

THE AMAZING TOMATO

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Introduction

Tomatoes are one of the vegetables in the nightshade (Solanaceae) family, which includes eggplant, bell peppers, and white potatoes; and in the past they were considered toxic, causing illnesses such as appendicitis, "brain fever", and cancer.

In reality, tomatoes may have just the opposite effect!

Tomatoes are rich in vitamin C, providing 40 percent of the daily value (DV). They also contain 15 percent DV of vitamin A, 8 percent DV of potassium, and 7 percent of the recommended dietary allowance (RDA) of iron for women and 10 percent RDA of iron for men.

The red pigment contained in tomatoes is called lycopene; and this compound appears to act as an antioxidant, neutralizing free radicals that can damage the body's cells. Recent studies have noted that lycopene may have twice the punch of beta-carotene - another well-known antioxidant.

Studies conducted at Harvard have discovered that men, who consumed 10 servings of tomatoes a week, or the equivalent to 10 slices of pizza, can cut the risk of developing prostate cancer by an astounding 45 percent.

However, the benefits of tomatoes are not limited to the prostate alone. Italian studies have found that those who consume more than 7 servings of raw tomatoes lower the risk of developing rectal colon or stomach cancers by 60 percent.

Israeli studies have found that lycopene is a powerful inhibitor of lung, breast, and endometrial cancer cells.

Research has also indicated that the lycopene in tomatoes can help older people stay active longer.

New research is beginning to indicate that tomatoes may be used to help prevent lung cancer. Two powerful compounds found in tomatoes (coumaric acid and chlorogenic acid) are thought to block the effects of nitrosamines. These are compounds that not only are formed naturally in the body, but also are the strongest carcinogen in tobacco smoke. By blocking the effects of these nitrosamines, the chances of lung cancer are reduced significantly.

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What to look for

When choosing tomatoes, pick those with the most brilliant shades of red. This indicates the highest amounts of betacarotene and lycopene. Although raw tomatoes are very healthful and beneficial, cooking them releases even more of their benefits.

Lycopene is located in the cell-wall of the tomato, so by cooking it in a small amount of oil, the lycopene is more fully released.

Moreover, cooking the tomato in olive oil allows the body to more effectively absorb the lycopene. Do not be concerned about the availability of "fresh tomatoes" - tomatoes do not lose any of their nutritional value in high heat processing; thus making tinned tomatoes and tomato sauce just as viable and beneficial as fresh tomatoes.

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Health Benefits of Tomatoes

Lycopene

In the area of food and phytonutrient research, nothing has been more intense in the last several years than studies on the lycopene in tomatoes. This carotenoid found in tomatoes, and everything made from them, has been studied for its antioxidant and cancer-preventing properties.

The antioxidant function of lycopene (its ability to help protect cells and other structures in the body from oxygen damage) has been linked in human research to the protection of DNA inside of white blood cells. Also, prevention of heart disease has been shown to be another antioxidant role played by lycopene.

In contrast to many other food phytonutrients, whose effects have only been studied in animals, lycopene from tomatoes has been repeatedly studied in humans and has been found to be protective against a growing list of cancers. These cancers now include colorectal, prostate, breast, endometrial, lung, and pancreatic.

Moreover, recent research describes how scientists are finding out that it is the array of nutrients included in tomatoes, including, but not limited to lycopene, that confers it with so much health value. However, it is important to be aware of the many benefits that lycopene provides.

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Always Choose Organic

Organic ketchup delivers three times as much of the cancer-fighting carotenoid, lycopene, as non-organic brands. So, for the most lycopene, choose the deepest red organic ketchup, tomato sauce, juice, and other tomato products.

Lycopene has been shown to help protect not only against prostate, but breast, pancreatic and intestinal cancers, especially when it is consumed with fat-rich foods, such as avocado, olive oil, or

nuts. The reason for this is that carotenoids are fat-soluble, which means that they are absorbed into the body along with fats.

