

# Broccoli Reverses Diabetes Damage

Posted By [Dr. Mercola](#) | August 23 2008 | 43,192 views

Eating broccoli could reverse the damage that diabetes inflicts on heart blood vessels. The key is most likely a compound in the vegetable called sulforaphane.

Sulforaphane encourages production of enzymes that protect the blood vessels, and reduces the number of molecules that cause cell damage -- known as Reactive Oxygen Species (ROS) -- by up to 73 percent.

People with diabetes are up to five times more likely to develop cardiovascular diseases such as heart attacks and strokes -- both of which are linked to damaged blood vessels.

## Sources:

- » [Diabetes August 4, 2008](#)
- » [BBC News August 5, 2008](#)



Dr. Mercola's Comments:

Keeping your heart healthy is extremely important if you have diabetes. Heart disease is actually the most common side effect of the condition, and 65 percent of people with diabetes die from heart attack or stroke.

If diabetes is not controlled, it can damage blood vessels, including those leading to the brain and heart. This encourages the formation of plaques (also known as atherosclerosis), which can ultimately make it difficult for blood to flow through the vessels and cause your blood pressure to rise.

[The Mayo Clinic](#) actually has some revealing statistics on this topic. If you have diabetes you:

- Are two to four times as likely to have a heart attack or stroke (compared to someone without diabetes)
- Are more likely to die from a heart attack
- Have the same risk for sudden death from a heart attack as someone who has already had a heart attack. Tim Russert, the NBC correspondent who recently [died without warning of a heart attack](#), actually had diabetes and coronary artery disease, both of which increased his risk of sudden death.

Yet, it's estimated that 70 percent of people with diabetes are not aware of these increased risks.

On the flip side, if you've had a heart attack, you should be [checked for diabetes or pre-diabetes](#). One study found that over two-thirds of heart attack patients had blood sugar abnormalities in the form of undiagnosed diabetes or pre-diabetes.

### **How Might Broccoli Help?**

One of broccoli's most powerful compounds is the phytochemical sulforaphane. This compound has been found to [restore your immune system as you age](#) and increase your liver's ability to detoxify carcinogenic compounds and free radicals. This in turn protects against cell mutations, cancer and other harmful effects.

It turns out sulforaphane also protects your heart, via two routes:

1. It reduces levels of harmful molecules called Reactive Oxygen Species (ROS).
2. It activates a protein called nrf2, which triggers protective antioxidant and detoxifying enzymes that protect your cells and tissues.

Broccoli is not the only vegetable that contains sulforaphane, though. Most of the veggies in the cruciferous family also contain it, and this includes vegetables such as turnips, cabbage, bok choy, rutabaga, mustard greens, cauliflower, radishes and many others.

To really get the most benefit, it helps to find out your [nutritional type](#), as some people actually do not do well with broccoli.

For instance, one of the most serious mistakes is for a protein nutritional type to consume a lot of dark green vegetables. This tends to over-alkalinize your system and worsens rather than improves your health if you're a protein type. This is despite the many beneficial phytonutrients that are present. I am very familiar with this mistake as it's one that I made prior to understanding nutritional typing.

However, other cruciferous vegetables such as cauliflower, which happens to be beneficial for protein types, can have a similar beneficial effect.

I want you to be aware of just how important it is to understand your body at a deeper level, because if you are a protein type and were to eat broccoli, the other effects of broccoli might push your metabolic biochemistry in the wrong direction and thus override its benefits.

### **What's the Best Way to Eat Broccoli?**

If you want to get even more of broccoli's benefits, opt for the sprouts. Just 5 grams (0.17 ounces) of broccoli sprouts contain concentrations of the compound glucoraphanin (a precursor to sulforaphane) equal to that found in 150 grams (5.2 ounces) of mature broccoli.

If you opt to eat mature broccoli, keep in mind that the way you cook it can greatly alter its nutrient content. Lightly steaming this vegetable should keep most of its phytonutrients intact,

but if you decide to microwave it you could be [reducing the beneficial compounds by 74-90 percent](#).

You can always just eat broccoli raw, of course, and this will ensure that most all of its phytonutrients are intact.

