

[Probiotic Nutrients Process](#) | [Broccoli and Cruciferous Sprouts](#) | [Free-Radical Stress Relief](#)
[Supercritical Extraction](#) | [Herbal Cox 2 Inhibition](#) | [Medicinal Mushrooms](#) | [Prostate Health](#)
[Breast Health](#) | [Smokeshield®](#) | [Turmeric](#) | [Ginger](#) | [CoQ10](#) | [Search](#)

Broccoli and Cruciferous Sprouts

We now know that the majority of cancers are avoidable. In the 15-20 year window preceding a cancer diagnosis, there are dietary and lifestyle changes we can make that will interrupt or reverse pre-cancerous conditions. Of these, the consumption of cruciferous vegetable sprouts may be one of the most powerful. The sprouts of cruciferous vegetables contain a multitude of beneficial phytonutrients. Much recent scientific research has focused on one particular group of these phytonutrients called glucosinolates. Over 80 studies have found that glucosinolates help to both eliminate carcinogenic toxins in the body and encourage the self-destruction of pre-cancerous cells. We also know from research that consuming the full-spectrum of glucosinolates and phytonutrients found in whole foods provides the greatest protection. However, regular consumption of cruciferous vegetable sprouts is challenging for most people. Fortunately, there are sprouted cruciferous products that capture the benefits of fresh sprouts in capsule form. Choice products should utilize heirloom seeds that are sprouted in a sunlight-filled, nutrient-dense environment to yield superior potencies of naturally occurring phytonutrients, including the glucosinolates. These products should also use production methods that protect the precious phytonutrients from destruction during processing.

Cancer research has clearly shown us that, without question, the most effective cure is prevention. It is infinitely easier to interrupt and reverse pre-cancerous conditions than it is to cure full-blown diagnosable cancer. Happily, interruption may actually be easier to accomplish than one might believe. Pre-cancerous conditions often exist in the body for as long as 15-20 years before they become a diagnosable cancer. Furthermore, current research now estimates that as many as 80% of cancers are avoidable—they could be interrupted in that 15-20 year window! That is a staggering number and clearly describes the power of prevention. This year alone, 1.2 million people will be diagnosed with some form of cancer and, according to statistics, 960,000 of those malignancies could have been avoided.

Many of us are in the 15-20 year window right now and don't recognize it. The common symptoms of malaise, lack of energy and nagging health discomforts, we tend to accept as normal, are often the result of a system overwhelmed by toxic influences. Fifty or one hundred years ago, our exposure to chemicals was very limited. They simply were not part of our daily lives. Today, however, current estimates reveal that we are regularly exposed to as many as five thousand chemicals a day! They are in our food, our water, our air, our soil, our homes, our yards, our clothing, our furnishings, our automobiles, our workplaces—they are everywhere! This represents an enormous environmental challenge, one to which our bodies have not had time to evolutionarily adapt. To make matters worse, these chemicals are often mixed together, and the combined effect of this chemical cocktail is incredibly potent.

As these chemicals enter the body and come into contact with our cells, many of them damage the DNA. Because cellular DNA is responsible for cell reproduction, this is extremely significant. DNA damage sets the stage for cancer. Obviously, along with reducing our chemical exposure, it is essential to clear these dangerous chemicals from our bodies as rapidly as possible, and our bodies work furiously to do just that. Sadly, in today's world, it is an extraordinary and overwhelming task more and more of our energy reserves are depleted in an often futile effort to keep up with an increasing chemical toxicity. Thus, many of us experience diminished energy or uncomfortable symptoms of dis-ease. If our systems are unsuccessful in their attempt and cellular damage occurs, our bodies must then be able to efficiently destroy the damaged cells. This process further taxes our energy and nutrient resources.

Assisting our body to rid itself of carcinogenic toxins and damaged cells can help to interrupt the development of cancer. Fortunately, simple diet and lifestyle changes can be very effective in the interruption process. This means

lifestyle changes are powerful tools in the interruption arsenal. It is worth repeating that fresh fruit and vegetables, particularly cruciferous vegetables, bestow many health advantages. By now, almost everyone knows the benefits of eating the cruciferous vegetables (i.e., broccoli, cauliflower, cabbage, kale, mustard greens, brussels sprouts, and daikon radish). Interest in these commonly known vegetables surged when it was discovered their phytonutrients help to protect us from certain kinds of cancer. For people who love cruciferous vegetables and could easily eat them without intestinal distress, this was good news indeed. For millions of others, however, it created a conflict—force down food you don't like or forego all those wonderful cancer fighting allies.

Unfortunately, as the research continued, commitment to regular consumption began to wane when scientists determined that to enjoy the cancer-fighting benefits of these vegetables, one had to consume a minimum of two pounds a week. That's a lot of cabbage, particularly if you don't like it! Further research confirmed that even two pounds a week might not be enough. As is true of all nutrients, the phytonutrient levels in mature cruciferous vegetables vary significantly, 20-50 times, depending upon their variety, growing conditions, and freshness. Even more discouraging, it is not possible to identify phytonutrient-rich vegetables by sight. Then came a bright ray of hope—scientific studies of cruciferous vegetables had continued with exciting and surprising results. Scientists found that the original, full concentration of one particular group of phytonutrients, called glucosinolates, are present within the sprouted seedlings of these vegetables. As the sprouts mature, the concentration spreads throughout the entire plant. Research confirmed that 1 ounce of 3-day old sprouts contain as many glucosinolates as two pounds of the mature vegetable! For people desiring to increase their consumption of phytonutrients, this was thrilling information.

