



# Phytochemicals and Your Health

## What is a phytochemical, and why should you care?

Phytochemicals are organic compounds found in plants; they are not nutrients essential for life—but you should care about them because many have known or potential health benefits.

### Antioxidants

Phytochemical	Food Sources
Anthocyanins	Blackberries, blueberries, strawberries, red grapes, red apple, red bell pepper, red cabbage, cherries, eggplant, plums, figs, red wine
Capsaicin	Chili peppers
Catechins (flavanols)	Green and black tea, berries
Flavonoids, polyphenolic acids, and other phenolic compounds	Parsely, carrots, citrus fruits, broccoli, cabbage, cucumbers, squash, yams, tomatoes, eggplant, peppers, soybean products, berries, potatoes, broad beans, pea pods, colored onions, radishes, horseradish, tea, onions, apples, red wine, grape juice
Lycopene	Tomato sauce, catsup, red grapefruit, guava, dried apricots, watermelon
<i>d</i> -limonene	Citrus, citrus oils

### Anti-Inflammatory

Phytochemical	Food Sources
Alpha-linolenic acid	Flaxseed, soy, walnuts
Beta-carotene	Green and yellow fruits and vegetables
Curcumin	Turmeric, curry, cumin

### Enhanced Immunity

Phytochemical	Food Sources
Alpha-linolenic acid	Flaxseed, soy, walnuts
Beta-carotene	Green and yellow fruits and vegetables
Catechins (flavanols)	Green and black tea, berries

### Anti-Cancer Activity

Phytochemical	Food Sources	Potential Health Benefits
Allylic sulfides	Garlic, onion, shallots, chives, leeks	Anti-cancer activity; may reduce risk for colon and stomach cancers
Alpha-linolenic acid	Flaxseed, soy, walnuts	May protect against breast cancer
Beta-carotene	Green and yellow fruits and vegetables	Reduces risk of lung and breast cancers



Phytochemical	Food Sources	Potential Health Benefits
Capsaicin	Chili peppers	Reduces risk for colon, gastric, and rectal cancer
Coumarin	Parsley, carrots, citrus	Reduces risk of cancers
Curcumin	Turmeric, curry, cumin	Reduces risk of skin cancer
Flavonoids, polyphenolic acids, and other phenolic compounds	Parsely, carrots, citrus fruits, broccoli, cabbage, cucumbers, squash, yams, tomatoes, eggplant, peppers, soybean products, berries, potatoes, broad beans, pea pods, colored onions, radishes, horseradish, tea, onions, apples, red wine, grape juice	Anticarcinogenic activity
Genistein (isoflavone)	Soybeans	Reduces risk of hormone-dependent cancers
Indoles	Cabbage, broccoli, brussels sprouts, spinach, watercress, cauliflower, turnip, kohlrabi, kale, rutabaga, horseradish, mustard greens	Reduce risk of hormone-related cancers
Isoflavones and saponins	Soybeans and soybean products	Decrease risks of certain cancers
Sulforaphane (released during chewing of cruciferous vegetables)	Cabbage, cauliflower, broccoli and broccoli sprouts, mustard greens, horseradish, radish	Reduced risk of tobacco-induced tumors; decreased risk for breast, prostate, and possibly colon cancer
Lignans	High fiber foods, especially seeds; flax	Reduce colon cancer risk, may decrease risk of estrogen-stimulated breast cancer
Lycopene	Tomato sauce, catsup, red grapefruit, guava, dried apricots, watermelon	Reduces risk of prostate cancer
<i>d</i> -limonene	Citrus, citrus oils	Reduces cancer risk
Monoterpenes	Parsely carrots, celery, broccoli, cabbage, cauliflower, squash, yams, tomatoes, eggplant, peppers, mint, basil, caraway seed oil	Anti-cancer activity
Organosulfur compounds	Garlic, onion, watercress, cruciferous vegetables, leeks	Reduce risk of gastric cancer
Polyacetylene	Parsley, carrots, celery	Decrease risk for tobacco-induced tumors
Phenolic acid	Cruciferous vegetables, eggplant, peppers, tomatoes, celery, parsley, soy, licorice root, flaxseed, citrus, whole grains, berries	Reduces risk for lung and skin cancers
Retinol	Green and yellow vegetables and fruits	Potentially decrease risk for certain cancers

## Cardiovascular Health

Phytochemical	Food Sources	Potential Health Benefit
Allylic sulfides	Garlic, onion, shallots, chives, leeks	Decrease lipid peroxidation, decrease cholesterol levels (total and LDL)



Phytochemical	Food Sources	Potential Health Benefit
Alpha-linolenic acid	Flaxseed, soy, walnuts	Lowers blood cholesterol, reduces inflammation
Anthocyanins	Blackberries, blueberries, strawberries, red grapes, red apple, red bell pepper, red cabbage, cherries, eggplant, plums, figs, red wine	Inhibits HMG-CoA reductase
Beta-carotene	Green and yellow fruits and vegetables	Reduces risk of coronary artery disease
Catechins (flavanols)	Green and black tea, berries	Decrease cholesterol production
Cynarin	Artichoke	Decrease cholesterol levels
Ellagic acid	Wine, grapes, currants, nuts (pecans), berries (strawberries, blackberries, raspberries), seeds	Reduces LDL cholesterol while increasing HDL cholesterol
Flavonoids, polyphenolic acids, and other phenolic compounds	Parsely, carrots, citrus fruits, broccoli, cabbage, cucumbers, squash, yams, tomatoes, eggplant, peppers, soybean products, berries, potatoes, broad beans, pea pods, colored onions, radishes, horseradish, tea, onions, apples, red wine, grape juice	Inhibit platelet aggregation and atherosclerosis
Genistein (isoflavone)	Soybean	Reduces cholesterol levels, reduces thrombi formation
Isoflavones and saponins	Soybeans and soybean products	Potentially decrease risk for coronary artery disease
Lignans	High fiber foods, especially seeds; flax	Reduce blood glucose and cholesterol
Lycopene	Tomato sauce, catsup, red grapefruit, guava, dried apricots, watermelon	May reduce the risk of cardiovascular disease
<i>d</i> -limonene	Citrus, citrus oils	Reduces cholesterol production
Organosulfur compounds	Garlic, onion, watercress, cruciferous vegetables, leeks	Decrease lipid peroxidation, anti-thrombotic, reduce cholesterol
Plant sterols	Broccoli, cabbage, cucumbers, squash, yams, tomatoes, eggplant, peppers, soy products, whole grains	Decrease total and LDL cholesterol levels

## Other Health Benefits

Potential Health Benefit	Phytochemical	Food Sources
Reduces risk of cataracts	Beta-carotene	Green and yellow fruits and vegetables
Reduces risk of osteoporosis, reduces menopausal symptoms	Genistein (isoflavone)	Soybean
Potentially decrease risk of osteoporosis	Isoflavones and saponins	Soybeans and soybean products
Reduces premenstrual symptoms	<i>d</i> -limonene	Citrus, citrus oils