### **Other Natural Methods to Prevent Diabetes and Protect Your Heart**

Eating broccoli and other veggies is only one small piece of the puzzle when it comes to keeping healthy.

Swapping out your grains and sugar for high-quality sources of protein, [healthy fat](#) (which INCLUDES saturated fat) and vegetables according to your nutritional type, all of which is outlined in my book [Take Control of Your Health](#), is also essential, especially for those of you with diabetes.

Next, [add in regular exercise](#). This, combined with diet, will help you to shed excess weight, and a weight loss of 10 pounds can reduce your risk of diabetes by nearly 60 percent.

Diet and exercise are your two keys to preventing both heart disease and diabetes, but the third factor, especially for heart disease, is your emotions. [Stress is the most common cause of heart attacks](#), so make sure you know how to keep your emotions under control using methods like the [Emotional Freedom Technique \(EFT\)](#), meditation, or even just a long soak in the tub with a really good book.

### **Related Links:**

- ✎ [Diabetes Is Not A Disease Of Blood Sugar!](#)
- ✎ [How Broccoli Fights Cancer](#)
- ✎ [Broccoli Boosts Aging Immune Systems](#)

# **How Broccoli Fights Cancer**

Posted By [Dr. Mercola](#) | July 22 2008 | 62,356 views

Just a few additional portions of broccoli each week could protect men from prostate cancer. Researchers believe a substance called isothiocyanate in the broccoli sparks hundreds of genetic changes, activating some genes that fight cancer and switching off others that fuel tumors.



Prostate cancer kills more men than any other kind except for lung cancer. Each year, 680,000 men worldwide are diagnosed with the disease and about 220,000 will die from it.

The benefit derived from broccoli would likely also be available from other cruciferous vegetables that contain isothiocyanate, including Brussels sprouts, cauliflower, cabbage, arugula, watercress and horseradish.

### Sources:

- » [PLoS ONE July 2, 2008; 3\(7\):e2568](#)
- » [Reuters July 1, 2008](#)



Dr. Mercola's Comments:

I have long touted the cancer busting power of broccoli and actually [posted my first article on it 11 years ago.](#)

Back then, animal studies had shown that glucoraphanin -- a precursor to sulforaphane -- boosts cell enzymes that protect against molecular damage from cancer-causing chemicals. Sulforaphane had also been shown to mobilize natural cancer protection resources, reducing the risk of malignancy.

Now, in this current PLoS study, they've been able to validate the actions of sulforaphane in humans as well.

Broccoli (as compared to other cruciferous vegetables) has a particularly powerful type of sulforaphane, which the researchers believe gives broccoli its particular cancer-fighting properties. It appears that broccoli contains the necessary ingredients to switch ON genes that prevent cancer development, and switch OFF other ones that help it spread.

The power of food in normalizing chronic disease and helping you achieve optimal health is quite profound and one of the reasons that I chose a career of natural health.

## How Much Broccoli do You Have to Eat to Reap These Benefits?

Previous studies have indicated that people who consume **more than one portion** of cruciferous vegetables per week are at lower risk of prostate cancer. In the study above, the participants ate four extra servings of broccoli per week for one year.

The researchers collected tissue samples over the course of the study and found that the men who ate broccoli showed **hundreds** of beneficial changes in genes known to play a role in fighting cancer!

That's pretty impressive. What's even more impressive is the fact that you don't have to make that drastic of a change to reap the benefits. After all, one [serving](#) of broccoli equates to about two spears. So we're only talking approximately 10 spears a week, folks. That's it!

## Is Broccoli the Right Choice for You?

While I believe foods, [especially vegetables](#), are a far smarter choice to treat serious health challenges like cancer than using most drugs, all foods may still not be the right choice for you. And even though vegetables are one of the healthiest food categories on the planet, not all vegetables are beneficial for everyone.

This is where a deep appreciation of [nutritional typing](#) will assist you in selecting the best vegetables for you.

One of the most serious mistakes is for a protein type to consume many dark green vegetables. This tends to over-alkaline your system and worsens rather than improves your health if you're a protein type. This is despite the many beneficial phytonutrients that are present. I am very familiar with this mistake as it's one that I made prior to understanding nutritional typing.

However, other cruciferous vegetables such as cauliflower, which happen to be beneficial for protein types, can also have a similar effect.

