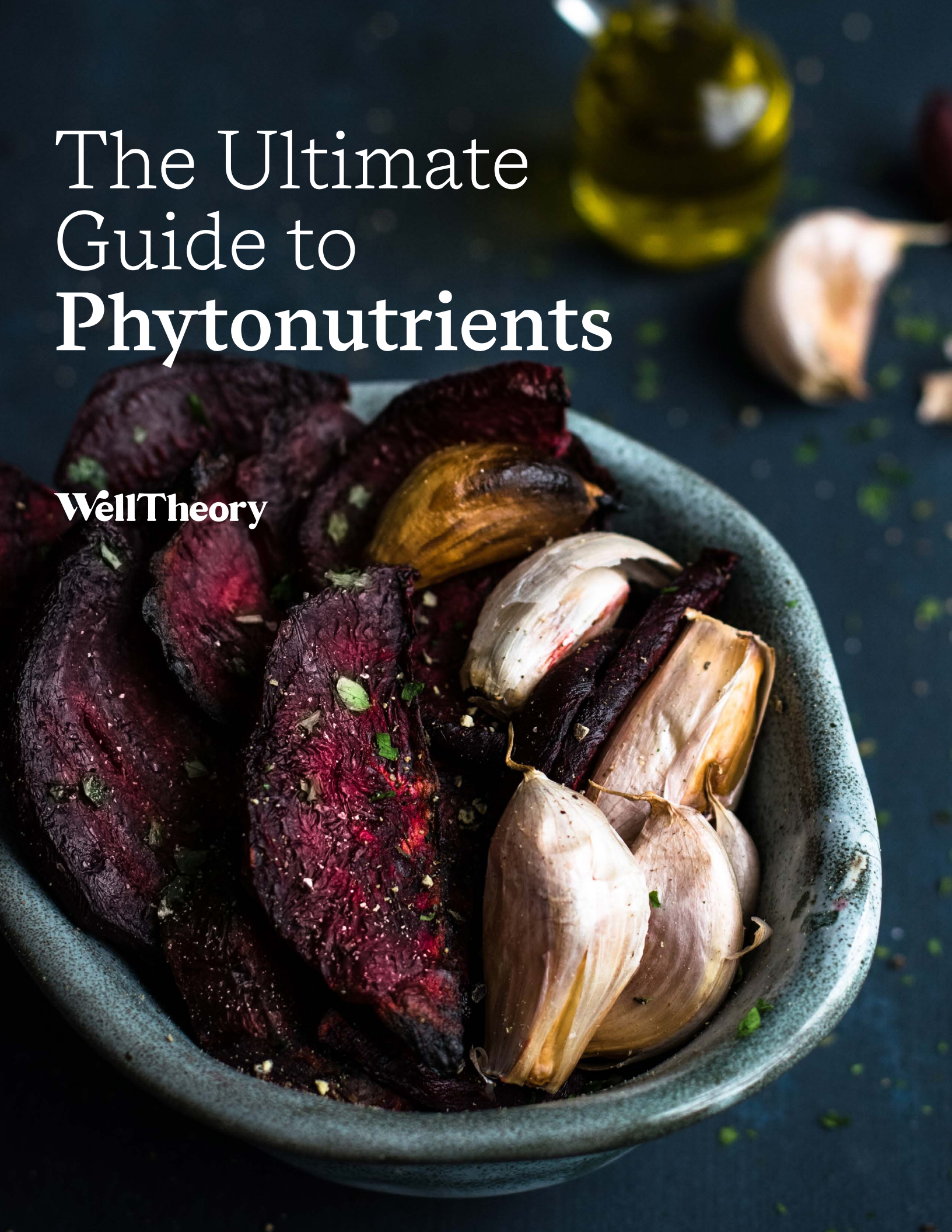
# The Ultimate Guide to **Phytonutrients**



