Polyphenols: Extraction Technologies and Prospects

Subjects: Others
Contributor: STEFANOS LEONTOPoulos

Polyphenols are a category of plant compounds that offers various health benefits.

Regularly consuming polyphenols is thought to boost digestion and brain health, as well as protect against heart disease, type 2 diabetes, and even certain cancers.

Red wine, dark chocolate, tea, and berries are some of the best-known sources. Yet, many other foods also offer significant amounts of these compounds.

This article reviews everything you need to know about polyphenols, including possible food sources.

HEALTHLINE RESOURCE
Your guide to beauty buzzwords

Confused about which skin care ingredients live up to the hype? You're not alone. Find out which products are worth using or worth skipping.

What are polyphenols?

Polyphenols are a category of compounds naturally found in plant foods, such as fruits, vegetables, herbs, spices, tea, dark chocolate, and wine.

They can act as antioxidants, meaning they can neutralize harmful free radicals that would otherwise damage your cells and increase your risk of conditions like cancer, diabetes, and heart disease (1Trusted Source).

Polyphenols are also thought to reduce inflammation, which is thought to be the root cause of many chronic illnesses (2Trusted Source, 3Trusted Source).

Types of polyphenols

More than 8,000 types of polyphenols have been identified. They can be further categorized into 4 main groups (4Trusted Source, 5Trusted Source):

- **Flavonoids.** These account for around 60% of all polyphenols. Examples include quercetin, kaemperol, catechins, and anthocyanins, which are found in foods like apples, onions, dark chocolate, and red cabbage.
- **Phenolic acids.** This group accounts for around 30% of all polyphenols. Examples include stilbenes and lignans, which are mostly found in fruits, vegetables, whole grains, and seeds.
- **Polyphenolic amides.** This category includes capsaicinoids in chili peppers and avenanthramides in oats.
- **Other polyphenols.** This group includes resveratrol in red wine, ellagic acid in berries, curcumin in turmeric, and lignans in flax seeds, sesame seeds, and whole grains.

The amount and type of polyphenols in foods depend on the food, including its origin, ripeness, and how it was farmed, transported, stored, and prepared.

Polyphenol-containing supplements are available as well. However, they’re likely to be less beneficial than polyphenol-rich foods (6Trusted Source).

Summary
Polyphenols are beneficial plant compounds with antioxidant properties that may help keep you healthy and protect against various diseases. They can be subdivided into flavonoids, phenolic acid, polyphenolic amides, and other polyphenols.

Health benefits of polyphenols

Polyphenols have been linked to various health benefits.

**May lower blood sugar levels**

Polyphenols may help lower your blood sugar levels, contributing to a lower risk of type 2 diabetes.

That's partly because polyphenols may prevent the breakdown of starch into simple sugars, lowering the likelihood of blood sugar spikes after meals ([7](#Trusteed Source)).

These compounds may also help stimulate the secretion of insulin, a hormone that's required to shuttle sugar from your bloodstream into your cells and keep your blood sugar levels stable ([7](#Trusteed Source)).

Various studies further link polyphenol-rich diets to lower fasting blood sugar levels, higher glucose tolerance, and increased insulin sensitivity — all important factors in lowering your risk of type 2 diabetes ([8](#Trusteed Source)).

In one study, people eating the highest amounts of polyphenol-rich foods had up to a 57% lower risk of developing type 2 diabetes over 2-4 years, compared with those eating the lowest amounts ([9](#Trusteed Source)).

Among polyphenols, research suggests that anthocyanins may offer the most potent antidiabetic effect. They're typically found in red, purple, and blue foods, such as berries, currants, and grapes ([10](#Trusteed Source), [11](#Trusteed Source)).

**May lower your risk of heart disease**

Adding polyphenols to your diet may improve heart health.

Experts believe that this is largely due to the antioxidant properties of polyphenols, which help reduce chronic inflammation, a risk factor for heart disease ([3](#Trusteed Source), [12](#Trusteed Source), [13](#Trusteed Source)).

Two recent reviews link polyphenol supplements to lower blood pressure and LDL (bad) cholesterol levels, as well as higher HDL (good) cholesterol ([14](#Trusteed Source), [15](#Trusteed Source)).

Another review found a 45% lower risk of death from heart disease in those with higher enterolactone levels, which are a marker of lignan intake. Lignans are a type of polyphenol typically found in flax seeds and whole grains ([16](#Trusteed Source)).