I want you to be aware of just how important it is to understand your body at a deeper level, because if you are a protein type and were to eat broccoli, the other effects of broccoli might push your metabolic biochemistry in the wrong direction and thus override its benefits.

The best way to understand specifically what foods are ideal for your body in particular is to learn your [nutritional type](#). When you eat properly for your particular type, you will experience increased daily energy, improved emotional well-being, a feeling of satiety and satisfaction, and, of course, optimized health and weight so you live longer.

However, even if you were a mixed or vegetarian/carb type and broccoli are good for you, there may be an even better way to get these cancer-fighting benefits than eating whole broccoli!

## What Might be Even Better Than Broccoli?

Small quantities of fresh broccoli *sprouts* contain as much cancer protection as larger amounts of the mature vegetable sold in food markets, according to previous research at Johns Hopkins University.

Just 5 grams (0.17 ounces) of sprouts contain concentrations of the compound glucoraphanin (a precursor to sulforaphane) equal to that found in 150 grams (5.2 ounces) of mature broccoli.

You can grow broccoli sprouts at home quite easily and inexpensively, and as you can see, a small amount of sprouts go a long way. Another major benefit is that the sprouts don't smell since you don't have to cook them. They are eaten raw, usually as an addition to salad.

### **Guidelines to Help Avoid and Treat Prostate (and Breast) Cancer**

The guidelines for preventing and treating breast cancer are almost identical to those for treating prostate cancer.

Below are my recommendations for how to avoid and treat prostate and breast cancer:

1. [Optimize your vitamin D levels](#) with appropriate sun exposure. Ideally, it would be best to [monitor your vitamin D levels](#).
2. [Control your insulin levels](#). Make certain that you limit your intake of processed foods.
3. Get appropriate [exercise](#). One of the primary reasons exercise works is that it drives your insulin levels down. Controlling insulin levels is one of the most powerful ways to reduce your cancer risks.
4. Get appropriate amounts of animal-based [omega-3 fats](#) such as krill oil or fish oil, and reduce your intake of omega-6 oils.
5. IP6 (phytic acid) is a powerful tool to [lower high iron levels](#) (serum ferritin levels). Excess iron can be a major cause of many cancers.
6. [Selenium](#) - 400 mcg per day.
7. Consume freshly ground [flaxseeds](#) - two ounces every other day.
8. [Vitamin E](#) - 400 units per day. (Please note: Only [natural vitamin E](#) should be used, not synthetic. Additionally, mixed tocopherol is more preferable than alpha-tocopherol, as the gamma tocopherols are particularly useful antioxidants.)
9. Consume fresh [vegetable](#) juice daily - including one small [tomato](#) (lycopene).
10. Eliminate sugar as much as possible as it's been shown again and again that [sugar feeds cancer](#).
11. Eat broccoli or cauliflower sprouts, depending on your nutritional type.
12. Have a tool to permanently erase the neurological short-circuiting that can activate cancer genes. Even the CDC states that [85 percent of disease is caused by emotions](#). It is likely that this factor may be more important than all the other physical ones listed here, so make sure this is addressed. My favorite tool, as you may know, is the [Emotional Freedom Technique](#).
13. Get enough high-quality sleep
14. Reduce your exposure to [environmental toxins](#) and [sources of heavy metals](#).
15. Boil, poach or steam your foods, rather than [frying or charbroiling them](#).

## Related Links:

- » [Broccoli Sprouts Fight Cancer](#)
- » [Cabbage, Broccoli Lower Bladder Cancer Risk](#)
- » [Broccoli Sprouts Fight Ulcers and Cancer](#)

# Cabbage, Broccoli Lower Bladder Cancer Risk

Posted By [Dr. Mercola](#) | January 02 2008 | 2,415 views

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Men who consume a lot of cruciferous vegetables -- specifically, broccoli and cabbage - may reduce their risk of bladder cancer. The higher the intake of cruciferous vegetables, the lower the bladder cancer risk. Of all the vegetables, only broccoli and cabbage intake seemed to have an impact on bladder cancer risk. Because the rate of bladder cancer in men is three to four times higher than in women, the researchers note that the findings may not apply to women.

