

# The Potential Health Benefits of Vegetable Crops

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## Abstract

Vegetable crops represent essential components of the dietary diet, it is considered a rich source of numerous phytochemicals that play important role in maintaining human health. All vegetable crops are nutritious, while, there are some crops that have higher phytochemicals and nutritional ingredients than other varieties, like tomatoes, sweet potato, broccoli, potatoes, asparagus, carrots, peppers, and dark leafy greens that contain different beneficial nutrients. Vegetable crops are considered one of the main sources of vital nutrients that include antioxidants, polyphenols, carotenoids, vitamins, flavonoids, minerals, carbohydrates, and dietary fibers, which have a protective impact and reduce the negative effects of oxidative damage induced by free radicals. There are several health benefits of vegetable crops such as decreasing inflammation due to their phytochemical components particularly carotenoids, which attributed to their higher contents of antioxidant, anti-inflammatory, vitamins, minerals, etc. Therefore, the consumption of vegetable crops as a part of a healthy diet plays a useful role for humans in the maintenance of body health and preventing various chronic diseases. Eating vegetable crops is considered one of the main relevant strategies to prevent the human body from different health complications particularly cardiovascular disease and infection of non-communicable diseases. All vegetable crops are nutritious and contain different beneficial ingredients, but there are some crops varieties rich with phytochemicals and nutritional ingredients than other varieties like potatoes, tomatoes, sweet potatoes, peppers, carrots, broccoli, cauliflower, asparagus, taro, and dark leafy greens. Consequently, there are numerous roles of these crops in preventing chronic disease, enhancing cognition, and protecting heart-healthy.

**Keywords:** Antioxidants; Carotenoids; Flavonoids; Polyphenols; Vegetable Crops; Vitamins

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**Citation:** Abobatta WF (2021) The Potential Health Benefits of Vegetable Crops. *J Food Nutr Health*, Volume 2:2. 113. DOI: <https://doi.org/10.47275/2692-5222-113>

**Received:** December 01, 2021; **Accepted:** December 13, 2021; **Published:** December 20, 2021

## Introduction

Vegetable crops are considered essential sources of important phytochemicals compounds that have great potential in keeping humans healthy, it is very essential components particularly for pregnant women, infants, and children to provide adequate supplemental nutrition. All vegetable crops are nutritious like cauliflower, cucumber, garlic, kale, onions, while, there are some crops that have higher phytochemicals and nutritional ingredients than other varieties, like tomatoes, sweet potato, broccoli, potatoes, asparagus, carrots, peppers, and dark leafy greens that contain different beneficial nutrients.

Vegetable crops are higher contents of several phytochemical components such as flavonoids, carotenoids, vitamins, dietary fibers, carbohydrates, minerals ...etc. Therefore, daily consumption of vegetable crops is very useful for humans in both as maintenance of health and preventing various chronic diseases. Consuming vegetable crops as a part of a healthy diet, considered one of the main relevant strategies to prevent the human body from different health complications particularly cardiovascular disease and infection of non-communicable diseases.

There are numerous health benefits of vegetable crops like strong antioxidant properties and anti-inflammatory capacities. Therefore, regular eating of vegetable crops is very useful for the human body in both as maintenance of health and preventing various chronic diseases. Consuming vegetable crops as a part of a healthy diet, considered one of the main relevant strategies to prevent the human body from

different health complications particularly cardiovascular disease and infection of non-communicable diseases. There are numerous nutritional benefits for regular intake of vegetable crops, it is reached with several phytochemicals components such as flavonoids have been identified as having. Historically vegetables are represented a valuable source of important dietary nutrients, recently they were recognized as imperative sources for a wide array of beneficial phytochemicals [1].

## Nutritional Important of Vegetable Crops

Vegetable crops considered functional and nutraceutical foods, that contain adequate amounts of many phytonutrients that mainly affect human health, therefore, regular consumption of vegetable crops maintains body health [2]. At the same time, there are about 3 billion people worldwide suffering from malnutrition due to improper diet and unbalanced nutrition [3]. In this work, we explore the most beneficial effects of vegetables on the body's health.

Due to spreading incidences of chronic diseases in the last decades particularly cancer and cardiovascular disease in different regions of the world. There is more attention to raising awareness regarding the importance of healthy food [4].

## Which Vegetable Crops are Healthier?

All vegetable crops are nutritious, but there are some crops varieties reaching with phytochemicals and nutritional ingredients than other varieties as shown in (Table 1). Vegetables are considered



**Table 1:** Most beneficial vegetable crops.

Crop	Scientific name	Components	References
Sweet Potato	<i>Ipomoea batatas</i>	beta-carotene	Alam MK, et al. (2020) [5]
Broccoli	<i>Brassica oleracea Var.Italica</i>	flavonoids, vitamins C, and K	dos Reis LC, et al. (2015) [6]
Tomatoes	<i>Solanum lycopersicum</i>	Lycopene, vitamins C, A, and minerals K, P, Mg, Fe.	Martínez-Valverde I, et al. (2002) [7]
Potatoes	<i>Solanum tuberosum L.</i>	vitamins (C, B1, and B2), total polyphenol)	Liang ZH, et al. (2019) [8]
Asparagus	<i>Asparagus officinalis L.</i>	vitamin K	Chitrakar B, et al. (2019) [9]
Peppers	<i>Capsicum annum L.</i>	vitamin C and Polyphenols	Hegazy AM, et al. (2019) [10]
Carrots	<i>Daucus carota L.</i>	phenolics, carotenoids, and polyacetylenes	Taiwo EA, et al. (2021) [11]
Cauliflower	<i>Brassica oleracea var. botrytis</i>	Vitamins C, B6, K, folate, and pantothenic acid	Kumar K, et al. (2017) [12]
Cucumber	<i>Cucumis sativus</i>	Polyphenolics, cucurbitacins and Vitamin K	Uthpala TG, et al. (2020) [13]
Garlic	<i>Allium sativum L.</i>	sulfurous compounds	Suleria HA, et al. (2015) [14]
Kale	<i>Brassica oleracea L. var. acephala</i>	protein, mineral, and prebiotic carbohydrate	Thavarajah D, et al. (2019) [15]
Onions	<i>Allium cepa L.</i>	Phenolic and Flavonoids compounds	Ren F, et al. (2021) [16]

