

FRUIT AND VEGETABLES

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Introduction

Diets high in fruits and vegetables are widely recommended for their health-promoting properties. Fruits and vegetables have historically held a place in dietary guidance because of their concentrations of vitamins, especially vitamins C and A; minerals, especially electrolytes; and more recently phytochemicals, especially antioxidants. Additionally, fruits and vegetables are recommended as a source of dietary fiber.

Certain fruits and vegetables are rich sources of vitamin C, but these rich sources (citrus fruits, strawberries, green peppers, white potatoes) are spread over many fruit and vegetable categories. Other fruits and vegetables, including avocado, corn, potatoes, and dried beans, are rich in starch, whereas sweet potatoes are mostly sucrose, not starch. Fruits (except bananas) and dark green vegetables contain little or no starch. Often, dietary guidance rules place fruit juices and potatoes in separate categories, because of dietary directives to eat whole fruits and minimize consumption of foods high in fat and sodium, i.e., French fries.

Health benefits of plant intake

Vegetarian diets have been promoted since the 18th century by men and women in search of physical and spiritual health. Vegetarian theorists who professed to follow the tenets of the ancient philosopher Pythagoras believed that diet should be part of an ascetic lifestyle. Vegetarianism was also symbolic of a commitment to health and social reform.

Fruits contain mostly sugars and fibers, such as pectin, that are extensively fermented in the large intestine. Certain fruits, especially apples and pears, are concentrated in fructose. Apples contain 6% fructose and 3% sucrose and pears are 6.5% fructose and 1.3% sucrose; these values would be consistent in apple and pear juices. Free fructose is poorly absorbed and would function like dietary fiber, escaping absorption in the small intestine while being fermented in the large intestine. This results

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in SCFA production, which is linked to small amounts of energy being absorbed in the colon. Additionally, it explains why apple and pear juices are used to treat constipation in children.

Fruits are also recommended as a source of vitamin C and potassium. Traditionally, fruits, as foodstuffs were available for a limited time and, when ripe, were sometimes difficult to collect and transport. When ripe, they have a short period of acceptability before senescence intervenes. Thus, many fruits consumed in today's world are processed, frozen, canned, or dried.

Leaves and stems are widely consumed by humans. The protein contents are higher than fruits and they contain low amounts of sugar.

Roots and tubers are important sources of energy as starch. Some roots such as cassava contain toxic secondary metabolites and require soaking in water before they are safe to consume. As foodstuffs, roots, and especially tubers, can be time-consuming to collect but can be stored for long periods.

Legumes are higher in protein than other vegetables but contain toxic plant metabolites, including saponins and lectins. The wide use of these products was much later in evolution, once foods were cooked in water.

HIGHEST IN SUGAR



MANGOES Fruit's good for you! It has fiber and other nutrients you need. But it also has natural sugar, and some have more than others. For example, one mango has a whopping 45 grams of sugar -- not your best choice if you're trying to watch your weight or how much sugar you eat. Maybe enjoy a couple of slices and save the rest for later.



GRAPES A cup of these has about 23 grams sugar. That's a lot for something that's so easy to pop in your mouth. You might eat them more slowly if you slice them in half and freeze them. They'll be waiting for you as a refreshing summer treat that takes a bit longer to eat.

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CHERRIES They're sweet, and they have the sugar to show for it: A cup of them has 18 grams. If you fill up a large bowl with them, you can lose track of how many you eat. Measure your snack beforehand so you know exactly how much sugar you'll get.



PEARS One medium pear has 17 grams of sugar. If you're trying to cut back, don't eat the whole thing -- just put a few slices in some low-fat yogurt or on top of a salad.



WATERMELON A medium wedge of this summer treat has 17 grams of sugar. As its name suggests, it's loaded with water, and it has special minerals called electrolytes that are just what your body needs to recharge after some time in the sun. Just keep it to a slice or two.



FIGS Two medium-size ones have 16 grams. If you're trying to keep an eye on your sugar, maybe slice a couple and spread some goat cheese on them for a protein-rich treat, or use some in a sauce to add some zip to lean meats like skinless chicken.



BANANA One medium banana has 14 grams sugar. If that seems like more than you bargained for, slice half of it into your morning cereal or smash a small piece in the middle of your peanut butter sandwich.

