



## Review Article

**Incredible Health Benefits of *Solanum lycopersicum*: A Point of View**IZHARUL HASAN\*<sup>1</sup>, TANWIR ALAM<sup>2</sup>, SUBOOHI IRSHAD<sup>3</sup><sup>1</sup>Dept of Juris and Toxicology, A & U Tibbia College & Hospital, Karol Bagh, New Delhi India<sup>2</sup>Dept of Preventive and social medicine, AIUMC Muzaffarnagar, UP India<sup>3</sup>Dept of Gynecology and obstetrics, A & U Tibbia College & Hospital, Karol Bagh, New Delhi India**ARTICLE DETAILS***Article history:*

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*Keywords:**Solanum lycopersicum*,  
Lycopene**ABSTRACT**

*Solanum lycopersicum* are widely known for their outstanding antioxidant content, including, of course, their oftentimes rich concentration of lycopene. Researchers have recently found an important connection between lycopene, its antioxidant properties, and bone health. *Solanum lycopersicum* is low in Sodium, and very low in Saturated Fat and Cholesterol. It is also a good source of Vitamin E (Alpha Tocopherol), Thiamin, Niacin, Vitamin B6, Folate, Magnesium, Phosphorus and Copper, and a very good source of Dietary Fiber, Vitamin A, Vitamin C, Vitamin K, Potassium and Manganese.

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**INTRODUCTION**

Red fruit of the plant *Solanum lycopersicum*, is commonly known as tomato. Its many varieties are now widely grown, sometimes in greenhouses in cooler climates. The tomato is consumed in diverse ways, including raw, as an ingredient in many dishes, sauces, salads, and drinks. While it is botanically a fruit, it is considered a vegetable for culinary purposes. The tomato belongs to the nightshade family (Solanaceae). It is a perennial in its native habitat, although often grown outdoors in temperate climates as an annual. An average common tomato weighs approximately 70-100 grams [1, 2].

Tomato (*Solanum lycopersicum*) is an annual plant which grows 1-3 m tall in the Solanaceae family, native to central, south, and southern North America from Mexico to Peru. In 2005, China was the largest producer of tomatoes. China accounted for at least one-fourth of the global output followed by USA and Turkey. More than 4 million ha land is devoted to the cultivation of tomato in the world. Approximately 1 million ha land is utilized for vegetable farming including tomato, eggplant and pepper in Turkey [3, 4]. A small town in Antalya region generates more than 100,000 tons of dry agricultural waste every year.

Until recently, vegetable stalks including tomato residues have been thrown away or burned, but disposal costs are rising and burning creates environmental problems. Recent economic, technological and political changes are opening up new markets for agricultural wastes. These markets could provide the foundation for a re-industrialization of many rural economies.

Specific antioxidant nutrients found in tomatoes, whole tomato extracts, and overall dietary intake of tomatoes have all been associated with antioxidant protection. Sometimes this protection comes in the form of reduced lipid peroxidation (oxygen damage to fats in cell membranes or in the bloodstream). Sometimes this protection comes in the form of better antioxidant enzyme function (for example, better function of the enzymes catalase or superoxide dismutase). Better antioxidant protection has also been shown using broad measurements of oxidative stress in different body systems<sup>3</sup>. Keeping this view in mind a high nutritive value and healthy benefits of tomatoes, authors have try to best collect various studies done in different aspects as the knowledge can be spread to get healthy life.

**Nutrition Information** [5, 6]

Amounts per 1 cup cherry tomatoes (149g)  
Calorie Information

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**Table 1:** Total calories %DV

Amounts Per Selected Serving	%DV
<b>Calories</b>	<b>26.8(112 kJ)1%</b>
From Carbohydrate	21.1(88.3 kJ)
From Fat	2.5(10.5 kJ)
From Protein	3.2(13.4 kJ)
From Alchoho	10.0(0.0 kJ)

**Table 2:** Carbohydrate calories %DV

Carbohydrates	
Amounts Per Selected Serving	%DV
Total Carbohydrate	5.8g 2%
Dietary Fiber	1.8g 7%
Sugars	3.9g
Sucrose	0.0mg
Glucose	1862mg
Fructose	2042mg

**Table 3:** Fats and fatty acids calories %DV

Fats & Fatty Acids	
Amounts Per Selected Serving	%DV
Total Fat	0.3g0%
Saturated Fat	0.0g0%
Polyunsaturated Fat	0.1g
Total trans fatty acids-	
Total Omega-3 fatty acids	4.5mg
Total Omega-6 fatty acids	119mg