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Polyphenols may reduce your risk of developing a blood clot.

Blood clots are formed when platelets circulating in your bloodstream begin to clump together. This process is known as platelet aggregation and is useful in preventing excess bleeding.

However, excess platelet aggregation can cause blood clots, which can have negative health effects, including deep vein thrombosis, stroke, and pulmonary embolism ([17](#Trusteed Source)).

According to test-tube and animal studies, polyphenols may help reduce the platelet aggregation process, thereby preventing the formation of blood clots ([18](#Trusteed Source), [19](#Trusteed Source), [20](#Trusteed Source)).

**May protect against cancer**

Research consistently links diets rich in plant foods to a lower risk of cancer, and many experts believe that polyphenols are partly responsible for this ([5](#Trusteed Source), [21](#Trusteed Source), [22](#Trusteed Source)).
Polyphenols have strong antioxidant and anti-inflammatory effects, both of which can be beneficial for cancer prevention (23).

A recent review of test-tube studies suggests that polyphenols may block the growth and development of various cancer cells (5Trusted Source, 24Trusted Source).

In humans, some studies link high blood markers of polyphenol intake to a lower risk of breast and prostate cancers, while others find no effects. Therefore, more studies are needed before strong conclusions can be made (25Trusted Source).

**May promote healthy digestion**

Polyphenols may benefit digestion by promoting the growth of beneficial gut bacteria while fending off harmful ones (26Trusted Source, 27Trusted Source).

For instance, evidence suggests that polyphenol-rich tea extracts can promote the growth of beneficial bifidobacteria (28Trusted Source).

Similarly, green tea polyphenols may help fight off harmful bacteria, including *C. difficile*, *E. Coli*, and *Salmonella*, as well as improve symptoms of peptic ulcer disease (PUD) and inflammatory bowel disease (IBD) (29Trusted Source, 30Trusted Source).

Furthermore, emerging evidence indicates that polyphenols may help probiotics thrive and survive. These are beneficial bacteria that occur in certain fermented foods and can be taken in supplement form. However, more research is needed (31Trusted Source).

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Polyphenol-rich foods may boost your focus and memory.

One study reports that drinking grape juice, which is naturally rich in polyphenols, helped significantly boost memory in older adults with mild mental impairment in as little as 12 weeks (32Trusted Source).

Others suggest that cocoa flavanols may improve blood flow to the brain and have linked these polyphenols to improved working memory and attention (33Trusted Source, 34Trusted Source, 35Trusted Source, 36Trusted Source).

Similarly, the polyphenol-rich plant extract *Ginkgo biloba* appears to boost memory, learning, and concentration. It has also been linked to improved brain activity and short-term memory in those with dementia (37Trusted Source).

**Summary**

Polyphenols may help prevent blood clots, reduce blood sugar levels, and lower heart disease risk. They may also promote brain function, improve digestion, and offer some protection against cancer, though more research is needed.

**Foods rich in polyphenols**

Though tea, dark chocolate, red wine, and berries are likely the best-known sources of polyphenols, many other foods also contain high amounts of these beneficial compounds.

Here are the 75 foods richest in polyphenols, listed by category (38Trusted Source).

**Fruits**

- apples
- apricots
- black chokeberries
- black and red currants
- black elderberries
- black grapes
- blackberries
- blueberries
- cherries
• grapes
• grapefruit
• lemon
• nectarines
• peaches
• pears
• pomegranate
• plums
• raspberries
• strawberries

Vegetables
• artichokes
• asparagus
• broccoli
• carrots
• endives
• potatoes
• red chicory
• red lettuce
• red and yellow onions
• spinach
• shallots

Legumes
• black beans
• tempeh
• tofu
• soybean sprouts
• soy meat
• soy milk
• soy yogurt
• white beans

Nuts and seeds
• almonds
• chestnuts
• hazelnuts
• flax seeds
• pecans
• walnuts

Grains
• oats
• rye
• whole wheat

Herbs and spices
• caraway
• celery seed
• cinnamon
• cloves
• cumin
• curry powder
• dried basil
• dried marjoram
• dried parsley
- dried peppermint
- dried spearmint
- lemon verbena
- Mexican oregano
- rosemary
- sage
- star anise
- thyme

**Other**

- black tea
- capers
- cocoa powder
- coffee
- dark chocolate
- ginger
- green tea
- olives and olive oil
- rapeseed oil
- red wine
- vinegar

Including foods from each of these categories in your diet provides you a wide variety of polyphenols.