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Phytonutrients, also known as phytochemicals, are bioactive compounds that are produced by plants. Readily available for consumption in fruits, vegetables, and grains, phytonutrients have been found to be beneficial for our health and have been linked to a reduced risk of a variety of major chronic diseases, such as type 2 diabetes, cancer, and cardiovascular diseases. Read on to find out what phytonutrients are, why they are so important to health, and how to include lots of beneficial phytochemicals in your diet. (31, 54)

## What Are Phytonutrients?

Phytochemicals are chemical compounds produced by plants for protection against predators and environmental threats. Although they are not critical for our health the same way vitamins and minerals are, there is evidence phytochemicals offer health benefits when we consume them, so we call them phytonutrients. (46, 23)

# What Are the Health Benefits of Phytonutrients?

Phytonutrients are produced by plants to protect them from disease, predation, and harmful environmental conditions, so it isn't surprising that the health benefits they offer us fall along the same lines. Thousands of phytonutrients have been discovered so far, and research has uncovered several ways they may be used to treat and prevent disease and chronic health problems.

While the immune system requires a variety of nutrients to properly function, and nutrient deficiencies play a role in the development of autoimmune disease, some people with autoimmune disease benefit from omitting certain foods from their diet. For example nightshades, such as tomatoes and eggplants, which are omitted during the Autoimmune Protocol elimination phase. The foods, often nutrient–dense foods, omitted during the elimination phase are those in which the inflammatory compounds outweigh the nutrient density or benefits of said food.

# Phytonutrients as Antioxidants

The antioxidant properties of many phytonutrients help keep oxidants and free radicals in check. Our body is constantly exposed to oxidizing agents and free radicals. They are present in the air, food, water, and are produced by metabolic processes in our cells. Free radicals are a double-edged sword. Low to moderate levels can help fight pathogens and boost immune function. However, they can also accumulate in the body and lead to oxidative stress, damaging DNA, proteins, and fatty tissue. Oxidative stress plays a role in the development of autoimmune and other diseases. (32, 37, 51)

# Phytonutrients as Anti-Inflammatories

Inflammation is our body's biological response to any infections, injury, or irritation. However, chronic inflammation can give rise to autoimmune diseases such as rheumatoid arthritis and diabetes. Research has found that phytonutrients are effective inhibitors of chronic inflammatory processes in the immune system. (58, 44)

# Phytonutrients as Antibacterials

Many phytonutrients are produced by plants to defend themselves against pathogens. These compounds also have antibacterial, antifungal, and antiviral effects against pathogens that humans come into contact with. Researchers have begun harnessing these antimicrobial effects to develop methods of fighting resistant bacteria. (6)

# Phytonutrients as Hormone Regulators

Some phytonutrients behave like hormones, such as estrogen. Phytoestrogens are naturally occurring plant compounds that mimic estrogen. Estrogen regulates the reproductive organs in the body, growth of healthy bones, and the breaking down of fats in the liver. When phytoestrogens are consumed, they may have a similar effect as estrogen produced by the body. (28)

# Phytonutrients and Food Color

Phytonutrients in plants act as pigments, giving fruits and vegetables their characteristic colors. Each color is caused by specific phytonutrients, for example, anthocyanins are responsible for the colors blue and purple, whilst carotenoids are responsible for yellow and red. (7)

# Phytonutrients in Red Foods

Lycopene is the pigment that gives fruits and vegetables its red color. It is a potent antioxidant and has anti-inflammatory properties that protects the body from oxidative stress. Oxidative stress is believed to be responsible for inflammation, which is known to play a role in augmenting the development of autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus, and multiple sclerosis (MS). (34)

Lycopene has also been found to decrease “bad” low density lipoprotein (LDL) and increase “good” high density lipoprotein (HDL) cholesterol. (Source) Lycopene may also protect the skin against ultraviolet (UV) damage from the sun. One small study found that participants who added 16 milligrams of lycopene to their diet every day had less severe skin reactions to UV light over 10 weeks than a control group without the added lycopene. (Of course, consumption of lycopene-rich foods doesn’t replace sunscreen!) (24, 45)

