



## Yellow's Corner:

# Real Prevention

in collaboration with the Earthrose Institute [www.earthrose.org](http://www.earthrose.org)

October is widely promoted as Breast Cancer Prevention month, yet it is noteworthy that little mention has been made in the mainstream media about the influence of environmental exposures on breast cancer risk.

Breast cancer prevention requires addressing the real issues surrounding the global increase in incidence of breast cancer. Public health education, corporate responsibility, and governmental regulation of toxic chemicals and the poor quality of modern foods must be included in addressing the factors contributing to today's cancer epidemic. Environmental factors influence an array of molecular mechanisms and consequently influence disease risk and gene expression.

A growing number of studies show that a parent's diet and their environmental exposures can influence DNA expression in their offspring and have an effect on health outcomes later in life. Genetic studies provide insights to further understand fetal origins of adult disease. Epigenetics holds that environmental factors from our diets, stress responses, and chemical exposures can affect our genetic fate by turning genes on and off and that information can be passed down to future generations. Evidence is accumulating that toxic exposures in utero, and childhood can lead to an increased risk of breast cancer.

Women in the United States face a greater lifetime risk of breast cancer than any previous generation, even though only about 5 percent have a known genetic link, according to a report published last year, by the World Health Orga-



nization who released its first ever country-by-country analysis of environmental health exposures and disease. The International Agency for Research on Cancer reports that breast cancer is now the most common form of cancer in women worldwide, with the highest rates in industrialized nations. In the United States, a woman's lifetime risk of breast cancer has tripled during the past 40 years, with estimates of one in six women having a diagnosis in their lifetime. Global research estimates that a woman's cumulative exposure to environmental estrogenic chemicals may be responsible for up to 50% of all breast cancers today.

To compound the problem of our toxic environment, we have refined away much of the nutritional value in our food supply and replaced it with artificial colors, preservatives, flavoris, additives, genetic engineering, and more. Thus, a



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poor quality diet-combined with extensive use of antibiotics in both medicine and agriculture may have predisposed many of us to experience a kind of "internal" pollution altering our own innate defense systems.

According to Dr. Walter Willet at the Harvard School of Public Health and the American Institute for Cancer Research, a recent study reviewing 4,500 scientific studies concluded in a 650-page report that 40% of cancers are avoidable. "The bottom line: eat a plant based diet, maintain moderate weight throughout life, and get some exercise."

### Endocrine Disruptors

Of all the common pollutants we are exposed to, the most harmful are the potent substances known as hormone disruptors, estrogen mimickers, or xenoestrogens. These pervasive chemicals, common in our daily lives and contained in most of our personal care products, household cleaners, pesticides, and plastics, have the potential to disrupt our hormonal and endocrine balance and cause chaos to many systems including the immune system, increasing the risk of cancer and other diseases.

### The Good News: What we can do

Increasingly, scientists are examining the role specific natural plant compounds play in increasing the body's natural defenses.

Nutrigenomics is the study of the response of humans to food components and phytochemicals in nature. The understanding of nutrigenomics encourages foods and plant based supplements that can be matched to individual

human genotypes to benefit the health of those individuals and enhance normal physiological processes. Currently, in major cancer centers, researchers are studying the effect of concentrated nutrients on gene expression and cell signaling pathways. Research on nutrients including resveratrol, curcumin, sulforaphane, and Vitamin D3 have been studied for their use as both protective agents as well as for the chemotherapeutic role in the treatment of cancer, including breast cancer.

### Summary of Protective Nutrients

#### Vitamin D3

Research estimates that as many as 50% of breast and colon cancer cases could be prevented by increasing daily intake of vitamin D according to a study that continues to call for higher upper limits of this essential vitamin.

Published in the August 2008 academic journal, *Nutrition Reviews*, researchers at the University of California, San Diego (UCSD) compiled data from observational studies showing an inverse link between serum 25-hydroxyvitamin D [25(OH)D] and these cancers. They took previous results one step further by looking into the dose response gradient between serum 25 (OH)D and the risk of both cancers.

The findings confirm what some researchers have long been advocating: we do not consume enough vitamin D and that information needs to be made more available to consumers through public awareness and education as well as increasing recommended daily requirements. According to the study's projections, in North America, a 50 percent reduction in colon



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cancer incidence would require an intake of 2000 IU (International Units) per day of vitamin D, and a 50% reduction in breast cancer would require 3,500 IU per day.

### Resveratrol

Resveratrol is classified as a polyphenol because of its chemical structure. Polyphenols make up a huge group of plant compounds that are further broken down into other classifications such as flavonoids, and proanthocyanidins. Naturally created by certain vines, pine trees, peanuts, grapes, and other plants, resveratrol also contains anti-inflammatory, neuro-protective, and antiviral properties. Resveratrol is currently in trials at Anderson Cancer Center for use as a potential chemotherapeutic agent.

### Sulforaphane

Three recently published scientific studies reinforce the protective power of sulforaphane, the naturally occurring antioxidant in broccoli and broccoli sprouts. Sulforaphane is the most characterized isothiocyanates (ITCs), and are identified in cruciferous vegetables. Sulforaphane is currently being researched as a promising agent in cancer prevention. Because of its ability to induce cancer cell apoptosis, it inhibits progression of benign tumors to malignant tumors and interrupts metastatic processes.

### Green Tea Polyphenols

Catechins, naturally occurring flavonoids derived from wine and green tea, are known to exhibit multiple health benefits. Epigallocatechin gallate (EGCG) is one of the most widely investigated catechins. The polyphenols in

green tea are catechins with multiple linked ring-like structures. Polyphenols are a form of bioflavonoids with several phenol groups. The dominant and most important catechin in green tea is Epigallocatechin Gallate (EGCG), a potent antioxidant.

### Curcumin

Curcumin research has been extensively published in peer-reviewed medical journals on its ability to protect against cancer. In addition to its capacity to intervene in the initiation and growth of cancer cells and tumors, and to prevent their subsequent spread throughout the body by metastasis, curcumin also has been shown to increase cancer cells' sensitivity to certain drugs commonly used to combat cancer, rendering chemotherapy more effective in some cases.

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