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Colon Health

A study published in American Journal of Clinical Nutrition found that in subjects with colorectal adenomas, a type of polyp that is the precursor for most colorectal cancers, blood levels of lycopene were 35% lower compared to study subjects with no polyps.

Blood levels of beta-carotene also tended to be 25.5% lower, although according to researchers, this difference was not significant. In their final (multiple logistic regression) analysis, only low levels of plasma lycopene (less than 70 microgram per litre) and smoking increased the likelihood of colorectal adenomas. However, the increase in risk was quite substantial - low levels of lycopene increased risk by 230% and smoking by 302%!

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Prostate Health

Tomatoes have been shown to be helpful in reducing the risk of prostate cancer.

A 14-month study published in the Journal of the National Cancer Institute underscores the importance of a healthy whole foods diet, rich in tomatoes, in the prevention of prostate cancer.

In this study, laboratory animals fed a lycopene-rich diet and treated with N-methyl-N-nitrosourea (a carcinogen) and testosterone to induce prostate cancer had a similar risk of death from prostate cancer as rats fed a control diet. In contrast, animals fed whole tomato powder were 26% less likely to die of prostate cancer. By the end of the study, 80% of the control group and 72% of the animals fed lycopene had succumbed to prostate cancer, while only 62% of the animals fed whole tomato powder had died.

In addition to the controls and those animals receiving lycopene or tomato powder, each group was also divided into two sub-groups, one of which was given 20% less food than the other sub-group. Animals on the energy-restricted, tomato-based diet fared best of all, showing a 32% drop in their risk of dying from prostate cancer.

Researchers concluded this was due to the fact that tomatoes contain not merely lycopene, but a variety of protective phytonutrients and suggest that the lycopene found in human prostate tissue and the blood of animals and humans who remain free of prostate cancer may indicate exposure to higher amounts of not just lycopene but other compounds working in synergy with it. Study leader, Dr. Steven Clinton, Ohio State University, commented, "Our findings strongly suggest that risks of poor dietary habits cannot be reversed simply by taking a pill...if we want the health benefits of tomatoes, we should eat tomatoes or tomato products and not rely on lycopene supplements alone."

In an accompanying editorial, Peter H. Gann, of the Robert H. Lurie Comprehensive Cancer Centre at Northwestern University in Chicago, and Frederick Khachik, of the University of Maryland, College Park, remarked that this study supports those who advocate whole foods in the debate about whether cancer prevention is best achieved with whole foods or concentrated single compounds. They point out that carotenoids and other phytonutrients evolved as sets of interacting compounds, and that this complexity limits the usefulness of reductionist approaches that seek to identify single protective compounds.

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Further Studies

A meta-analysis of 21 studies published in *Cancer Epidemiology Biomarkers and Prevention* confirms that eating tomatoes, especially cooked tomatoes, provides protection against prostate cancer.

When the data from all 21 studies was combined, men who ate the highest amounts of raw tomatoes were found to have an 11% reduction in risk for prostate cancer. Those eating the most cooked tomato products fared even better with a 19% reduction in prostate cancer risk. Even eating just one 6-ounce serving a day of raw tomato provided some benefit—a reduction in prostate cancer risk of 3%.

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Tomatoes and Broccoli

Tomatoes and broccoli, which are two vegetables separately recognized for their cancer-fighting capabilities, are even more successful against prostate cancer when taken together.

"When tomatoes and broccoli are eaten together, we see an additive effect. We think it's because different bioactive compounds in each food work on different anti-cancer pathways," said John Erdman, Professor of Food Science and Human Nutrition at the University of Illinois.

Starting one month before, male rats were implanted with prostate tumours. Erdman fed the animals one of 5 different diets, and then compared the cancer-preventive effects of the diets to treatment with finasteride (a drug commonly prescribed for men with enlarged prostates, or surgical castration).