**Journal of the National Cancer Institute April 7, 1999;91:605-613.**

**COMMENT:** It is good to see phytonutrient-based research being published in some of the hard core traditional cancer journals. I believe this is an encouraging sign. In general, it is wise to include as many different variety of vegetables in your diet as you can tolerate. The greater the variety and the larger the volume the better. Most all of the powerful healing elements of food are in the vegetables. The grains are what is getting our culture into most disease producing conditions as they are relatively devoid of nutrients when compared with vegetables. The vegetables deserve to be at the base of the food pyramid, not the grains. They should be placed far higher up, right under sugar.

## The Natural Cancer-Fighting Power of Tomatoes and Broccoli

Posted By [Dr. Mercola](#) | February 03 2007 | 3,974 views

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Broccoli and tomatoes, both of which have been previously found to help fight cancer, have been found to be even more effective against prostate cancer when eaten together as part of a daily diet.

Researchers fed rats who had been implanted with prostate cancer cells a diet containing 10 percent broccoli powder and 10 percent tomato powder for a period of 22 weeks.

Other rats received either one or the other but not both, a dose of lycopene (the substance in tomatoes believed fight cancer), or the drug finasteride. Another set of rats was castrated.

At the end of the study, the tomato and broccoli combination diet was the most effective treatment; only castration even came close in terms of effectiveness.

The combination of vegetables may be more effective than either one alone because different compounds in each food work on different anti-cancer pathways.

### Sources:

- » [Cancer Research January 9, 2007 Full-Text PDF](#)
- » [Yahoo News January 16, 2007](#)



Dr. Mercola's Comments:

Considering that nearly all of the conventional prostate cancer treatments may be [unnecessary and harmful](#) to your health, I'm glad to see still [more confirmation](#) about a natural and completely healthy [whole food treatment](#) that doesn't involve a toxic drug or dangerous procedure.

**Even eating tomato sauce a couple of times a week may [reduce prostate cancer risk](#), and the diet suggested by this study -- 1.4 cups of fresh broccoli and 1/2 cup of tomato paste daily -- is easily doable by those who wish to reduce their risk.**

Still, it's very important to realize, despite the good news, no food or vegetable is [ideal for everyone](#). One of the best things you can do to honor your body, among many to [virtually](#)



[eliminate your cancer risks](#), remains eating the best foods for your [unique nutritional type](#).

However, one of the most valuable and important natural approaches you can have to avoid prostate cancer is to make sure you have adequate sun exposure on your skin. There is overwhelming compelling evidence that [optimal vitamin D levels are highly protective against prostate cancer](#).

On [Vital Votes](#), Mary from Cabool, Missouri adds:

*"It still amazes me that people think the drug companies are still "good". When according to this study diet and castration are the two most effective methods of curing prostate cancer.*

*Even more effective than finasteride, which is a prescription medication that is available now."*

Other responses to this article can be viewed at [Vital Votes](#), and you can add your own thoughts or vote on comments by [first registering at Vital Votes](#).

## Broccoli for Prostate & Breast Cancer

Posted By [Dr. Mercola](#) | May 24 2003 | 7,093 views

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A plant-derived chemical produced when your body digests green vegetables such as broccoli and kale can inhibit the growth of human prostate cancer cells, according to research.

Vegetables such as broccoli, Brussels sprouts, kale and cauliflower are rich sources of indole-3-carbinol (I3C), which the body converts into 3,3'-diindolylmethane DIM during digestion.

DIM acts as a powerful anti-androgen that inhibits the spread of human prostate cancer cells in culture tests. Androgen is a necessary hormone for the normal function of the prostate, however it also plays a role in the early stages of prostate cancer. Prostate cancer in the early stages is typically treated with anti-androgen drugs.

In later stages of the disease, cancer cells typically develop resistance to androgen.

In the study, the researchers compared the effects of DIM on androgen-dependent human prostate cancer cells as well as on cancer cells that were independent of androgen.

It was found that androgen-dependent cancer cells treated with a solution of DIM grew 70 percent less than untreated cells. However, androgen-independent cells were not affected by the DIM solution.