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SPECIFIC EFFECTS

Balanced brain
 Helping concentration. Nourishing the nervous system
 Source of folate & vitamin B6*/B1*

In many **round** vegetables like:



Help healthy sight
 Source of carotenes

In many **orange & dark green** vegetables like:



Sustained energy
 Low GL, source of fibre

In many **roots and pods** like:



Responsive immunity
 Contains phytochemicals

In many **bulbs* & brassicas*** like:



Healthy insides
 Source of fibre

In many **fibrous green** vegetables like:



vital hydration
 Water-rich. Contain potassium

In many **plump, crisp** vegetables like:



Immunity & skin health
 Source of vitamin C & carotenes

In many **dark leaves & bright fruits** like:



Help curb hunger pangs
 Source of fibre. Water-rich

In many **vegetables** like:



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Broad health benefit area	Vegetable(s) When making the statement, please try to include the vegetable group definition (given in bold) wherever possible. You may choose any, some or all the vegetables from the list given	Nutrient bundle	Effect on health function
Responsive immunity	Bulbs such as <i>onion, leeks, shallots</i>	Contain Phytochemicals including Sulphur compounds, Flavonoids & Saponins	Phytochemicals help keep your immune system in good shape
	Brassicas such as <i>cauliflower, cabbage, broccoli, brussel sprouts, Asian varieties of cabbage & broccoli, watercress, rocket, turnip, swede</i>	Contain Glucosinolates & Flavonoids	Glucosinolates and Flavonoids help keep your immune system in good shape
Immunity and skin health	Dark leaves and coloured fruits such as <i>rocket, watercress, dark salad leaves (cos, mignonette), spinach, silverbeet, red capsicum, pumpkin</i>	Source of Carotenes & Vitamin C	Carotenes and Vitamin C help leave skin healthy and glowing. Carotenes and Vitamin C contribute to a healthy immune system
Vital hydration	Plump/ crisp vegetables such as <i>eggplant, spring onions, celery, cucumber, Chinese cabbage, cauliflower, capsicum, turnip, iceberg lettuce, carrot, radish, cabbage, butterbeans</i>	Contain more than 90% water and a good supply of Potassium	Water helps hydrate the skin and body
Balanced brain	Round vegetables such as <i>swede, brussel sprouts, red capsicum</i>	Source of Vitamin B6 and Folate, contains Potassium and naturally low in Sodium	Vitamin B6 and Folate are calming nutrients that help to nourish the nervous system
	Round vegetables such as <i>peas, butternut pumpkin and sweetcorn</i>	Source of vitamin B1 and Folate	Vitamin B1 and Folate help nourish the brain for everyday function helping us concentrate and perform at our best
	Green vegetables such as <i>asparagus, brussels sprouts, broccoli, rocket, spinach, silverbeet, green beans, green capsicum</i>	Good source of Folate	Folate helps maintain a healthy brain
	Red/purple vegetables such as <i>red cabbage, capsicum, eggplant, radishes & raddichio,</i>	Contain Flavonoids which are powerful Antioxidants	Flavonoids help maintain a healthy brain
Help healthy sight	Orange vegetables such as <i>butternut pumpkin, pumpkin, sweet potato and carrots</i>	Source of Carotenes	Carotenes help maintain healthy sight
	Green leafy vegetables such as <i>spinach, watercress, rocket, mignonette, cos</i>		
	Green leafy vegetables such as <i>spinach, kale, silverbeet</i>	Contains Lutein and Zeaxanthin (Xanthophylls)	Lutein and Zeaxanthin help maintain healthy sight
Help curb hunger pangs:	A wide range of vegetables: <i>Peas, broad beans, parsnip, sweet potato, eggplant, cauliflower, leeks, swede, broccoli, snowpeas, silverbeet, brussels sprouts</i>	High Water content and a source of Fibre	Water and Fibre help you to feel fuller for longer, helping curb the urge to snack between meals
Healthy insides:	<i>Onions</i>	Contain Saponins and Fructans	Saponins and Fructans have a beneficial effect on gut health
	Fibrous greens such as <i>broccoli, peas, broad beans, watercress, snowpeas, spinach, silverbeet, lettuce (mix of iceberg, mignonette and cos), brussel sprouts</i>	Source of Fibre	Fibre is important for everyday digestive health
Sustained energy	Roots and pods such as <i>parsnip, beetroot, taro, sweet potato, swede, peas, broad beans</i>	Low GL ^u and a source of Fibre	Low GL foods that are sources of Fibre help sustain your energy levels for longer to help you function at your best throughout the day