The diets contained one of the following: 10% tomato, 10% broccoli, 5% tomato plus 5% broccoli, 10% tomato plus 10% broccoli, or lycopene (23 or 224 nmol/g diet).

After 22 weeks, the prostate tumours weighed, and the 10% tomato/broccoli combination was shown to greatly outperform all other diets, shrinking prostate tumours by 52%.

Broccoli alone decreased tumour weight by 42%, and tomato alone by 34%.

Lycopene alone (23 or 224 nmol/g diet) came in last, reducing tumours weight by 7% and 18% respectively.

Only castration—a last resort option for most men, although it resulted in a 62% reduction in prostate tumour weight—approached the level of protection delivered by the tomato/broccoli diet. Said Erdman, "As nutritionists, it was very exciting to compare this drastic surgery to diet and see that tumour reduction was similar."

"Older men with slow-growing prostate cancer who have chosen watchful waiting over chemotherapy and radiation should seriously consider altering their diets to include more tomatoes and broccoli," said Canene-Adams.

To get the prostate health benefits seen in this study, a 55-year-old man would need to consume 1.4 cups of raw broccoli and 2.5 cups of fresh tomato, 1 cup of tomato sauce or ½ cup of tomato paste daily, said Canene-Adams.

Erdman noted that this study shows eating whole foods is better than taking isolated nutrients. "It's better to eat tomatoes than to take a lycopene supplement—and cooked tomatoes may be better than raw tomatoes. Chopping and heating make the cancer-fighting constituents of tomatoes and broccoli more bioavailable," he said.

Practical Tips

While the phytonutrients in tomatoes become more concentrated when they are cooked into a sauce or paste, and more bioavailable when eaten with a little oil, those in broccoli will be greatly reduced if this vegetable is overcooked. Steam or healthy sauté broccoli no more than 5 minutes.

Also, broccoli's cancer-preventive compounds form after it has been cut, but heat denatures the enzyme necessary for this process. For optimal nutrient formation, cut broccoli florets in half or into quarters, depending on their initial size, and let sit for 5 minutes before cooking.

Broccoli and tomatoes can make a delicious team at virtually any meal or snack:

- Healthy sauté broccoli and onion, then add to your favourite breakfast omelette and serve with grilled tomatoes.
- Enjoy a bowl of tomato soup along with a salad including broccoli florets for lunch.
- Add lightly steamed broccoli florets to the tomato-paste toppings on your favourite pizza.
- Healthy sauté broccoli florets along with other favourite vegetables, such as onions and mushrooms, add to pasta sauce and use to top whole wheat pasta or brown rice.
- For a quick snack, serve raw broccoli florets along with the carrot and celery sticks, dip and crackers, and toast your prostate's health with a glass of tomato juice.

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Tomatoes and Green Tea

Choosing to eat lycopene-rich tomatoes and regularly drink green tea may greatly reduce a man's risk of developing prostate cancer, suggests research published the *Asia Pacific Journal of Clinical Nutrition*.

In this case-control study involving 130 prostate cancer patients and 274 hospital controls, men drinking the most green tea were found to have an 86% reduced risk of prostate cancer compared, to those drinking the least.

A similar inverse association was found between the men's consumption of lycopene-rich fruits and vegetables such as tomatoes, apricots, pink grapefruit, watermelon, papaya, and guava. Men who most frequently enjoyed these foods were 82% less likely to have prostate cancer compared to those consuming the least lycopene-rich foods.

Regular consumption of both green tea and foods rich in lycopene resulted in a synergistic protective effect, stronger than the protection afforded by either, the researchers also noted.

Practical Tips

Get in the habit of drinking green tea and eating lycopene-rich foods.