Further tests showed that DIM inhibits the actions of dihydrotestosterone (DHT), the primary androgen involved in prostate cancer. DHT works by stimulating the expression of prostate specific antigen (PSA). PSA acts as a growth factor for prostate cancer, however when androgen-dependent cells were treated with DIM, the level of PSA decreased, which suggests that DIM functions at a gene expression level, according to researchers.

The findings support previous research that has shown this class of chemicals to be a potential therapeutic agent for breast and endometrial cancer.

Prostate cancer is the second leading cause of cancer deaths in American men. One in 10 men in the United States will develop signs of prostate cancer in his life, and more than 100,000 new cases are reported each year.

Researchers noted that there are already plenty of health reasons to consume more vegetables such as broccoli, and their findings add another potential benefit when it comes to preventing prostate cancer.

Prostate cancer is the second deadliest cancer among American men and over 100,000 new cases are reported each year.

### **Journal of Biological Chemistry June 6, 2003**

Dr. Mercola's Comments:



**We now have one more natural tool to add to the list of what to use for prostate and breast cancer. Although this study focuses on prostate cancer it is important to remember that causes and treatments for most prostate and breast cancers are very similar.**

**So does this mean that we should all go out and eat tons of broccoli? Of course not. I for one do not care for broccoli, and that is a giant clue. I am a protein [Metabolic Type](#) and broccoli pushes my biochemistry in an unhealthy direction so it helps me to avoid it and that is what my body tells me to do.**

**However, the DIM found in broccoli is also in other cruciferous vegetables such as cauliflower, which happens to be good for protein types.**

So it is very important to understand your body at a deeper level because if you were to eat broccoli and you were a protein type, the other effects of broccoli might push your metabolic biochemistry in the wrong direction and thus override the benefits of the DHT inhibition.

The best way to understand specifically what foods are ideal for your body in particular is to learn your [metabolic type](#). Properly eating for your particular nutritional type will lead to increased daily energy, improved emotional well-being, a feeling of satisfaction and, of course, optimized health and weight so you live longer. You'll also understand how beneficial eating generally healthy foods like broccoli really is compared to other foods that might be even better for you.

However, even if you were a mixed or vegetarian/carb type and broccoli were good for you, there are likely better ways to get the benefits than eating whole broccoli.

I first wrote about this six years ago when I posted information on using broccoli sprouts. They are an inexpensive and more effective cancer-treating alternative to eating the whole vegetable. When I wrote the article, broccoli sprouts were not being grown commercially.

Growing broccoli sprouts yourself is easy and inexpensive. You can purchase organic broccoli seeds from Johnny's at (207) 861-3901. Reference item #148, four ounces are \$9.00, or one pound is \$26.15.

For sprouting instructions call Jaffe Brothers at (619) 749-1133. Your local library or health food store may also have some instructions on sprouting seeds.

The other major benefit of the sprouts is that they don't smell, as you don't have to cook them. They are eaten raw, usually as an addition to salad. I have already ordered my sprouts. I suspect that there are similar benefits for many of the other vegetables when eaten as sprouts.

Below is the most current list of tools to avoid and treat prostate and breast cancer:

- IP6 (phytic acid) is a powerful tool to [lower high iron levels](#) (serum ferritin levels). Excess iron can be a major cause of many cancers.
- [Vitamin D](#)
- [Increased omega-3 oils and reduced omega-6 oils](#)
- [Sunlight](#)
- [Selenium](#) - 400 mcg per day
- Freshly Ground [Flaxseeds](#) - two ounces every other day
- [Vitamin E](#) - 400 units (Please note: Only natural vitamin E should be used, not synthetic. Additionally, mixed tocopherol is more preferable than alpha-tocopherol, as the gamma tocopherols are particularly useful antioxidants.)
- [Progesterone Cream](#)
- Daily [Vegetable Juice](#) - including one small [tomato](#) (lycopene)
- [Stress treatment](#) with [EFT](#)

- [Cut out sugar](#)
- [Avoid pesticides](#)
- Use broccoli or cauliflower sprouts

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# Broccoli Sprouts Fight Ulcers and Cancer

Posted By [Dr. Mercola](#) | June 12 2002 | 8,327 views

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**By Rick Weiss**

Bad news for those who can't stomach broccoli: New research suggests that broccoli is especially good for the stomach.