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MAXIMISE NUTRITION CONTENT

Nutrient	Tips to maximise nutrient content	Tips to get your daily needs
Vitamin B1, B6	These vitamins are water soluble, so cooking with a minimum of water (steaming, stir-frying etc) and eating raw will mean you retain more of these vitamins in your vegetables	<ul style="list-style-type: none"> Choose one serve each of silverbeet, brussel sprouts and swede at your main meal to provide over half your daily folate and vitamin B6 needs One serve of peas, sweetcorn and butternut pumpkin provide three quarters of your daily vitamin B1 and over half your daily folate needs One serve each of brussel sprouts, capsicum, potato and pumpkin will meet almost half (40%) of your daily needs for Vitamin B6 while providing potassium One serve of silverbeet, potato and brussel sprouts will meet over one half of your daily needs for Vitamin B6 and provide essential potassium
Folate	Extremely sensitive to light, heat and air. It is easily destroyed during cooking, so try and eat some of your vegetables raw	<ul style="list-style-type: none"> One serve each of lettuce, beetroot and asparagus meets your daily needs for folate One serve each of parsnip, peas and broccoli meets over three quarters of your daily needs for folate
Flavonoids	<p>Eat a variety of vegetables at the same time to assist with absorption and maximise the effect (different plant chemicals, like flavonoids act together in the body).</p> <p>Cooking vegetables or consuming them with a small amount of fat increases the body's absorption of plant chemicals, such as flavonoids³⁹</p> <p>Flavonoids tend to be most concentrated in the skins of vegetables, so try not to peel them (scrub if necessary)</p>	
Carotenes	<p>Carotene is fat-soluble so is best absorbed when consumed in a meal with some oil or fat. This can be either as part of the meal (e.g. milk, cheese, salad dressing) or used in cooking such as roasting or stir-frying vegetables with oil. The Australian Dietary Guidelines recommend when cooking vegetables to use a small amount of oil because this enhances absorption of carotene and other fat-soluble Vitamins⁴⁰</p> <p>It has also been shown that chopping and cooking helps release carotene, the matrix of foods eaten can affect the release of carotene from foods. However, processing of foods (cutting up, cooking etc) greatly improves availability and thus absorption of carotene from foods⁴¹</p>	<ul style="list-style-type: none"> Half a cup of carrots meets your daily needs for carotene Only one serve (150g) of sweet potato meets twice your daily needs for carotene A mixed salad (2 cups) of lettuce (mignonette & cos), rocket and watercress with capsicum will meet your daily needs for carotene 1 serve of butternut pumpkin (75g) meets your daily needs for carotenes One serve of spinach meets around a third of your daily needs for carotenes

Nutrient	Tips to maximise nutrient content	Tips to get your daily needs
Vitamin C	Vitamin C is easily destroyed by cooking. To retain Vitamin C it is best to lightly cook vegetables. Because Vitamin C is soluble in water it is often discarded in cooking water. Use as little water as possible when cooking. Refrigeration and quick freezing help to retain Vitamin C. Most commercially produced frozen foods are processed close to the source of supply so that their Vitamin C content is often higher than that of fresh foods that have been shipped across the country and have spent time in storage and on supermarket shelves ⁴²	<ul style="list-style-type: none"> Half a cup of carrots meets 10% of your daily needs for Vitamin C Only one serve (150g) of sweet potato meets your daily needs for Vitamin C A mixed salad (2 cups) of lettuce (mignonette & cos), rocket and watercress with capsicum will meet your daily needs for Vitamin C One serve of spinach meets around half your daily needs for Vitamin C
Fibre	<p>Try not to remove (peel or cut) the outer layer or keep peeling or cutting to a minimum – try scrubbing instead and try to eat vegetables raw</p> <p>Make salads from a variety of raw vegetables instead of plain lettuce salads to increase your fibre intake</p>	<ul style="list-style-type: none"> A serve of sweetcorn, peas and potato as part of your meal gives you a third of your daily fibre needs A salad including a serve each of watercress, snow peas and carrots will give you around a quarter of your daily fibre needs Stir-fry a serve of broccoli, green beans and sweetcorn and you will have a third of your daily fibre needs. Saute some spring onions and garlic as a base to your stir-fry and you have added some powerful antioxidants for digestive health A coleslaw with cabbage, spring onions and carrot will provide around a quarter of your fibre needs
Phytochemicals	Include vegetables from the bulb and Brassica families regularly in your diet to help keep your immune system in balance	<ul style="list-style-type: none"> Health authorities recommend you consume 5 serves of vegetables each day to get the wide variety of substances – plant phytochemicals, antioxidants and fibre to help healthy bowel function Choose vegetables from the Brassica family, such as broccoli, broccoflower, cauliflower, radish and rocket everyday. One serve is 75g, around ½ a cup of cooked vegetables Include onions regularly in cooking e.g. in a stir-fry, bolognaise sauce or slice raw for a salad to add special phytochemicals to your diet that promote, amongst other things, bowel health
GI/GL	<p>The Glycaemic Index Foundation recommends the following in relation to starchy vegetables and lowering the GI/GL of a meal:</p> <ul style="list-style-type: none"> If you are a big potato eater and can't bear the thought of giving them up, you don't have to. Just cut back on the quantity. Choose a lower GI potato such as Almera, Nicola or Marfona or have one or two baby new potatoes with a small cob of corn or make a cannellini bean and potato mash, replacing half the potato with cannellini beans. Try other starchy vegetables like sweet potato, yams or taro steamed, roasted or mashed 	