for breakdown sites in the liver, thereby increasing the lifespan of insulin.

3. Onions have historically been used to treat asthma, too. Their action on asthma is due to their ability to inhibit the production of compounds that cause the bronchial muscle to spasm and relax.

4. Onions have potent antibacterial activity, destroying many disease-causing pathogens, including *E. coli* and salmonella.

5. The flavonoids in onion tend to be more concentrated in the outer layers of the flesh. To maximise health benefits, peel off as little of the fleshy, edible portion as possible when removing the onion's outermost paper layer. Even a small amount of overpeeling can result in unwanted loss of flavonoids. For example, a red onion can lose about 20 per cent of its quercetin and almost 75 per cent of its anthocyanins if it is overpeeled.

6. The total polyphenol content of onions is much higher than many people expect. (Polyphenols are one of the largest categories of phytonutrients in food. This category includes all flavonoids as well as tannins.) The total polyphenol content of onions is not only higher than its fellow allium vegetables, garlic and leeks, but also higher than tomatoes, carrots and red bell pepper. In the French diet, only six vegetables (artichoke heart, parsley, brussels sprouts, shallot, broccoli and celery) have a higher polyphenol content than onion. Since the French diet has been of special interest to researchers in terms of disease prevention, onion's strong polyphenol contribution will very likely lead to follow-up studies that pay closer attention to this unique allium vegetable.

7. Within the polyphenol category, onions are also surprisingly high in flavonoids. For example, on an ounce-for-ounce basis, onions rank in the top ten commonly eaten vegetables for their quercetin content. The flavonoid content of onions can vary widely, depending on the exact variety and growing conditions. Although the average onion is likely to contain less than 100mg of quercetin per 3.5 ounces, some onions do provide this amount. And while 100mg may not sound like a lot, in the United States, moderate vegetable eaters average only twice this amount for all flavonoids (not just quercetin) from all vegetables per day.

8. When onions are simmered to make soup, their quercetin does not get degraded. It simply gets transferred into the water part of the soup. By using a low-heat method for preparing onion soup, we can preserve the health benefits of onion that are associated with this key flavonoid.

9. When we get quercetin by eating an onion rather than consuming the quercetin in purified, supplement form, we may end up getting better protection from oxidative stress. That is exactly what happened in an animal study where some animals had yellow onion added to their diet in a way that would provide the same amount of quercetin provided to other animals in the form of purified quercetin extracts. The best protection came from the onion version of this flavonoid, rather than the supplement form.

10. Several servings of onion each week are sufficient to statistically lower our risk of some types of cancer. For colorectal, laryngeal, and ovarian cancer, between one and seven servings of onion have been shown to provide risk reduction.

Table I
Onion Nutrition Chart

Principle	Nutrient value	Percentage of RDA
Energy	40 Kcal	2
Carbohydrates	9.34gm	7
Protein	1.10gm	2
Total fat	0.10gm	0.5
Cholesterol	0mg	0
Dietary fibre	1.7gm	4.5
Vitamin Principle of RDA		
Folates	19µg	5
Niacin	0.116mg	1
Pantothenic acid	0.123mg	2.5
Pyridoxine	0.120mg	9
Riboflavin	0.027mg	2
Thiamin	0.046mg	4
Vitamin A	2 IU	0
Vitamin C	7.4mg	12
Vitamin E	0.02mg	0
Electrolytes		
Sodium	4mg	0
Potassium	146mg	3
Minerals		
Calcium	23mg	2
Copper	0.039mg	4
Iron	0.021mg	3
Magnesium	10mg	2.5
Manganese	0.129mg	5.5
Phosphorus	29mg	4
Zinc	0.17mg	1.5
Phyto-nutrients		
Carotene-beta	1µg	-
Cryptoxanthin-beta	0µg	-
Lutein-zeaxanthin	4µg	-

But for decreased risk of oral and oesophageal cancer, you will need to consume one onion serving per day (approximately half cup).

11. The pungent odour might keep you away from onions but they are totally worth it. They can be cooked in almost all the recipes and can be consumed very easily. Onions are loaded with many chemicals which keep you away from illness and also make us glow due to its detoxification properties.

12. An onion is an immediate

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cure for fever, common cold, cough, sore throat and allergies. A mixture of onion juice and honey can cure these problems easily.

13. A small piece of onion can work against the side effects of fever if it is kept on the forehead.

14. A small piece of onion when inhaled can stop or slow down the bleeding through the nose.

15. An onion a day can cure insomnia or sleeping disorders. This will surely give us a good night sleep.

16. Onions can improve digestive system. If we have digestion problem, then onions can cure it by increasing the release of digestive juices.

17. Onion juice can cure burnt skin or an insect bite or a bee bite. It can cause a burning sensation when applied but can heal very effectively.

18. We can protect ourselves from osteoporosis and atherosclerosis by consuming onions daily.

19. Onions increase insulin in the body and also treat diabetes by controlling the sugar levels in the blood.

20. The bad cholesterol that causes heart problems can be burned or removed with daily consumption of onions. Onions keep us stay safe from the coronary artery disease and protect the good cholesterol.

21. Inflammation from arthritis in the joints can be healed with onions.

22. Onions fried in sesame or castor oil can be used to heal any type of ache.

23. One of the well-known tricks to remove dark patches or pigments on our face is to apply onion and turmeric juice on that area. Onion juice is also used to cure ear and eye problems. This juice is used for infants as eye drops for clear vision.

24. Onion juice is also used for

toothaches and tooth decaying.

25. Onions have rejuvenation properties on the body tissues.

26. For a few types of moles, onion juice works efficiently by removing them.

27. Regular consumption of onions leads to good memory and strong nervous system.

28. Onions cure menstrual disorders. Raw onions should be consumed before a few days of the beginning of your cycle.

29. Use onion juice on hair or scalp to get rid of lice and hair fall. This is one of the most prominent benefits for hair.

30. Onions contain water, protein, fats, starch, fibres, minerals, calcium, vitamin C, iron and B complex.

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