A compound found in broccoli and broccoli sprouts appears to be more effective than modern antibiotics against the bacteria that cause peptic ulcers. Moreover, tests in mice suggest the compound offers formidable protection against stomach cancer -- the second most common form of cancer worldwide.

If upcoming human tests confirm the findings, a daily snack of tangy broccoli sprouts could become a medically indicated staple -- especially in Asia, where the ulcer bacteria and stomach cancer occur in epidemic proportions.

The new work, led by scientists at Johns Hopkins University, is the latest in a 10-year series of studies on the cancer-fighting potential of broccoli.

It started in 1992, when Hopkins pharmacology professor Paul Talalay and his colleagues showed that sulforaphane -- a substance produced in the body from a compound in broccoli -- could trigger the production of phase II enzymes. The enzymes can detoxify cancer-causing chemicals and are among the most potent anti-cancer compounds known.

Scientists had known for years that cancer is less common in people who eat more vegetables, but the broccoli studies were among the first to point to a particular chemical that might account for much of that protection.

Subsequent studies found that sulforaphane could prevent the development of breast and colon cancer, as well as other tumors, in mice. Then Talalay's team found that the key protective compound in broccoli (a chemical called glucoraphanin, which the body turns into sulforaphane) is at least 20 times more concentrated in three-day-old broccoli sprouts than it is in broccoli.

**A single ounce of sprouts has as much glucoraphanin as a pound and a quarter of cooked broccoli,** offering a simpler -- and less flatulent -- means of consuming potentially healthful quantities of the protective agent.

Talalay and co-worker Jed W. Fahey founded a company to make the sprouts for grocery stores. So it was as economic stakeholders (limited under Johns Hopkins's conflict-of-interest rules) that they and their collaborators began testing the effects of sulforaphane on the bacterium *Helicobacter pylori*. The microbe, found globally but especially in Asia, causes ulcers and increases a person's risk of getting gastric cancer threefold to sixfold.

Fahey said the study arose after he learned that two employees at a broccoli sprout facility with longstanding ulcers had apparently been cured after they took up snacking on the sprouts.

Working with researchers from the National Scientific Research Center in Nancy, France, the team found that sulforaphane easily kills *H. pylori*, a microbe that is notoriously difficult to eradicate even with combinations of two or three antibiotics. In test tube studies, it even killed *H. pylori* that had burrowed inside human stomach lining cells, as the microbe often does to escape attack.

In separate studies involving mice that were dosed with a chemical known to cause stomach cancer, mice pre-treated with sulforaphane had 39 percent fewer tumors.

The findings, published in today's online edition of Proceedings of the National Academy of Sciences, doesn't mean broccoli can cure ulcers or prevent stomach cancer in people.

"One question is, would you have to eat a ton of broccoli a day to get enough of this to be effective?" said Frank Gonzalez, a scientist at the National Cancer Institute.

But Fahey said he is optimistic. "The levels that are effective [in test tubes] are levels that could be achieved by eating a serving or so of broccoli sprouts, based on the chemistry we know," Fahey said. "This isn't one of those rat studies in which you need 400 times the maximum amount a human could handle."

Talalay said the group is preparing to start a clinical trial in Japan to test the sprouts' effectiveness in people infected with *H. pylori*. About 80 percent of Japanese adults harbor the microbe in their stomachs -- one reason that gastric cancer is the No. 1 cancer killer in Japanese women and No. 2 after lung cancer in Japanese men.

The microbe is similarly common and deadly in many parts of the world where antibiotics are unavailable or unaffordable, Talalay said.

"Gratifyingly, this is a dietary approach," he said, "which is the only approach feasible or practical if you want to knock down the incidence of this very serious disease in the parts of the world where it is most prevalent."