**Summary**

Many plant foods are naturally rich in polyphenols. Including a variety of these foods in your diet is a great strategy to boost your intake of these beneficial nutrients.

**What about polyphenol supplements?**

Supplements have the advantage of offering a consistent dose of polyphenols. However, they also have several potential drawbacks.

First, supplements haven’t been consistently shown to offer the same benefits as polyphenol-rich foods, and they don’t contain any of the additional beneficial plant compounds typically found in whole foods.

Moreover, polyphenols seem to work best when interacting with the many other nutrients naturally found in foods. It’s currently unclear whether isolated polyphenols, such as those in supplements, are as effective as those found in foods ([6Trusted Source, 39Trusted Source](https://www.allure.com/)).

Finally, polyphenol supplements aren’t regulated, and many contain doses over 100 times larger than those in foods. More research is needed to establish safe and effective dosages, and it’s unclear whether these large doses are beneficial ([39Trusted Source, 40Trusted Source](https://www.allure.com/)).

**Summary**

Polyphenol supplements may not offer the same health benefits as polyphenol-rich foods. Effective and safe dosages haven’t been determined.

**Potential risks and side effects**

Polyphenol-rich foods are safe for most people.

The same cannot be said of supplements, which tend to provide much higher quantities of polyphenols than those typically found in a healthy diet ([39Trusted Source](https://www.allure.com/)).

Animal studies show that high-dose polyphenol supplements may cause kidney damage, tumors, and an imbalance in thyroid hormone levels. In humans, they may result in an increased risk of stroke and premature death ([39Trusted Source, 40Trusted Source](https://www.allure.com/)).

Some polyphenol-rich supplements can interact with nutrient absorption or interact with medications. For instance, they may reduce your body’s ability to absorb iron, thiamine, or folate ([39Trusted Source, 41Trusted Source, 42Trusted Source](https://www.allure.com/)).
If you have a diagnosed nutrient deficiency or are taking medications, it may be best to speak to your healthcare provider about polyphenol supplements before taking them.

In addition, some polyphenol-rich foods, such as beans and peas, may be rich in lectins. When consumed in large quantities, lectins may cause unpleasant digestive symptoms, such as gas, bloating, and indigestion (43Trusted Source).

If this is an issue for you, try soaking or sprouting your legumes before eating them, as this can help reduce the lectin content by up to 50% (44Trusted Source, 45Trusted Source).

**Summary**
Polyphenol-rich foods are considered safe for most people, while supplements may cause more harm than good. To reduce gas, bloating, and indigestion, try soaking or sprouting polyphenol-rich legumes before eating them.

**The bottom line**
Polyphenols are beneficial compounds in many plant foods that can be grouped into flavonoids, phenolic acid, polyphenolic amides, and other polyphenols.

They may improve digestion, brain function, and blood sugar levels, as well as protect against blood clots, heart disease, and certain cancers.

More research is needed to identify effective and safe polyphenol supplement dosages.

Therefore, for the time being, it’s best to rely on foods rather than supplements to boost your intake of these healthful compounds.

**How we vetted this article:**
Top Foods with Polyphenols

- Cloves and other seasonings
- Cocoa powder and dark chocolate
- Berries
What are polyphenols?

Polyphenols are compounds that we get through certain plant-based foods. They’re packed with antioxidants and potential health benefits. It’s thought that polyphenols can improve or help treat digestion issues, weight management difficulties, diabetes, neurodegenerative disease, and cardiovascular diseases.

You can get polyphenols by eating foods containing them. You can also take supplements, which come in powder and capsule forms.

Polyphenols may have several unwanted side effects, however. These are most common when taking polyphenol supplements instead of getting them naturally through food. The most common side effect with the strongest scientific evidence is the potential for polyphenols to interfere with or limit iron absorption.

Factors that influence activity of polyphenols in the body include metabolism, intestinal absorption, and the bioavailability of the polyphenol. Although some foods may have higher polyphenol levels than others, this does not necessarily mean that they are absorbed and used at higher rates.

Read on to learn the polyphenol content of many foods. Unless otherwise stated, all numbers are given in milligrams (mg) per 100 grams (g) of food.

1. Cloves and other seasonings

In a 2010 study that identified the 100 foods richest in polyphenols, cloves came out on top. Cloves had a total of 15,188 mg polyphenols per 100 g of cloves.