- Take a quart of iced green tea to work and sip throughout the day or take it to the gym to provide prostate protection while replenishing fluids after your workout.
- Pack a small plastic bag of apricots and almonds in your briefcase or gym bag for a handy snack.
- Start your breakfast with a half grapefruit or a glass of papaya or guava juice.
- Begin lunch or dinner with some spicy tomato juice on the rocks with a twist of lime. Snack on tomato crostini: in the oven, toast whole wheat bread till crusty, then top with tomato sauce, herbs, a little grated cheese, and reheat until the cheese melts.
- Top whole wheat pasta with olive oil, pine nuts, feta cheese and a rich tomato sauce for lunch or dinner.

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Pancreatic Health

One of the deadliest cancers, pancreatic cancer progresses so rapidly that individuals with the disease who are participating in studies often die before their interviews can be completed. So the benefits noted in the following study of a diet rich in tomatoes and tomato-based products are especially significant.

In this 3-year Canadian study, published in the *Journal of Nutrition*, individuals with pancreatic cancer were age and gender matched with individuals free of the disease. After adjustment for age, province, body mass index, smoking, educational attainment, dietary folate and total caloric intake, the data showed that men consuming the most lycopene had a 31% reduction in their risk of pancreatic cancer.

Among persons who had never smoked, those whose diets were richest in beta carotene or total carotenoids reduced their risk of pancreatic cancer by 43% and 42%, respectively.

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How Tomatoes Promote Optimal Health

Research by Dr. Joseph Levy and colleagues from Ben-Gurion University of the Negev, Beer-Sheva, Israel, may have identified the unique mechanism through which lycopene protects against cancer: activating cancer-preventive phase II enzymes.

When the researchers incubated breast and liver cancer cells with lycopene, the carotenoid triggered the production and activity of certain phase II detoxification enzymes that other carotenoids, including beta-carotene, astaxanthin, and phytoene, did not. Since much epidemiological evidence indicates that lycopene acts synergistically with other phytonutrients to give tomatoes their protective effects, and recent studies have shown that eating tomato products prevents cancer more effectively than taking lycopene alone, the researchers concluded that other carotenoids stimulate phase II enzymes via different pathways from that used by lycopene.

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Significant Anti-Oxidant Protection

In addition to their centre-stage phytonutrient, lycopene, tomatoes are packed with traditional nutrients that have been shown in many studies to be helpful for all of the above conditions. For example, tomatoes are an excellent source of vitamin C and vitamin A, the latter notably through its concentration of carotenoids including beta-carotene. These antioxidants travel through the body neutralizing dangerous free radicals that could otherwise damage cells and cell membranes, escalating inflammation and the progression or severity of atherosclerosis, diabetic complications, asthma, and colon cancer. In fact, high intakes of these antioxidants have been shown to help reduce the risk or severity of all of these illnesses.

In addition, tomatoes are a very good source of fibre, which has been shown to lower high cholesterol levels, keep blood sugar levels from getting too high, and help prevent colon cancer. A cup of fresh tomato will provide 57.3% of the daily value for vitamin C, plus 22.4% of the DV for vitamin A, and 7.9% of the DV for fibre.

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Reduction in Heart Disease Risk

Tomatoes are a very good source of potassium and a good source of niacin, vitamin B6, and folate. Niacin has been used for years as a safe way to lower high cholesterol levels. Diets rich in potassium have been shown to lower high blood pressure and reduce the risk of heart disease. Vitamin B6 and folate are both needed by the body to convert a potentially dangerous chemical called homocysteine into other, benign molecules. High levels of homocysteine, which can directly damage blood vessel walls, are associated with an increased risk of heart attack and stroke. All of these nutrients work together and make tomatoes a truly heart-healthy food. In a cup of tomato, there is 11.4% of the daily value for potassium, 5.6% of the DV for niacin, 7.0% of the DV for B6, and 6.8% of the DV for folate.