What are the phytonutrients in cruciferous sprouts and why are they so useful? Cruciferous sprouts contain many potent phytonutrients and the glucosinolate compounds, in particular, have attracted recent attention. In the body, glucosinolates break down into numerous other compounds such as indoles and isothiocyanates. Of these isothiocyanates, sulforaphane and sinigrin are most commonly known. Over 80 scientific studies have documented the powerful protection glucosinolates offer from chemically induced cancers, particularly cancers of the lung, colon, stomach, liver and breasts.

Although both sulforaphane and sinigrin are isothiocyanates, their action in the body differs somewhat. Studies have shown that sulforaphane promotes the activity of phase II detoxification enzymes in the liver responsible for clearing carcinogenic chemicals from the body. Anything that promotes their activity also increases the detoxification and excretion of carcinogens from the body. As a result, there is less opportunity for the carcinogens to interact with the individual cells and damage their DNA. Sinigrin, like sulforaphane, stimulates phase II enzymes and it also stimulates apoptosis. Apoptosis is a natural process during which cells in the body, whose DNA has already become damaged by a carcinogen, self-destruct.

From this information, one may hope to skip cruciferous sprouts altogether and simply consume an isolated isothiocyanate or sulforaphane supplement. Although this would seem to make logical sense, it is not a viable solution. The body utilizes glucosinolates in the small intestine. If we imagine, for a moment, that individual glucosinolates are individual snowflakes, it becomes easier to understand. Attempting to transfer a single snowflake from one hand to another is an impossibility. The snowflake will disintegrate before it reaches the opposite hand. However, if we compress many snowflakes together and create a snowball, delivery is simple and accurate. Such is the case with glucosinolates. Individually they are fragile and can not survive the trip to the small intestines. Packaged together, as they are in a whole food, the trip is easily accomplished.

Moreover, it is imperative to remember that isothiocyanates, such as sulforaphane and sinigrin, are just two members in a whole family of glucosinolate compounds. Research has shown that the other members are equally as important and beneficial to our health, and they all offer slightly different benefits. When scientists study a food, they isolate its component molecules and examine their effects separately. While this reductionist approach may be useful in determining why a particular food is beneficial, it has the unfortunate side effect of leading people to believe that one or two isolated component parts define the value of the food. This is simply not the case.

Food in its natural state is amazingly intricate and there remains much we don't understand about the synergy and interactions among the chemical

compounds present in one unique food. For example, broccoli contains over 80 different known chemical components. Its health enhancing properties are not defined by just one or two of these isolated components; but rather by the complex web of interaction between these 80 different compounds. These components support and strengthen one another. This complex web of interaction is nature's way of providing checks and balances—the presence of all the phytonutrient compounds increases both their efficacy and safety. Thus, consuming the full-spectrum of phytonutrients, including glucosinolates, in the same proportion found in nature, will ultimately be of much greater value.

Herein lies the value of cruciferous vegetable sprouts. The unique components of cruciferous sprouts assist the body in clearing offending chemicals while at the same time encouraging the self-destruction of damaged cells. More importantly, they provide these components in their natural state. The glucosinolates safely pass through the stomach and are delivered, intact, to the small intestines accompanied by all the corresponding co-nutrients found in the sprouts. When we consume glucosinolates as they exist in whole food, we automatically receive them in the balance and proportion nature intended. Given the toxic world in which we all now reside, cruciferous sprouts may offer powerful protection during the 15-20 year period, preceding the formation of a diagnosable cancer. As the body is better able to rid itself of toxins, efficiently and effectively, overall energy and wellness may also improve.

Because sprouts can be challenging to grow and the taste of cruciferous sprouts may be unappetizing, several companies have developed cruciferous vegetable products. Although they may appear similar, there are significant differences. Some of these products are not sprouts but rather an extract of the mature vegetables. A 100% sprouted product that contains a full-spectrum of glucosinolates will provide powerful phytonutrients in a safe form your body can most easily recognize and embrace. Among the products that are truly sprouted, the quality varies wildly, as does the potency. Sprouts are a living food and they must be carefully grown and processed to preserve the integrity of the fresh sprouts and enhance the potency of their full-spectrum glucosinolates. Heirloom seeds that have been open-air pollinated and nurtured in natural sunlight and pure air, produce sprouts containing the most beneficial levels of phytonutrients. To preserve these precious phytonutrients during processing, it is essential that they be flash freeze-dried and ground in a frozen environment. Selecting a product with care will optimize the health enhancing benefits one experiences.

How you use the product will also impact its efficacy. Ideally, it is best to take the sprouts on an empty stomach with a full glass of water. It is also useful to take acidophilus with the freeze-dried sprouts. Additional studies in Spain found that the presence of Lactobacillus friendly flora (acidophilus) in the gut, enhanced the digestion and utilization of sinigrin. As is always the case, consuming a nourishing food or supplement is only the first step. The body must be able to break the chemical bonds in the food to properly assimilate its valuable compounds. Lactobacillus encourages intact glucosinolates to breakdown and convert into their most bioavailable form once in the body.

Other nutrients and botanicals may also contribute to the action of cruciferous sprouts and add their own unique support to interrupting and reversing pre-cancerous conditions. Tonic mushrooms such as reishi, shiitake, and maitake offer added protection as do green tea, chlorella, sea vegetables, CoQ10 and whole food antioxidant nutrients. Eliza Secrist is a Certified Nutritionist and Wellness Consultant. The former Director of a Women's Resource Center and the Clinic Manager of a Women's Health Center, she has been teaching and counseling for 10 years.

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[BACK TO TOP](#)