There were a number of other seasonings with high rankings, too. These included dried peppermint, which ranked second with 11,960 mg polyphenols, and star anise, which came in third with 5,460 mg.

Shop for cloves online.

2. Cocoa powder and dark chocolate

Cocoa powder was the fourth richest polyphenol food identified, with 3,448 mg polyphenols per 100 g of the powder. It’s not a surprise that dark chocolate fell close behind on the list and was ranked eighth with 1,664 mg. Milk chocolate is also on the list, but due to its lower cocoa content, falls much further down the list at number 32.

Find a selection of cocoa powder and dark chocolate online.
3. Berries

A number of different types of berries are rich in polyphenols. These include popular and easily accessible berries like:

- highbush blueberries, with 560 mg polyphenols
- blackberries, with 260 mg polyphenols
- strawberries, with 235 mg polyphenols
- red raspberries, with 215 mg polyphenols

The berry with the most polyphenols? Black chokeberry, which has more than 1,700 mg polyphenols per 100 g.

4. Non-berry fruits

Berries aren’t the only fruits with plenty of polyphenols. According to the American Journal of Clinical Nutrition, a large number of fruits contain high numbers of polyphenols. These include:

- black currants, with 758 mg polyphenols
- plums, with 377 mg polyphenols
- sweet cherries, with 274 mg polyphenols
- apples, with 136 mg polyphenols

Fruit juices like apple juice and pomegranate juice also contain high numbers of this micronutrient.

5. Beans

Beans contain a large number of nutritional benefits, so it’s no surprise that they naturally have hefty doses of polyphenols. Black beans and white beans in particular have the highest number of polyphenols. Black beans have 59 mg per 100 g, and white beans have 51 mg.

6. Nuts

Nuts can be high in caloric value, but they pack a powerful nutritional punch. Not only are they full of protein; some nuts also have high polyphenol content.

One 2012 study found significant levels of polyphenols in a number of both raw and roasted nuts. Nuts high in polyphenols include:

- hazelnuts, with 495 mg polyphenols
- walnuts, with 28 mg polyphenols
- almonds, with 187 mg polyphenols
- pecans, with 493 mg polyphenols

Purchase nuts online.

7. Vegetables

There are many vegetables that contain polyphenols, though they usually have less than fruit. Vegetables with high numbers of polyphenols include:

- artichokes, with 260 mg polyphenols
- chicory, with 166–235 mg polyphenols
- red onions, with 168 mg polyphenols
- spinach, with 119 mg polyphenols
8. Soy

Soy, in all its various forms and stages, contains large numbers of this valuable micronutrient. These forms include:

- soy tempeh, with 148 mg polyphenols
- soy flour, with 466 mg polyphenols
- tofu, with 42 mg polyphenols
- soy yogurt, with 84 mg polyphenols
- soybean sprouts, with 15 mg polyphenols

Purchase soy flour here.

9. Black and green tea

Want to shake it up? In addition to high-fiber fruits, nuts, and vegetables, black and green teas both contain ample amounts of polyphenols. Black tea clocks in with 102 mg polyphenols per 100 milliliters (mL), and green tea has 89 mg.

Find black teas and green teas online.

10. Red wine

Many people drink a glass of red wine every night for the antioxidants. The high number of polyphenols in red wine contributes to that antioxidant count. Red wine has a total of 101 mg polyphenols per 100 mL.

Rosé and white wine, while not as beneficial, still have a decent chunk of polyphenols, with 100 mL of each having about 10 mg polyphenols.

Potential risks and complications

There are some risks and complications associated with polyphenols. These seem to be most heavily associated with taking polyphenol supplements. More research is needed to evaluate the actual risk of these complications, which include:

- carcinogenic effects
- genotoxicity
- thyroid issues
- estrogenic activity in isoflavones
- interactions with other prescription medications

Takeaway

Polyphenols are powerful plant compounds that our body needs. They have numerous health benefits that may offer protection from the development of cancers, cardiovascular disease, osteoporosis, and diabetes.

It’s best to consume polyphenols through foods naturally containing them, instead of through artificially made supplements, which may come with more side effects. If you take supplements, make sure they are made from a reputable company with high quality sourcing.

Last medically reviewed on May 23, 2017

How we vetted this article:
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Red wine, dark chocolate, tea, and berries are some of the best-known sources. Yet, many other foods also offer significant amounts of these compounds.

This article reviews everything you need to know about polyphenols, including possible food sources.