## **AIP-Compliant** Red Foods and Their Phytonutrient Compounds

**Blood Orange**
flavonoids, hesperidin, isohesperidin, limonene, limonin, lycopene, naringin, terpenio

**Cherry**
anthocyanin, flavonoids, hydroxycinnamates

**Cranberry**
anthocyanin, catechins, ellagic acid, hippuric acid, kaempferol, lycopene, triterpenoids, quercetin, quinic acid

**Gac**
beta-carotene, lutein, lycopene, polyphenols

**Pomegranate**
anthocyanin, cyanidin, ellagic acid, lycopene

**Watermelon**
cucurbitacin E, beta-carotene, lycopene

**Red Grape**
anthocyanin, cyanidin, ellagic acid, flavonols, kaempferol, lycopene, myricetin, peonidin, quercetin, resveratrol

**Pink Guava**
alkaloids, ellagic acid, lycopene

**Red/Pink Grapefruit**
beta-cryptoxanthin, lycopene, naringin, narirutin, ponciri

**Red Onion**
copaene, flavonols, lycopene, polysulfides, quercetin, vinyldithiins

**Red Beet**
betacyanin, flavonoids, lycopene, phenolic acids

**Rose Hip**
anthocyanin, beta-cryptoxanthin, flavonoids, glycosides, rubixanthin, terpenoids

## Other Red Foods and Their Phytonutrient Compounds

**Tomato**
beta-carotene, kaempferol, lycopene, rutin

**Red Bell Pepper**
anthocyanin, capsaicinoid, beta-cryptoxanthin, lutein, lycopene, zeaxanthin

**Paprika**
beta-carotene, canthaxanthin, lycopene, tocopherols

**Red Potato**
alpha linoleic acid, anthocyanin, flavonoids, polyphenols, tocopherols

**Goji/ Wolfberry**
beta-carotene, lycopene, zeaxanthin

**Sources:** 21, 11, 50

# Ways to incorporate more red foods into your diet

- Add red-colored fruits and vegetables to salads.
- Opt for red pasta sauces made from tomatoes instead of carbonara or Alfredo sauce. Red sauces can also be used as toppings for other dishes!
- Have salsa as a dip alongside tortilla chips or eggs, or on top of potatoes.
- Make a juice using lycopene-rich foods.
- Add some goji berries to your chrysanthemum, chamomile, or any other tea.

# Phytonutrients in Orange Foods

Carotenoids are responsible for yellow, orange, and red color in many fruits and vegetables. Research suggests that one carotenoid in particular, beta-carotene, may protect against decline in lung function. A study done in 2017 also suggested that eating fruits and vegetables rich in carotenoids such as beta-carotene, alpha-carotene, and beta-cryptoxanthin had protective effects against lung cancer. (20, 42)

Like lycopene, dietary intake of beta-carotene has protective effects against diseases that are mediated by oxidative stress, such as diabetes, cancer, and autoimmune diseases. High levels of alpha-carotene are associated with longevity — one large U.S. study found that high levels of alpha-carotene in the blood was linked with a reduced risk of death over a 14 year period. Aside from having antioxidant effects, the carotenoid beta-cryptoxanthin may prevent bone loss and has anti-inflammatory, anticancer, and anti-inflammatory properties. (16, 29, 25)

## **AIP-Compliant** Orange Foods and Their Phytonutrient Compounds

**Apricot**
beta-carotene, lycopene, rutin, tartaric acid

**Butternut Squash**
alpha-carotene, beta-carotene, beta-cryptoxanthin, lutein, phenolic acids, zeaxanthin

**Cantaloupe**
beta-carotene, beta-cryptoxanthin, gallic acid, kaempferol, lutein, zeaxanthin

**Carrot**
alpha-carotene, beta-carotenes, beta-cryptoxanthin, caffeic acid, chlorogenic acid, lycopene

**Mandarin Oranges**
alpha-carotene, beta-carotene, beta-cryptoxanthin, flavonoids, lutein, zeaxanthin

**Mango**
beta-carotene, beta-cryptoxanthin, beta-glucogallin, ellagic acid, quercetin

**Orange**
beta-carotene, beta-cryptoxanthin, flavonoids, hesperidin, isohesperidin, naringin, terpineol, limonene, limonin