The lycopene in tomatoes may also provide cardiovascular benefits. Research conducted at Brigham and Women's Hospital, Boston, MA, suggests that in addition to its inverse association with various cancers, a high dietary consumption of lycopene may play a role in cardiovascular disease prevention. The researchers tracked close to 40,000 middle-aged and older women who were free of both

cardiovascular disease and cancer when the study began. During more than 7 years of follow-up, those who consumed 7 to 10 servings each week of lycopene-rich foods (tomato-based products, including tomatoes, tomato juice, tomato sauce and pizza) were found to have a 29% lower risk of cardiovascular disease compared to women eating less than 1.5 servings of tomato products weekly. Women who ate more than 2 servings each week of oil-based tomato products, particularly tomato sauce and pizza, had an even better result—a 34% lower risk of CVD (cardiovascular disease).

Another study, this one conducted in Europe, also suggests that enjoying tomatoes raw or in the form of tomato sauce or paste several times each week is a delicious way to protect your cardiovascular system. This study, published in the *European Journal of Nutrition*, reported that when a group of 12 healthy women ate enough tomato products to provide them with 8 mg of lycopene daily for a period of three weeks, their LDL (bad) cholesterol was much less susceptible to free radical oxidation—the first step in the formation of atherosclerotic plaque formation and a major risk factor for cardiovascular disease.

Research showing tomatoes' cardiovascular benefits continues to accumulate. A study led by Dr. Howard Sesso and published in the *American Journal of Clinical Nutrition* further supports Dr. Sesso's earlier studies, reported in the *Journal of Nutrition*, which found that women with the highest intake of lycopene-rich tomato-based foods had a significantly reduced risk of heart disease. This 4.8 year study, a prospective case-control trial involving almost 40,000 middle-aged and elderly women in the Women's Health Study, found that as the women's blood levels of lycopene went up, their risk for cardiovascular disease dropped.

Study subjects were divided into four groups in order of increasing blood levels of lycopene. A 34% reduction in cardiovascular disease risk was seen in women in the top two groups, but even women in the second highest group were still 22% less likely to develop cardiovascular disease compared to women in the lowest group. After excluding women with angina, those whose plasma lycopene levels were in the three highest groups were found to have a 50% reduced risk of cardiovascular disease compared to those with the lowest blood levels of lycopene.

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Diets Rich in Tomato Products Significantly Improve Cholesterol Profiles

A high dietary intake of tomato products significantly reduced total and LDL (bad) cholesterol levels, while also increasing LDL's resistance to oxidation (damage by free radicals) in a study involving 21 healthy subjects published in the *British Journal of Nutrition*.

Study volunteers followed a diet free of tomato products for 3 weeks, followed by a high tomato diet (13.5 ounces tomato juice and 1 ounce tomato ketchup daily). At the end of the high tomato diet period, study participants' total cholesterol levels had dropped an average of 5.9%, with LDL cholesterol levels reduced by 12.9%. Blood samples also showed increases in lycopene, beta-carotene and gamma-carotene-antioxidant carotenoids found in tomatoes—plus a 13% increase in the ability of circulating LDL cholesterol to resist oxidation. (Silaste ML, Alfthan G, et al., *Br J Nutr.*)

While drinking 13.5 ounces of plain tomato juice every day may seem a bit challenging, enjoying a cup of tomato juice with lunch, a cup of hot tomato juice into which an ounce of tomato ketchup has been stirred along with some freshly ground pepper as an afternoon "soup" break, and/or a Virgin Mary (the alcohol-free counterpart to the Blood Mary) before dinner would provide some taste diversity along with the amount of tomato products effective in the research.

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Tomato Juices May Reduce Blood-Clotting Tendencies

Tomato juice can reduce the tendency toward blood clotting, suggests Australian research published in the *Journal of the American Medical Association*. In this study, 20 people with type 2 diabetes were given 250 ml (about 8 ounces) of tomato juice or a tomato-flavoured placebo daily. Subjects had no history of clotting problems and were taking no medications that would affect blood clotting ability.

After just 3 weeks, platelet aggregation (the clumping together of blood cells) was significantly reduced among those drinking real tomato juice, while no such effect was noted in those receiving placebo.