### What are polyphenols?

Polyphenols are a category of compounds naturally found in plant foods, such as fruits, vegetables, herbs, spices, tea, dark chocolate, and wine.

They can act as antioxidants, meaning they can neutralize harmful free radicals that would otherwise damage your cells and increase your risk of conditions like cancer, diabetes, and heart disease [1Trusted Source].

Polyphenols are also thought to reduce inflammation, which is thought to be the root cause of many chronic illnesses [2Trusted Source, 3Trusted Source].

### Types of polyphenols

More than 8,000 types of polyphenols have been identified. They can be further categorized into 4 main groups [4Trusted Source, 5Trusted Source]:

- **Flavonoids.** These account for around 60% of all polyphenols. Examples include quercetin, kaempferol, catechins, and anthocyanins, which are found in foods like apples, onions, dark chocolate, and red cabbage.
- **Phenolic acids.** This group accounts for around 30% of all polyphenols. Examples include stilbenes and lignans, which are mostly found in fruits, vegetables, whole grains, and seeds.
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- **Other polyphenols.** This group includes resveratrol in red wine, ellagic acid in berries, curcumin in turmeric, and lignans in flax seeds, sesame seeds, and whole grains.

The amount and type of polyphenols in foods depend on the food, including its origin, ripeness, and how it was farmed, transported, stored, and prepared.

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Experts believe that this is largely due to the antioxidant properties of polyphenols, which help reduce chronic inflammation, a risk factor for heart disease ([3Trusted Source], [12Trusted Source], [13Trusted Source]).

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**Foods rich in polyphenols**

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• plums
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• strawberries

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• asparagus
• broccoli
• carrots
• endives
• potatoes
• red chicory
• red lettuce
• red and yellow onions
• spinach
• shallots

Legumes
• black beans
• tempeh
• tofu
• soybean sprouts
• soy meat
• soy milk
• soy yogurt
• white beans

Nuts and seeds
• almonds
• chestnuts
• hazelnuts
• flax seeds
• pecans
• walnuts

Grains
• oats
• rye
• whole wheat

Herbs and spices
• caraway
• celery seed
• cinnamon
• cloves
• cumin
• curry powder
• dried basil
• dried marjoram
• dried parsley
• dried peppermint
• dried spearmint
• lemon verbena
• Mexican oregano
• rosemary
• sage
• **star anise**
• thyme

### Other

• black tea
• capers
• cocoa powder
• **coffee**
• dark chocolate
• ginger
• green tea
• olives and olive oil
• rapeseed oil
• red wine
• vinegar

Including foods from each of these categories in your diet provides you a wide variety of polyphenols.

### Summary

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What about polyphenol supplements?

Supplements have the advantage of offering a consistent dose of polyphenols. However, they also have several potential drawbacks.

First, supplements haven’t been consistently shown to offer the same benefits as polyphenol-rich foods, and they don’t contain any of the additional beneficial plant compounds typically found in whole foods.

Moreover, polyphenols seem to work best when interacting with the many other nutrients naturally found in foods. It’s currently unclear whether isolated polyphenols, such as those in supplements, are as effective as those found in foods ([6Trusted Source](#), [39Trusted Source](#)).

Finally, polyphenol supplements aren’t regulated, and many contain doses over 100 times larger than those in foods. More research is needed to establish safe and effective dosages, and it’s unclear whether these large doses are beneficial ([39Trusted Source](#), [40Trusted Source](#)).

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If this is an issue for you, try soaking or sprouting your legumes before eating them, as this can help reduce the lectin content by up to 50% (44Trusted Source, 45Trusted Source).

Summary
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How we vetted this article:

Share this article

By Alina Petre, MS, RD (NL) on July 8, 2019
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- Cloves and other seasonings
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There were a number of other seasonings with high rankings, too. These included dried peppermint, which ranked second with 11,960 mg polyphenols, and star anise, which came in third with 5,460 mg.

Shop for cloves online.

2. Cocoa powder and dark chocolate

Cocoa powder was the fourth richest polyphenol food identified, with 3,448 mg polyphenols per 100 g of the powder. It’s not a surprise that dark chocolate fell close behind on the list and was ranked eighth with 1,664 mg. Milk chocolate is also on the list, but due to its lower cocoa content, falls much further down the list at number 32.