**Papaya**
beta-cryptoxanthin, lutein, zeaxanthin

**Peach**
alpha-carotene, anthocyanidins, beta-carotene, beta-cryptoxanthin, phenolic acids, rutin

**Persimmon**
beta-carotene, beta-cryptoxanthin, catechin, kaempferol, proanthocyanidins, quercetin, triterpenoid

**Pumpkin**
alpha-carotene, beta-carotene, beta-cryptoxanthin, lutein, phenolic acids, phytic acid, zeaxanthin

**Sea Buckthorn**
beta-carotene, beta-cryptoxanthin, lutein, lycopene, quercetin, zeaxanthin

**Sweet potato**
alkaloids, anthocyanin, beta-carotene, flavonoids, oxalic acid, phenolic acids

**Tangerine**
alpha-carotene, beta-carotene, lutein, lycopene, tangeritin, zeaxanthin

**Turmeric**
curcumin, curcumenol, demethoxycurcumin, eugenol, turmerin, turmerones, zingiberene

**Winter Squash**
alpha-carotene, beta-carotene, beta-cryptoxanthin, lutein, zeaxanthin

**Yam**
alkaloids, beta-carotene, flavonoids, phenol

## Other Orange Foods and Their Phytonutrient Compounds

**Orange Lentils**
beta-carotene, flavonoids, phytic acid, tocopherols, flavonols

**Orange Bell Pepper**
beta-carotene, lycopene, capsaicinoid, lycopene, phenols

**Sources:** 21, 1, 11, 56, 3

# Ways to incorporate more orange foods into your diet

- Have a baked sweet potato instead of white potato.
- Add turmeric powder to stir-fries, or make a warm cup of ginger and turmeric tea.
- Have orange-colored foods as a snack throughout the day, such as tangerines, papaya, or peaches.
- Make a pumpkin, butternut squash, or carrot soup.
- Make a smoothie out of orange-colored foods.

# Phytonutrients in Yellow Foods

Lutein and zeaxanthin are also part of the carotenoid family, along with beta-carotene, alpha-carotene, and beta-cryptoxanthin. Lutein and zeaxanthin are the only dietary carotenoids that reach the retina, the thin layer of tissue that lines the inside on the back of the eye. They are known to support eye health and have preventative effects against age-related macular degeneration, an eye disease that can lead to the loss of vision as we age. However, lutein and zeaxanthin also have strong antioxidant and anti-inflammatory capabilities. Zeaxanthin can also help to recycle glutathione, another important antioxidant in the body. (9, 17)

## **AIP-Compliant** Yellow Foods and Their Phytonutrient Compounds

**Yellow Apple**
catechin, chlorogenic acid, flavonols, quercetin, rutin

**Avocado**
beta-cryptoxanthin, lutein, tartaric acid

**Banana**
beta-carotene, lutein, oxalic acid, zeaxanthin

**Golden Beet**
beta-carotene, beta-cryptoxanthin, flavonoids, lutein, phenolic acids, zeaxanthin, flavonoids

**Yellow Cauliflower**
beta-carotene, polyphenols, protocatechuic acid, quercetin

**Yellow dragon fruit**
betacyanin, beta-carotene, flavonoids, lutein, phenolic acid, zeaxanthin, phenolic acid

**Durian**
alpha-carotene, anthocyanin, beta-carotene, flavonoids, lutein, polyphenols, zeaxanthin

**Eggfruit**
alkaloids, beta-carotene, biolaxantin, gallic acid, neoxanthin, quercetin, terpenoids, zeaxanthin

**Ginger**
gingerol, monoterpenes, oxalic acid, quercetin

**Golden Kiwi**
beta-carotene, beta-cryptoxanthin, caffeic acid, chlorogenic acid, lutein, phenolics, quinic acid, zeaxanthin