one of the main world’s concentrated sources of nutrients. In addition, tubers like potatoes, sweet potatoes, taro, and dark leafy greens contain different beneficial nutrients. Furthermore, there are numerous roles of these crops in preventing chronic disease, enhancing cognition, and protecting heart-healthy.

### Sweet Potato

Sweet potatoes (*Ipomoea batatas*) are one of the rich vegetable crops in antioxidants, carotenoids particularly beta-carotene [5], Sweet potatoes are one of the delicious starchy tubers which play important role in protecting eye health, minimizing cancer disease in women like breast and ovarian cancers particularly after menopausal [1].

### Broccoli

Broccoli (*Brassica oleracea Var.Italica*) has great tastes, it is one of the valuable vegetables that present numerous health-promoting properties attributed to its higher content of antioxidant components particularly flavonoids, vitamins C and K and, dietary fibers, and adequate amount of protein [6]. Broccoli combats oxidative damage and prevents cardiology disease, type 2 diabetes, and cancer [17].

### Tomatoes

Tomatoes (*Solanum lycopersicum*) are one of the popular vegetables consumed worldwide, it is ranking as the first vegetable crop worldwide [18]. Tomatoes are theoretically a fruit while it is usually classified as a vegetable crop [19]. Tomatoes do not lose their nutritional values after processing, unlike many fresh fruits and vegetables, which increases their availability throughout the year, therefore, tomatoes could use in both forms as fresh fruits or processing products, as they retain their beneficial properties after heat treatment [20]. Regular consumption of tomatoes improves body health and reduces the risk of different diseases like prostate cancer, osteoporosis, and cardiovascular [21]. Tomatoes contain large amounts of phytochemicals that include vitamin C, vitamin A, potassium, phosphorus, magnesium, and iron. Tomatoes are considered a reach source of vital nutrients, for instance, it is the top natural source of lycopene, ranking the third vegetarian source of vitamin C, and the fourth source for vitamin A [7].

### Potatoes

Potatoes (*Solanum tuberosum L.*) are one of the cheap, staple parts of the dietary food from ancient times, currently, it is considered a key nutrient as a part of the staple food for humans, consuming potatoes increase vitamins (C, B1, and B2), total polyphenol) and minerals (K, Mn, and Cu) intake [8].

*Potatoes represent an important source of carbohydrates worldwide. Furthermore, Potatoes are rich in fibers, potassium, vitamin C, vitamin B6, folate, iron, and other nutrients with little quantity [22-25].*

### Asparagus

Asparagus (*Asparagus officinalis L.*), is the sole edible species of all asparagus species (about 200 species approximately) [26], it is a popular vegetable with unique flavor and texture. Asparagus is a valuable source of nutritional ingredients, in addition, it is rich in phytochemicals particularly vitamin K and has a low content in both carbohydrates and calories [9].

### Peppers

Peppers (*Capsicum annum L.*) is a part of the human diet since ancient times about 7500 BC [27]. Peppers have valuable nutrients due to a large number of bioactive compounds, for instance, red sweet peppers contain vitamin C double than the vitamin C of oranges, which play important role in maintaining healthy teeth and gums, also, peppers contain higher dietary fibers, and antioxidants [28]. Furthermore, Polyphenols are one of the vital components of the different antioxidants in pepper fruits, which play important role in protecting the body from the negative impacts of oxidative damage induced by free radicals [10].

### Carrots

Carrots (*Daucus carota L.*) are a familiar root vegetable worldwide with unique properties, there are increasing demands for the consumption of different carrots varieties [29]. Carrots are considered a source of numerous nutritional ingredients that have several nutraceutical influences on body health [30]. There are numerous health benefits of carrots attributed to their higher content of bioactive compounds like phenolics, carotenoids, polyacetylenes, phenolic compounds, and ascorbic acid, which play important role in reducing hazards of chronic diseases like cancer and cardiovascular diseases, due to their impacts as an antioxidant, anti-inflammatory, and anti-tumor [11,31-34].

### Conclusion

There are different health benefits of various vegetable crops, hence, the daily consumption of vegetables in the dietary diet has a beneficial effect on protecting against different common diseases and reducing the incidence of chronic diseases, like cardiovascular disease, diabetes particularly type 2, and some cancers.

All vegetable cultivars have nutritional benefits, while, there is a



group of cultivars rich with phytochemicals and nutritional ingredients than other varieties include potatoes, tomatoes, sweet potatoes, peppers, carrots, broccoli, asparagus, and dark leafy greens.

There is a positive correlation between the consumption of vegetables and a healthy body, this may be associated with their higher contents of bioactive phytochemicals that include flavonoids, carotenoids, vitamins, polyphenols, bioactive peptides, ...etc.

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