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Excerpt from *Healthy Women, Healthy Lives*

by Susan E. Hankinson, R.N., Sc.D., Graham A. Colditz, M.D., JoAnn E. Manson, M.D., and Frank E. Speizer, M.D.

Source:

http://www.health.harvard.edu/newsweek/Excerpt_from_Healthy_Women_Healthy_Lives_alcohol.htm

Chapter 20: Alcohol

BACKGROUND

Alcohol has been used by humans for at least 4,000 years and occupies a unique place in most societies. It is often a sacred part of religious ceremony and is a focal point of many social celebrations and everyday interactions. Yet it is an addictive drug that, when abused, has potentially severe short-term and long-term health consequences. These consequences depend largely on how much a person drinks-and on how much he/she can tolerate physiologically.

Alcohol tends to be less well tolerated by women's bodies than men's, and thus the effects can be more dramatic among women. A central nervous system depressant, alcohol acts like a sedative or tranquilizer, slowing down motor coordination and reaction time. It also impairs judgment, memory, reasoning, and self-control. Drink for drink, women accumulate more alcohol in their bloodstream than men and so experience these effects much more rapidly. This is due to several physiologic differences between men and women. First, in order for alcohol to be moved out of the bloodstream, it must be neutralized by a certain enzyme in the stomach. Women inherently have lower levels of this enzyme than men. Second, women tend to have a higher proportion of body fat than men, and body fat does not absorb alcohol; it allows alcohol to accumulate in the bloodstream. Finally, despite having more body fat, women tend to have smaller bodies than men. As a result, they have less blood circulating in their bodies, so that the ratio of alcohol to blood rises much more rapidly than it does in men.

The other factor obviously influencing the health consequences of alcohol is how much is consumed. A committee of the Institute of Medicine has defined three levels of alcohol intake based on their health consequences: low, moderate, and heavy. For women, low alcohol intake means drinking less than half a drink a day, with a drink defined as a 12-ounce bottle of beer, a 5-ounce glass of wine, or a 1.5-ounce shot of 80-proof liquor. This is about what the average American woman drinks (that is, two to three drinks a week) and is still considered a relatively safe amount. Moderate drinking is the next step up and involves having up to two drinks a day. Though considered safe in the short term, moderate drinking comes with both risks and benefits in the long term. Heavy drinking, on the other hand, has no benefits. It can lead to cirrhosis, alcoholism, accidents, violence, and a number of different cancers. In this chapter, we examine the risks and benefits of moderate drinking, where, unlike low and heavy intake, the line is not always clear in terms of safe versus unsafe.

The Benefits of Moderate Alcohol Consumption

Lower Risk of Coronary Heart Disease

Thanks to extensive media coverage, most women now recognize that moderate alcohol consumption can lower the risk of coronary heart disease. Although red wine was initially thought to be the most beneficial type of alcohol, it is now apparent that beer, white wine, and liquor also offer protection. In the Nurses' Health Study, we found that drinking one drink a day—be it a glass of wine, bottle of beer, or shot of liquor—cut women's risk of coronary heart disease by about half (see Figure 20-1). Similar results have been reported in numerous other studies.

One of the questions that remains about this relationship is whether women can receive the same benefit by drinking two drinks on three days of the week as by drinking one drink on each day of the week. Few studies have looked at this, but those that have suggested that the answer is no. In one large study, researchers looked at the number of drinks women consumed per day and the number of days they drank per week. The lowest risk was seen among women who drank one to two drinks per day on five to six days per week. Those who averaged the same number of drinks per week but consumed them on fewer days had either less benefit or none at all.

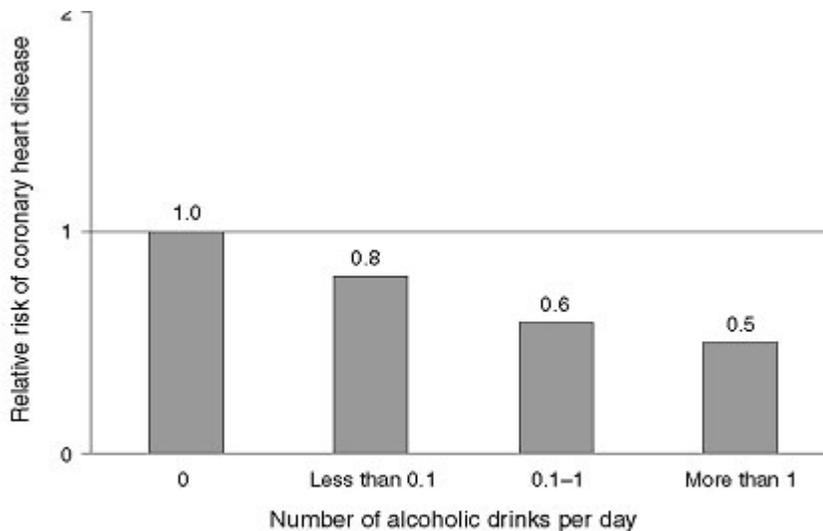


FIG. 20-1. The risk of heart disease is substantially lower among women who drink small amounts of alcohol each day compared to those who do not drink at all. (Source: Nurses' Health Study)