**Jackfruit**
alkaloids, alpha-carotene, beta-carotene, flavonoids, lignans, lutein, phenolics, terpenoids, zeaxanthin

**Lemon**
alkaloids, beta-cryptoxanthin, flavonoids, phenols, quinines, rutin, terpenoids

**Nectarine**
anthocyanin, beta-carotene, phenols

**Yellow Pear**
beta-carotene caffeic acid, pectin, quercetin, tocopherols

**Plum**
anthocyanin, beta-cryptoxanthin, lutein

**Rutabaga/ Swedish Turnip**
beta-carotene, indole-3-carbinol, lutein, luteolin

**Summer Squash**
beta-carotene, beta-cryptoxanthin, lutein, zeaxanthin

**Star Fruit**
alkaloids, flavonoids, phenolics, phytofluene

**Pineapple**
alkaloids, beta-carotene, beta-cryptoxanthin, chlorogenic acid

**Plantain**
beta-carotene, lutein, zeaxanthin

**Yellow Watermelon**
beta-carotene, beta-cryptoxanthin, lutein, zeaxanthin

**Yellow Zucchini**
alpha-carotene, beta-carotene, lutein, zeaxanthin

## Other Yellow Foods and Their Phytonutrient Compounds

**Yellow bell pepper**
beta-carotene, capsaicinoid, lutein, phenols, zeaxanthin

**Corn**
anthocyanin, beta-carotene, flavonoids, phenolic acids

**Millet**
beta-carotene, lutein, zeaxanthin, ferulic acid, caffeic acid, chlorogenic acid

**Yellow Potatoes**
beta-carotene, lutein, zeaxanthin, flavonoids, phenols, anthocyanin

**Sources:** 21, 49, 57, 53, 48

# Ways to incorporate more yellow foods into your diet

- Add diced yellow bell peppers and corn to your stir-fry.
- Make honey and lemon tea.
- Make stove-top popcorn with healthy fats such as olive oil and coconut oil.
- Roast, bake, or mash yellow (Yukon) potatoes instead of white potatoes.
- Use bananas to make banana pancakes and bread.
- Slide some banana into your oatmeal.
- Blend frozen pineapple, almond milk, and honey or maple syrup to make pineapple sorbet.

# Phytonutrients in Green Foods

Dark green, leafy cruciferous vegetables are a good source of sulfur (isocyanate, sulforaphane, glucosinolate). Our body needs sulfur in order to synthesize certain essential proteins. These sulfur compounds break down into isothiocyanates and indoles in the gut, which are known to have antibacterial, antiviral, antifungal, and anti-inflammatory effects. (36, 52, 33)

Research suggests that sulforaphane may support heart health by reducing inflammation and lowering blood pressure. It may also have antidiabetic effects. One study found that sulforaphane reduced fasting blood sugar in patients with type 2 diabetes. (55, 41, 47)

Glucoraphanin, a glucosinolate that's found in some cruciferous vegetables, has been found to protect the blood–brain barrier in mice with induced experimental autoimmune encephalomyelitis (used to study MS, which can't be induced in the same way), suggesting it may reduce the risk of developing MS. (19, 40)

## **AIP-Compliant** Green Foods and Their Phytonutrient Compounds

**Artichoke**
cynarin, gallic acid, quercetin, rutin, silymarin

**Arugula**
glucosinolates, indole-3-carbinol, lutein, sulforaphane, thiocyanates, zeaxanthin

**Asparagus**
lycopene, rutin, glutathione, quercetin, caffeic acid, kaempferol, ferulic acid

**Bitter Gourd**
anthraquinones, beta-carotene, glucosinolates, isoflavones, lutein, phenolic acids, sterol,

**Bok Choy**
beta-carotene, flavonoids, glucosinolates, kaempferol, lutein

**Broccoli**
alpha-carotene, beta-carotene, glucosinolates, kaempferol, lutein, sulforaphane

**Brussel Sprouts**
indole-3-carbinol, isoflavonoids, isothiocyanate, kaempferol, lutein, zeaxanthin

**Cabbage**
beta-carotene, chlorogenic acid, indole-3-carbinol, lutein, sulforaphane, tocopherol

**Collards**
beta-carotene, lutein, indole-3-carbinol, isothiocyanates, sulforaphane, zeaxanthin

**Zucchini**
beta-carotene, lutein, zeaxanthin

**Gai Lan/ Chinese Broccoli/ kale**
beta-carotene, carbinol, chlorophyll, indole-3-carbinol, lutein, sulforaphane, zeaxanthin