**Table 4:** Protein & amino acids calories %DV

Protein & Amino Acids	
Amounts Per Selected Serving	%DV
Protein	1.3g 3%
Tryptophan	8.9mg
Threonine	40.2mg
Isoleucine	26.8mg
Leucine	37.2mg
Lysine	40.2mg
Methionine	8.9mg
Cystine	13.4mg
Phenylalanine	99.8mg
Tyrosine	20.9mg
Valine	26.8mg
Arginine	31.3mg
Histidine	20.9mg
Alanine	40.2mg
Aspartic acid	201mg

Glutamic acid	642mg
Glycine	28.3mg
Proline	22.3mg
Serine	38.7mg

**Table 5:** Vitamins %DV

Vitamins	
Amounts Per Selected Serving	%DV
Vitamin A1241IU	25%
Retinol	0.0mcg
Retinol Activity Equivalent	62.6mcg
Alpha Carotene	151mcg
Beta Carotene	669mcg
Lycopene	3834mcg
Lutein+Zeaxanthin	183mcg
Vitamin C	18.9mg 32%
Vitamin E (Alpha Tocopherol)	0.8mg 4%
Beta Tocopherol	0.0mg
Gamma Tocopherol	0.2mg
Delta Tocopherol	0.0mg
Vitamin K	11.8mcg 15%
Thiamin	0.1mg 4%
Riboflavin	0.0mg 2%
Niacin	0.9mg 4%
Vitamin B	60.1mg 6%
Folate	22.3mcg 6%
Food Folate	22.3mcg
Folic Acid	0.0mcg
Dietary Folate Equivalents	22.3mcg
Vitamin B12	0.0mcg 0%
Pantothenic Acid	0.1mg 1%
Choline	10.0mg
Betaine	0.1mg

**Table 6:** Minerals %DV

Minerals	
Amounts Per Selected Serving	%DV
Calcium	14.9mg 1%
Iron	0.4mg 2%
Magnesium	16.4mg 4%
Phosphorus	35.8mg 4%
Potassium	353mg 10%
Sodium	7.5mg 0%
Zinc	0.3mg 2%
Copper	0.1mg 4%
Manganese	0.2mg 8%
Selenium	0.0mcg 0%
Fluoride	3.4mcg

**Table 7: Sterols %DV**

Sterols	
Amounts Per Selected Serving	%DV
Cholesterol	
Phytosterols	0.0mg0%
Campesterol	10.4mg
Stigmasterol	
Beta-sitosterol	

**Table 8: Water, ash, caffeine %DV**

Other	
Amounts Per Selected Serving	%DV
Water	141g
Ash0	0.7g
Caffeine	0.0mg
Theobromine	0.0mg

**Health Benefits** [1, 4, 7-13]

There are two types of tomatoes: determinate and indeterminate. Determinate tomatoes grow to a certain height, then flower and set their fruit within a short time. "Celebrity" is popular cultivar of determinate tomato. Indeterminate tomatoes continue to grow and produce flowers and fruits until killed by first frost or senesce naturally. The harvest from indeterminate varieties often extends over 2 or 3 months (this is why they are very good for home gardening). Yields are generally heavier than from determinate types. The plants need to be supported by stakes, cages, or trellises. One of popular cultivars of indeterminate varieties is "Better boy".

Tomatoes are now eaten freely throughout the world. They contain the carotene lycopene, one of the most powerful natural antioxidants. In some studies, lycopene, especially in cooked tomatoes, has been found to help prevent prostate cancer, but other research contradicts this claim. Lycopene has also been shown to improve the skin's ability to protect against harmful UV rays. A study done by researchers at Manchester and Newcastle universities revealed that tomato can protect against sunburn and help keeping the skin looking youthful.

**Cardiovascular Support**

Reduced risk of heart disease is an area of health benefits in which tomatoes truly excel. There are two basic lines of research that have repeatedly linked tomatoes to heart health. The first line of research involves antioxidant support, and the second line of research involves regulation of fats in the bloodstream.