In an interview, lead researcher Sherri Lazarus explained, "Diabetes is a multi-faceted disease with problems such as glucose intolerance, high blood pressure, high cholesterol and high triglycerides, and the less talked about hyperactive platelets.

Platelets are the parts of blood responsible for the preservation of healthy blood vessels. When the health of blood vessels is impaired, as in the case of diabetes, platelets stick to the lining of the vessel wall, which, over time, can lead to the development of cardiovascular disease. Aggregation is the clumping together and clotting of platelets. We looked at how susceptible the platelets were to clotting before and after the people with type 2 diabetes had taken tomato juice."

Although dietary strategies have been developed to address other known cardiovascular risk factors, currently there is no dietary strategy aimed at reducing high platelet activity. For persons with type 2 diabetes, tomato juice may be just what the doctor should order.

While of special benefit for those with type 2 diabetes who are at increased risk of cardiovascular disease, the blood thinning effects of tomato juice are noteworthy for anyone at higher risk of blood clot formation. Persons with high cholesterol, those whose work involves travelling long distances, who have recently undergone a surgical procedure or who smoke would benefit. But be sure to choose a low-sodium tomato juice; many "regular" tomato juice products are loaded with artery-unfriendly sodium.

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Tomato Juice-a Natural Anti-Inflammatory

Italian researchers, publishing in the *Journal of Agricultural and Food Chemistry* have reported that a daily glass of tomato juice (Lyc-o-Mato) can lower one of the primary markers of inflammation-TNF-alpha-by almost 35% in less than one month.

Oxidative stress (the production of excessive amounts of free radicals within cells) and the resulting recruitment of inflammatory compounds such as TNF-alpha have been linked to virtually all chronic degenerative diseases, including atherosclerosis (hardening of the walls of the arteries), cardiovascular disease, cancer, osteoporosis and Alzheimer's disease. Lyc-o-Mato tomato juice contains a mix of potent antioxidants including 5.7 mg of lycopene, 1 mg beta-carotene, 3.7 mg of phytoene, 2.7 mg of phytofluene, and 1.8 mg of the alpha-tocopherol fraction of vitamin E.

The placebo-controlled, double-blind crossover trial divided 26 young healthy volunteers into two groups. In three 26-day segments, Group One first was given a placebo juice (same taste and flavor but no active compounds), then nothing, then a daily glass of Lyc-o-Mato. Group 2 got Lyc-o-Mato first, then nothing, then placebo. Study subjects continued to eat their normal, unrestricted diet.

TNF-alpha levels decreased by 34% after 26 days' consumption of the tomato drink while no changes in TNF-alpha levels were seen after placebo.

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Bone Health

Tomatoes are a very good source of vitamin K. The 17.8% of the daily value for vitamin K that is found in one cup of raw tomato is important for maintaining bone health. Vitamin K1 activates osteocalcin, the major non-collagen protein in bone. Osteocalcin anchors calcium molecules inside of the bone. Therefore, without enough vitamin K1, osteocalcin levels are inadequate, and bone mineralization is impaired.

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Reducing Stress

A Tufts University study published in the Journal of Nutrition shows that daily consumption of gazpacho (two bowls of 250 ml per day, corresponding to 72 mg of vitamin C, for two weeks) significantly increased blood levels of vitamin C and decreased biomarkers of oxidative (free radical) stress and inflammation.

Gazpacho, a Mediterranean vegetable soup that typically combines tomato, cucumber, and sweet pepper along with olive oil, onion, garlic, wine vinegar and sea salt, is replete, not only with vitamin C, but a variety of other nutrients associated with a reduced risk of chronic disease, including other antioxidants, folic acid, and fibre.