**Honey Dew Melon**
beta-carotene, caffeic acid, ellagic acid, ferulic acid, gallic acid, kaempferol, lutein, terpenes

**Horseradish**
glucosinolates, lutein, polysulfides, zeaxanthin

**Kale**
beta-carotene, glucosinolates, indole-3-carbinol, kaempferol, lutein, zeaxanthin

**Kiwi**
anthocyanin, beta-carotene, beta-cryptoxanthin, flavonoids, lutein

**Kohlrabi**
anthocyanin, beta-carotene, glucosinolates, isothiocyanate

**Leek**
allicin, alliin, beta-carotene, gallic acid, isothiocyanate, kaempferol, lutein

**Lettuce**
beta-carotene, chlorophyll, lutein, zeaxanthin

**Mustard Greens**
glucosinolate, beta-carotene, lutein, zeaxanthin, phenolic acids, anthocyanin

**Okra**
beta-carotene, chlorophyll, flavonoids, lutein, phytosterols, zeaxanthin

**Perilla**
apigenin, beta-carotene, caffeic acid, citral, dillapiole, elemicin, limonene, luteolin, myristicin

**Spinach**
beta-carotenes, lutein, quercetin, zeaxanthin

**Swiss Chard**
catechin, epicatechin, kaempferol, lutein, myricetin, quercetin, zeaxanthin

**Watercress**
beta-carotene, glucosinolates, lutein, zeaxanthin

## Other Green Foods and Their Phytonutrient Compounds

**Coriander**
apigenin, caffeic acid, chlorogenic acid, chlorophyll, flavonoids, kaempferol

**Pistachios**
anthocyanin, beta-carotene, chloroform, lutein, phytosterols, violaxanthin

**Sources:** 21, 10, 14

# Ways to incorporate more green foods into your diet

- Add chopped spinach and asparagus to an omelet or frittata.
- Make a green smoothie using a variety of green vegetables and fruits.
- Make kale chips using green kale.
- Use basil or any dark green vegetable of your choice to make a pesto sauce.
- Dip cucumbers in hummus, or celery in peanut butter.
- Make wraps using lettuce leaves, cabbage leaves, perilla leaves, or Swiss chard.
- Saute your choice of green vegetables with garlic, lemon, and olive oil.

# Phytonutrients in Blue/Purple/ Black Foods

Anthocyanins are phytochemicals that give red, blue, and purple plants their vibrant coloring. Anthocyanins have antioxidant properties that may boost heart health and reduce the risk of developing cardiovascular-related and other chronic diseases. (26)

Anthocyanin-rich foods have been linked to reductions in inflammation and reduced blood sugar concentrations, suggesting they may also have antidiabetic effects. Anthocyanins have also been found to protect eye health. One study found that daily supplementation with pharmaceutical anthocyanins improved the visual function of individuals with normal tension glaucoma (where the optic nerve is damaged despite pressure in the eye being normal). (30, 43)

Other phytochemicals called stilbenoids are typically found in grapes and blueberries. Like anthocyanins, stilbenoids have been shown to have a variety of benefits such as protective effects on the heart and brain, as well as antidiabetic, anticancer, and anti-inflammatory properties. (4)