No body system has a greater need for antioxidant protection than the cardiovascular system. The heart and bloodstream are responsible for taking oxygen breathed in through the lungs and circulating it around throughout the body. In order to keep this oxygen in check, antioxidant nutrients are needed in an ample supply. Earlier in this Health Benefits section, we gave you a close-up look at some of the best-researched antioxidants in tomatoes. It's worth noting here that conventional vitamin antioxidants like vitamin E and vitamin C are sometimes overlooked in tomatoes because of their unique phytonutrient composition. Yet vitamin E and vitamin C provide critical antioxidant support in the cardiovascular system, and they are an important part of the contribution made by tomatoes to our heart health. It's the carotenoid lycopene, however, that has gotten the most attention as tomatoes' premier antioxidant and heart-supportive nutrient. Lycopene (and a related group of nutrients) has the ability to help lower the risk of lipid peroxidation in the bloodstream. Lipid peroxidation is a process in which fats that are located in the membranes of cells lining the bloodstream, or fats that are being carried around in the blood, get damaged by oxygen.

**Supports Bone Health**

Bone health is another area of growing interest in tomato research. Interestingly, the connection of tomato intake to bone health involves the rich supply of antioxidant in tomatoes. We don't always think about antioxidant protection as being important for bone health, but it is; and tomato lycopene (and other tomato antioxidants) may have a special role to play in this area. In a recent study, tomato and other dietary sources of lycopene were removed from the diets of postmenopausal women for a period of 4 weeks to see what effect lycopene restriction would have on bone health.

**Antibiotic (leaves)**

Tomatoes have also been widely used as a natural antiseptic agent, because of its nicotinic acids. As mentioned before, certain tribes use the fresh leaf of the tomato plant, pulverized with a little water, as a poultice which is applied to an infected area and wrapped with gauze or a strip of cloth. Usually an infected minor wound will heal within 24 to 72 hours.

**Anti-Cancer Benefits**

While not well researched for all cancer types, tomatoes have repeatedly been show to provide

us with anti-cancer benefits. The track record for tomatoes as a cancer-protective food should not be surprising, since there is a very large amount of research on tomato antioxidants and a more limited but still important amount of research on tomato anti-inflammatory nutrients. Risk for many cancer types starts out with chronic oxidative stress and chronic unwanted inflammation. For this reason, foods that provide us with strong antioxidant and anti-inflammatory support are often foods that show cancer prevention properties.

### Home Remedial Uses

#### Eye Irritation <sup>[12]</sup>

To relieve bloodshot eyes, eating 1 or 2 fresh tomatoes first thing in the morning on an empty stomach is useful. Scientists believe that the Vitamin C and flavonoid in the tomatoes strengthen the blood vessels.

#### Face Peel <sup>[12]</sup>

Tomato is excellent for a face peel that loosens the top layer of dead skin cells and rub them off. It is good for all types of skins. Rub tomato slices directly into your clean has healing powers, and an acid that removes dead skin and unplugs pores, making skin soft and radiant.

#### Tomato Mask <sup>[12]</sup>

Slice a ripe tomato as thin as possible. Lie down and close your eyes. Apply the slices to your face. Wait 10 to 15 minutes. Let the juices seep into your skin. After the 10 to 15 minutes are up, use a slice to rub the juices further into the skin. The tomato works as a face peel, removing all dead, dry skin and leaving your face soft, glossy, and smooth.

#### Healing Sunburn <sup>[12]</sup>

Lycopene has also been shown to improve the skin's ability to protect against harmful UV rays and tomato can be used to transform painful sunburn into a modest tan. A slice of tomato placed on sunburn for 15 minutes takes away the burning feeling and prevents the skin from peeling or blistering; or soak peeled tomato slices in buttermilk, then apply them directly on the skin affected. It will close up the pores and relieve the pain.

#### Other Health Benefits <sup>[10, 11]</sup>

While not as thoroughly researched as these other areas of antioxidant support, cardiovascular support, and anti-cancer benefits, several other health benefit areas are important to mention with respect to tomatoes. Diets that include tomatoes have been linked with reduced

risk of some neurological diseases (including Alzheimer's disease) in multiple studies. Tomato-containing diets have also been linked in a few studies with reduced risk of obesity.

### CONCLUSION

In order to maximize the health benefits of tomatoes and tomato products, it is also best to consume fresh organic tomatoes and canned organic tomatoes as virtually all foods, with the exception of organic food, have trace amounts of pesticides. There is mounting evidence that by avoiding even minuscule trace amounts of pesticides, one's health will be improved.

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