This study focused on gazpacho's effect on vitamin C levels and biomarkers of oxidative stress and inflammation in 12 healthy subjects (both men and women). Within just 7 days, blood levels of vitamin C had increased 26% in the men and 25% in the women and remained elevated throughout the study. Also, when they were measured on day 14, a number of markers of oxidative stress and inflammation had decreased: F2-isoprostanes, PGE2, and MCP-1 dropped in men and women, and uric acid decreased significantly in men and slightly in women.

While the focus of this study was gazpacho's vitamin C, researchers noted that other nutrients present in the soup may have synergistically contributed to its positive effects. For example, the plasma concentration of carotenoids also increased. The researchers' final conclusion: increasing vegetable consumption could improve human health.

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Colon Cancer, Diabetes, and Migraines

The folate in tomatoes can also help to reduce the risk of colon cancer. In addition, tomatoes are a good source of riboflavin, which has been shown to be helpful for reducing the frequency of migraine attacks in those who suffer from them. A good intake of chromium, a mineral of which tomatoes are a good source, has been shown to help diabetic patients keep their blood sugar levels under control. In addition to the 6.8% of the daily value for folate already mentioned above in relation to its protective actions against cardiovascular disease, a cup of tomatoes contains 5.3% of the DV for riboflavin, and 7.5% of the DV for chromium.

Tomatoes are a great vegetable loaded with a variety of vital nutrients. They also make a wonderful addition to a heart-healthy and cancer-preventing diet. So whether it is by tomato soup, tomato sauce, tomato chunks in salad or tomato slices on a sandwich, increasing your intake of tomatoes is an excellent step towards excellent health.

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Allergic Reactions to Tomatoes

Although allergic reactions can occur to virtually any food, research studies on food allergy consistently report more problems with some foods than with others. It turns out that tomatoes are one of the foods most commonly associated with allergic reactions. Other foods commonly associated with allergic reactions include: cow's milk, wheat, soy, shrimp, oranges, eggs, chicken, strawberries, spinach, peanuts, pork, corn and beef. These foods do not need to be eaten in their pure, isolated form in order to trigger an adverse reaction. For example, yogurt made from cow's milk is also a common allergenic food, even though the cow's milk has been processed and fermented in order to make the yogurt. Ice cream made from cow's milk would be an equally good example.

Some of the most common symptoms for food allergies include eczema, hives, skin rash, headache, runny nose, itchy eyes, wheezing, gastrointestinal disturbances, depression, hyperactivity and insomnia. Individuals who suspect food allergy to be an underlying factor in their health problems may want to avoid commonly allergenic foods.

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Nutritional Profile

Tomatoes are an excellent source of vitamin C, vitamin A, and vitamin K. They are also a very good source of molybdenum, potassium, manganese, dietary fibre, chromium, and vitamin B1. In addition, tomatoes are a good source of vitamin B6, folate, copper, niacin, vitamin B2, magnesium, iron, pantothenic acid, phosphorus, vitamin E and protein.

Tomato, ripe 180 grams 1 cup 37.80 calories		
Nutrient	Amount	DV (%)
vitamin C	34.38 mg	57.3
vitamin A	1121.40 IU	22.4
vitamin K	14.22 mcg	17.8
molybdenum	9.00 mcg	12.0
potassium	399.60 mg	11.4
manganese	0.19 mg	9.5
dietary fiber	1.98 g	7.9
chromium	9.00 mcg	7.5
vitamin B1 (thiamin)	0.11 mg	7.3
vitamin B6 (pyridoxine)	0.14 mg	7.0
folate	27.00 mcg	6.8
copper	0.13 mg	6.5
vitamin B3 (niacin)	1.13 mg	5.6
vitamin B2 (riboflavin)	0.09 mg	5.3
magnesium	19.80 mg	5.0
iron	0.81 mg	4.5
vitamin B5 (pantothenic acid)	0.44 mg	4.4
phosphorus	43.20 mg	4.3
vitamin E	0.68 mg	3.4
tryptophan	0.01 g	3.1
protein	1.53 g	3.1

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