## **AIP-Compliant** Blue/Purple/Black Foods and Their Phytonutrient Compounds


anthocyanin, beta-carotene, ecdysterone, lutein, zeaxanthin


anthocyanin, beta-carotene, kaempferol, myrcene, phenolic acids, quercetin, rutin, terpinolene


anthocyanin, caffeic acid, chlorogenic acid, kaempferol, myricetin, quercetin, terpenoids


anthocyanin, beta-carotene, lutein, salicylic acid, zeaxanthin


anthocyanin, catechins, ferulic acid, gallic acid, myricetin, phenolic acids, quercetin, stilbenoids


anthocyanin, beta-carotene, flavonoids, glucosinolates, indole-3-carbinol, lutein, sulforaphane, zeaxanthin


anthocyanin, beta-carotene, glucosinolates, iindole-3-carbinol, lutein, sulforaphane, zeaxanthin


alpha-carotene, anthocyanin, beta-carotene, caffeic acid, chlorogenic acid, lutein, zeaxanthin


anthocyanin, caffeic acid, kaempferol, phenolic acids, lignans, myricetin, quercetin


anthocyanin, flavonoids, polyphenols


anthocyanin, beta-carotene, chlorogenic acid, lutein, rutin, zeaxanthin


anthocyanin, beta-carotene, caffeic acid, catechins, coumaric acid, ellagic acid, ferulic acid, kaempferol, lutein, myricetin, quercetin, stilbenoids, zeaxanthin


anthocyanins, beta-carotene, flavonoids, glucosinolates, indole-3-carbinol, lutein, sulforaphane, zeaxanthin


anthocyanin, chlorogenic acid, lutein, phytosterols, sorbitol, terpenoids, zeaxanthin


anthocyanin, ellagic acid, lutein, lycopene, quercetin, zeaxanthin

## Other Blue/Purple/Black Foods and Their Phytonutrient Compounds


caffeic acid, quercetin, myricetin, phenolic acids, chlorogenic acid


phenolic acids, tocopherols, flavonoids, anthocyanin, phytosterols, phytic acid


anthocyanin, aubergenone, flavonoids, glycoalkaloids, phenolic compounds

**Sources:** 22, 35, 3, 27, 38

# Ways to incorporate more blue/purple/ black foods into your diet

- Substitute purple cabbage, carrots, and onions for green cabbage, orange carrots, and white onions.
- Add blueberries, blackberries, black currants, figs, and plums to yogurt or oatmeal.
- Have a baked purple sweet potato instead of white potato, or use them to make sweet potato patties.
- Make sauerkraut using purple cabbage.
- Use purple vegetables in salads.
- Make a cannelloni using eggplant.

# Phytonutrients in White/Tan/ Brown Foods

Allicin, a phytochemical produced when garlic is chopped or crushed, has been associated with a lower risk of coronary events in older adults. Research suggests allicin may help reduce LDL and total cholesterol levels when consumed for more than 2 months. (8, 39)

Garlic is well known for its antimicrobial effects and has historically been used to combat infectious diseases. It is also known to be effective against a variety of bacteria, such as Salmonella, Escherichia coli, and *Staphylococcus aureus*. (8)

Another phytonutrient that is found in many white, tan, and brown foods is quercetin. Quercetin has anti-inflammatory properties and may be effective against obesity, cancer, viruses, allergies, and high blood pressure. (5)

Serum C-reactive protein (CRP) levels are a biomarker of inflammation in the body. High CRP levels are associated with heart disease, obesity, and lupus. One study done in 2008 found that intake of foods rich in flavonoids, such as quercetin, is associated with lower serum CRP concentrations. (6)

## **AIP-Compliant** White/Tan/Brown Foods and Their Phytonutrient Compounds

| | | | | | |
|---|---|---|---|---|---|
| Cauliflower | Dates | Japanese Turnip | Garlic | Ginger | Lotus Root |
| beta-carotene, flavonoids, glucosinolates, indole-3-carbinol, lutein, sulforaphane, zeaxanthin | beta-carotene, flavonoids, lutein, phenolic acids, zeaxanthin | anthocyanins, beta-carotene, ferulic acid, glucosinolate, lutein, quercetin, violaxanthin | allicin, allin, caffeic acid, ferulic acid, kaempferol, polysulfides, quercetin, triterpenoid | gingerols, paradols, shogaols, terpenes | catechins, catechol, gallic acid, phenolic acids |
| Lychee | Mangosteen | Mushroom | Olives | Onion | Taro |
| anthocyanidins, catechins, malvidin, quercetin, rutin | catechins, gartanin, mangostin, normagostin, rosin, xanthones | beta-glucans, ergosterol, ganoderic acid, lucidenic acid | hydroxytyrosol, oleuropein | allicin, alliin, caffeic acid, ferulic acid, fumaric acid, phytosterols, quercetin, rutin | alkaloids, flavonoids, glycosides, phenols, quercetin, terpenoids |