[Proceedings of the National Academy of Sciences](#) **May 2002:28;99(11):7610-7615**

[Washington Post](#) **May 28, 2002; Page A04**

Dr. Mercola's Comments:

**I first promoted broccoli sprouts over five years ago (see link below). They sure seem like an inexpensive alternative to eating the whole vegetable.**

**When I wrote the article, broccoli sprouts were not being grown commercially.**

**Although you can purchase the seeds in a store, growing them yourself is easy and less expensive. You can purchase organic broccoli seeds from Johnny's (207) 861-3901. Reference item #148, four ounces are \$9.00, or a pound for \$26.15.**

**For sprouting instructions call Jaffe Brothers at (619) 749-1133. Your local library or health food store may also have some instructions on sprouting seeds.**

**The other major benefit is that the sprouts don't smell as you don't have to cook them. They are eaten raw, usually as an addition to salad. I have already ordered my sprouts. I suspect that there are similar benefits for many of the other vegetables when eaten as sprouts.**

## **Broccoli Sprouts Fight Cancer**

Posted By [Dr. Mercola](#) | January 02 2008 | 10,163 views

Small quantities of fresh broccoli sprouts contain as much cancer protection as larger amounts of the mature vegetable sold in food markets, according to researchers at Johns Hopkins University. Just 5 grams (0.17 ounces) of sprouts contain concentrations of the compound glucoraphanin equal to that found in 150 grams (5.2 ounces) of mature broccoli. The compound is a precursor to sulforaphane, proven in animal studies to boost cell enzymes that protect against molecular damage from cancer-causing chemicals.

Sulforaphane has been shown to mobilize, or induce, the body's natural cancer protection resources and help reduce the risk of malignancy. Broccoli is the best source of the chemical precursor to sulforaphane -- glucoraphanin. Now, broccoli sprouts are an "exceptionally rich source" of inducers of cellular enzymes for "detoxifying" chemical carcinogens -- cancer causing compounds. Some of these compounds are potent enhancers of phase 2 enzymes, which speed the detoxication of electrophiles and reactive oxygen metabolites. Therefore, they say, induction of phase 2 enzymes by these compounds can "...protect cells against mutagenesis and neoplasia."

The researchers attempted to calculate how much broccoli one would have to eat in order to produce a significant degree of protection against cancer, based on epidemiologic evidence. They found that one would have to eat about two pounds of an average broccoli a week in order to reduce, say, one's risk of colon cancer by about 50%.

An additional complication is that it is impossible to determine by the looks of this cruciferous vegetable alone or even with knowledge of how and where it was grown whether you are buying the 'high-inducer' or 'low-inducer' broccoli. The enzyme-inducing abilities of samples taken from 22 varieties of fresh and 7 brands of frozen mature broccoli vary greatly. Only sophisticated scientific measurements can determine the concentrations.

But fresh broccoli sprouts offer an alternative. One can get away with eating 10 to 100 times lower quantities. Threeday old sprouts have the additional advantage that they're far more uniform in their potency. Broccoli sprouts look and taste something like alfalfa sprouts, according to the researchers. The report also notes that small quantities of broccoli sprout extracts markedly reduced the size of rat mammary tumors that were induced by chemical carcinogens.

The researchers refer to the concept of "chemoprotection" -- "deliberate efforts to increase the body's own defense mechanisms to reduce susceptibility to carcinogens by administration of substances that can be precisely identified, and ideally, delivered in the diet. The interesting aspect of chemoprotection strategies is that they're almost never organ-specific. Chemoprotection produces a general cancer protective effect which blocks multiple steps -- a cascade of steps -- that are common to cancer formation.

## **Proceedings of the National Academy of Sciences (1997;94:10367-10372)**

**Dr. Mercola's Comment: At the present time, broccoli sprouts are not being grown commercially. However you can grow them yourself quite easily. You can purchase organic broccoli seeds from Johnny's at 207-437-4301. Item number 148, four ounces are \$9.00 or a pound for \$26.15. Non-organic seeds can probably be purchased through farm supply stores or other seed catalogs. You can also call Jaffe Brothers at 619-749-1133 for instructions on how to sprout. They also sell sprouting lids to apply to Ball jars which make the entire process quite convenient. The library or health food store may also have some instructions on sprouting seeds.**

**A small amount of sprouts go a long way. A pound of sprouts will probably make over ten pounds of sprouts which from the researchers calculations translates up to as much cancer protecting phytochemicals as 1000 pounds (half a ton) of broccoli! The other major benefit is that the sprouts don't smell as you don't have to cook them. They are eaten raw, usually as an addition to salad. I have already ordered my sprouts. I suspect that there are similar benefits for many of the other vegetables when eaten as sprouts.**