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Super FOODS

Broccoli

Providing Cancer Protection, Liver Support, and Essential Nutrients

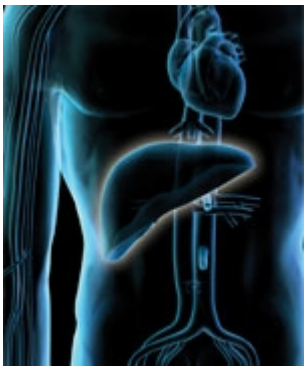
By Dale Kiefer

One important way to protect yourself from the lethal scourge of cancer that is destroying the lives of millions of Americans is to regularly consume cruciferous vegetables such as broccoli, cauliflower, cabbage, and Brussels sprouts. This particular group of vegetables is an excellent source of unique cancer-fighting chemicals known as glucosinolates. Once inside the body, glucosinolates are transformed into powerful metabolites such as indole-3-carbinol (I3C) and isothiocyanates (including sulforaphane). These phyto-chemical compounds have been shown to protect against a broad range of potentially lethal threats, including colon, breast, prostate, thyroid, cervical, and other cancers.[1-22]

ATTACKING CANCER

The remarkable compounds derived from broccoli work through numerous mechanisms to inhibit cancer cells. Some produce beneficial changes in gene expression, thus altering levels of key proteins and enzymes, while others inhibit tumor cell adhesion, spread, and invasion. Most recently, scientists have shown that a particular cruciferous vegetable compound known as phenethyl isothiocyanate (PEITC) directly inhibits a tumor's ability to supply itself with blood.[2] This interruption of angiogenesis is considered an important cancer-fighting mechanism.

Another broccoli compound known as sulforaphane induces cancer cells to commit cellular suicide, while other compounds—particularly I3C, or its condensation product, 3,3'-diindolyl-methane (DIM)—interrupt the ability of cancer cells to reproduce.[1,3,4,7,9,10] "I3C and DIM affected the expression of a large number of genes that are related to the control of carcinogenesis, cell survival, and physiologic behaviors," noted one research team.[22] Recent studies suggest that at high concentrations, these compounds may interact with one another to thwart cancer in a synergistic manner. In order to achieve a high enough concentration of these effective cancer-fighting compounds, it may be necessary to also use supplements.[3]



Scientists in California demonstrated that I3C interferes with breast cancer cell proliferation by altering the size of a protein associated with cellular reproduction. As a result, cellular division grinds to a halt, as if a monkey wrench had been thrown into the gears of the cell's machinery.[4] Runaway cell division is a hallmark of cancer; I3C appears to restore balance by commandeering the body's own protein-producing capability and using it to halt rampant cell division.

SUPPORTING DETOXIFICATION

Broccoli compounds also modulate the activity of enzymes in the liver, which enhances natural detoxification pathways. The protective effect of these phytochemicals may arise from their ability to inhibit the carcinogen-activating phase I liver enzymes, while inducing the carcinogen-detoxifying phase II enzymes. The critically important phase II enzymes convert dangerous compounds, such as toxins, hormones, and xenoestrogens (estrogen-like compounds from the environment), into less toxic compounds that can safely be eliminated by the body.[5-7,23,24]

RICH IN NUTRIENTS

In addition to its unique cancer-fighting phytochemicals, broccoli is an excellent source of vitamins C, K, and A, as well as folate and dietary fiber. It is considered a very good source of minerals, such as manganese, potassium, magnesium, and phosphorus, and vitamins such as riboflavin (vitamin B2) and pyridoxine (vitamin B6).

CONCLUSION

Broccoli makes a healthful addition to the daily diet. In addition to providing valuable vitamins, minerals, and fiber, broccoli offers an abundance of powerful phytochemicals that may help protect the body against deadly cancers.

NUTRITIONAL CONTENT OF BROCCOLI

One cup (91 grams) of raw broccoli contains the following nutrients:[25]

- **Calories:** 31
- **Total fat:** 0 grams
- **Total carbohydrates:** 6 grams
- **Dietary fiber:** 2 grams
- **Sugars:** 2 grams
- **Protein:** 3 grams

- **Vitamins and minerals:**
  - **Vitamin A:** 567 IU
  - **Vitamin C:** 81.2 mg
  - **Vitamin E:** 0.7 mg
  - **Vitamin K:** 92.5 mg
  - **Lutein and zeaxanthin:** 1,277 mcg
  - **Folate:** 57.3 mcg
  - **Thiamine:** 0.1 mg
  - **Riboflavin:** 0.1 mg
  - **Niacin:** 0.6 mg
  - **Pyridoxine:** 0.2 mg
  - **Calcium:** 42.8 mg
  - **Magnesium:** 19.1 mg
  - **Iron:** 0.7 mg
  - **Phosphorus:** 60.1 mg
  - **Sodium:** 30.0 mg
  - **Potassium:** 206 mg
  - **Zinc:** 0.4 mg
  - **Manganese:** 0.2 mg
  - **Selenium:** 2.3 mcg

You can enjoy broccoli raw or cooked. Avoid overcooking broccoli, since this may deplete the vegetable of its water-soluble nutrients. Lightly steaming broccoli has been found to cause less nutrient loss than other cooking methods.[26]

References

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