Find a selection of cocoa powder and dark chocolate online.
3. Berries

A number of different types of berries are rich in polyphenols. These include popular and easily accessible berries like:

- highbush blueberries, with 560 mg polyphenols
- blackberries, with 260 mg polyphenols
- strawberries, with 235 mg polyphenols
- red raspberries, with 215 mg polyphenols

The berry with the most polyphenols? Black chokeberry, which has more than 1,700 mg polyphenols per 100 g.

4. Non-berry fruits

Berries aren’t the only fruits with plenty of polyphenols. According to the American Journal of Clinical Nutrition, a large number of fruits contain high numbers of polyphenols. These include:

- black currants, with 758 mg polyphenols
- plums, with 377 mg polyphenols
- sweet cherries, with 274 mg polyphenols
- apples, with 136 mg polyphenols

Fruit juices like apple juice and pomegranate juice also contain high numbers of this micronutrient.

5. Beans

Beans contain a large number of nutritional benefits, so it’s no surprise that they naturally have hefty doses of polyphenols. Black beans and white beans in particular have the highest number of polyphenols. Black beans have 59 mg per 100 g, and white beans have 51 mg.

Shop for beans here.

6. Nuts

Nuts can be high in caloric value, but they pack a powerful nutritional punch. Not only are they full of protein; some nuts also have high polyphenol content.

One 2012 study found significant levels of polyphenols in a number of both raw and roasted nuts. Nuts high in polyphenols include:

- hazelnuts, with 495 mg polyphenols
- walnuts, with 28 mg polyphenols
- almonds, with 187 mg polyphenols
- pecans, with 493 mg polyphenols

Purchase nuts online.

7. Vegetables

There are many vegetables that contain polyphenols, though they usually have less than fruit. Vegetables with
high numbers of polyphenols include:

- artichokes, with 260 mg polyphenols
- chicory, with 166–235 mg polyphenols
- red onions, with 168 mg polyphenols
- spinach, with 119 mg polyphenols

8. Soy

Soy, in all its various forms and stages, contains large numbers [Trusted Source] of this valuable micronutrient. These forms include:

- soy tempeh, with 148 mg polyphenols
- soy flour, with 466 mg polyphenols
- tofu, with 42 mg polyphenols
- soy yogurt, with 84 mg polyphenols
- soybean sprouts, with 15 mg polyphenols

Purchase soy flour here.

9. Black and green tea

Want to shake it up? In addition to high-fiber fruits, nuts, and vegetables, black and green teas [Trusted Source] both contain ample amounts of polyphenols. Black tea clocks in with 102 mg polyphenols per 100 milliliters (mL), and green tea has 89 mg.

Find black teas and green teas online.

10. Red wine

Many people drink a glass of red wine every night for the antioxidants. The high number of polyphenols [Trusted Source] in red wine contributes to that antioxidant count. Red wine has a total of 101 mg polyphenols per 100 mL.

Rosé and white wine, while not as beneficial, still have a decent chunk of polyphenols, with 100 mL of each having about 10 mg polyphenols.

Potential risks and complications

There are some risks and complications associated with polyphenols. These seem to be most heavily associated with taking polyphenol supplements. More research is needed to evaluate the actual risk of these complications, which include:

- carcinogenic effects
- genotoxicity
- thyroid issues
- estrogenic activity in isoflavones
- interactions with other prescription medications

Takeaway

Polyphenols are powerful plant compounds that our body needs. They have numerous health benefits that may offer protection from the development of cancers, cardiovascular disease, osteoporosis, and diabetes.

It’s best to consume polyphenols through foods naturally containing them, instead of through artificially made supplements, which may come with more side effects. If you take supplements, make sure they are made from a reputable company with high quality sourcing.

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How we vetted this article:
Opinions on coffee vary greatly — some consider it healthy and energizing, while others claim it’s addictive and harmful.

Still, when you look at the evidence, most studies on coffee and health find that it’s beneficial.

For example, coffee has been linked to a reduced risk of type 2 diabetes, liver diseases, and Alzheimer’s (1Trusted Source, 2Trusted Source, 3Trusted Source, 4Trusted Source).

Many of coffee’s positive health effects may be due to its impressive content of powerful antioxidants.

In fact, studies show that coffee is one of the largest sources of antioxidants in the human diet.

This article tells you everything you need to know about coffee’s impressive antioxidant content.

Loaded With Several Powerful Antioxidants

Your body is under constant attack from so-called free radicals, which can damage important molecules like proteins and DNA.

Antioxidants can effectively disarm free radicals, thus protecting against aging and many diseases that are partly caused by oxidative stress, including cancer.

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