## Other White/Tan/Brown Foods and Their Phytonutrient Compounds

| | | | | | |
|---|---|---|---|---|---|
| Almonds | Cacao | Hazelnut | Legumes | Sesame | Soy |
| catechin, kaempferol, methylquercetin, protocatechuic acid, p-hydroxybenzoic acid, resveratrols, vanillic acid | caffeine, flavonols, quercetin, theobromine | caffeoylquinic acid, gallic acid, kaempferol, myricetin, quercetin | flavonoids, lutein, phenolic acids, tocopherols, zeaxanthin | lignans, phytosterols, sesamin, sesamolin, tocopherols | beta-sitosterol, daidzein, genistein, isoflavone |
| Walnuts | Whole Grains | White Potatoes | Coffee | Flaxseed | |
| gallic acid, phenolic acids, phytosterol, proanthocyanidins | beta-cryptoxanthin, flavonoids, lutein, zeaxanthin | flavonoids, phenolic acids, beta-carotene, chlorogenic acid | beta-carotene, caffeine, chlorogenic acid, phenolic acids | campesterol, lignans, triterpenes, sitosterol, stigmasterol | |

**Sources:** 18, 3, 21, 15, 2

# Ways to incorporate more white/tan/brown foods into your diet

- Use dates to sweeten a dish or drink instead of refined sweeteners.
- Add onions and mushrooms to a stir-fry.
- Make your own granola or trail mix using whole grains, nuts, and seeds.
- Stir-fry lotus root with bell peppers and garlic sauce.
- Add cacao to smoothies, yogurt, or oatmeal.
- Pickle some Japanese turnip to have as a snack or side dish.

# The Bottom Line on Phytonutrients

The thousands of phytochemicals produced by plants for their own protection may also help prevent and treat many of our own medical conditions and diseases. Phytonutrients give fruits, vegetables, grains, nuts, and other plant foods their variety of colors, so “eat the rainbow” to maximize the health benefits offered by these plentiful chemical compounds.

# Going grocery shopping?

*Take this AIP-friendly, phytonutrient-rich list on your next trip to the grocery store.*

## RED

Beet
Blood orange
Cherry
Cranberry
Gac
Radishes
Red grape
Red grapefruit
Pink guava
Red onion
Red pear
Pomegranate
Rose hip
Watermelon

## ORANGE

Cantaloupe
Carrots
Mango
Papaya
Peach
Persimmon
Pumpkin
Sea buckthorn
Sweet potato
Squash
Tangerine
Turmeric
Winter squash
Yam

## YELLOW

Avocado
Yellow apple
Banana
Golden beet
Dragon fruit
Durian
Eggfruit
Ginger
Golden kiwi
Jackfruit
Lemon
Nectarine
Yellow pear
Rutabaga

## GREEN

Algae
Artichoke
Arugula
Asparagus
Bitter gourd
Bok choy
Brussel sprouts
Collards
Coriander
Gai lan
Kiwi
Kohlrabi
Mustard Greens
Okra
Perilla

## BLUE/PURPLE/BLACK

Purple basil
Bilberry
Blackberries
Blueberries
Purple cabbage
Purple carrots
Black currants
Elderberries
Fig
Purple grapes
Purple kale
Plum
Radicchio

## WHITE/TAN/BROWN

Cauliflower
Coconut
Dates
Garlic
Ginger
Lotus root
Lychee
Mangosteen
Mushroom
Olives
Onion
Sesame

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