The reason for this is that the effects of alcohol on the cardiovascular system are thought to be only temporary. For example, alcohol may increase the level of "good cholesterol" in the blood and lower the level of a blood-clotting substance, but only for about twenty-four hours. By drinking a small amount of alcohol each day, a woman may keep these substances in the blood at the optimal level for protection against heart disease.

Lower Risk of Ischemic Stroke

Given that ischemic stroke is similar in nature to coronary heart disease (both being caused by clogged blood vessels), it is not surprising that alcohol has the same effect on ischemic stroke that it does on heart disease. When consumed in moderate amounts, alcohol can substantially reduce the risk of both conditions. In the Nurses' Health Study, we found that the risk of ischemic stroke was about 50 percent lower among women who drank one drink a day compared to those who did not drink at all (see Figure 20-2). These results have been replicated in many other large studies.

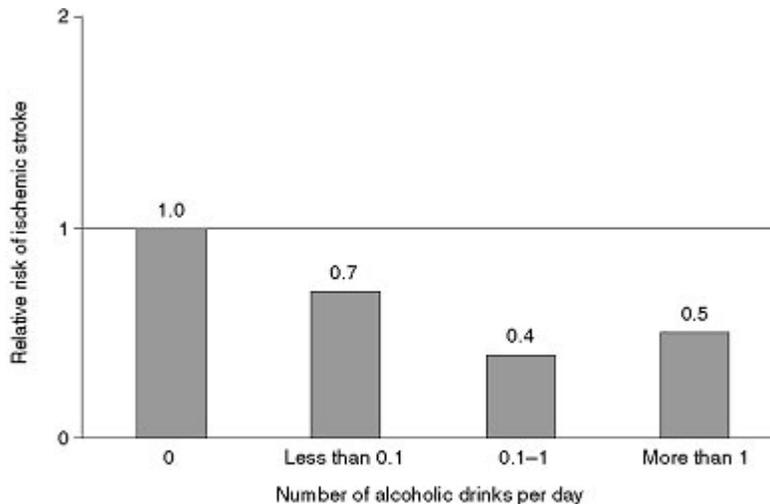


FIG. 20-2. Women who drink small amounts of alcohol each day are much less likely to have an ischemic stroke than women who do not drink at all. (Source: Nurses' Health Study)

The Risks of Moderate Alcohol Consumption

Increased Risk of Breast Cancer

Alcohol is one of the most consistent dietary factors related to the risk of breast cancer. More than twenty-five studies have shown that it increases risk, most likely by raising the level of estrogen in the bloodstream or making the breast more vulnerable to carcinogens.

In the Nurses' Health Study, we found that the type of alcohol consumed was not as important as the amount consumed. Women who drank half a drink a day—be it beer, wine, or liquor—had a slightly elevated risk of breast cancer, while those who drank a whole drink a day had an even higher risk. When researchers combined our data with those from other large studies, they found similar results: a woman's risk of breast cancer rose by about 10 percent for every additional drink she consumed per day. In other words, a woman who averaged two drinks a day had a 10 percent greater chance of developing breast cancer than a woman who averaged one drink a day. This was true regardless of the type of alcohol consumed.

Because breast tissue may be particularly vulnerable during adolescence and early adulthood, researchers have speculated that drinking alcohol during these time periods might be more harmful than drinking alcohol later in life. To date, studies on this topic have been inconsistent.

Increased Risk of Hip Fracture

Hip fractures become increasingly common as women age. Prior to menopause, the body produces enough estrogen to keep bones healthy and strong. However, after menopause, estrogen levels drop, and bones can become brittle and vulnerable to fracture. About 90 percent of all hip fractures occur in those over the age of sixty-five, and most are the result of a bad fall.

Although alcohol increases estrogen levels in postmenopausal women, and moderate alcohol consumption has been linked to higher bone mass, it is more likely that alcohol actually leads to fractures. Drinking alcohol, even in moderate amounts, can make a person less steady and increase the likelihood that they will fall and injure themselves. In the Nurses' Health Study, we found that women who consumed about a drink a day were twice as likely to fracture their hips as women who did not drink at all. Similar results have been reported in several other studies, including the Framingham Study.

Probable Increased Risk of Colon Cancer

Only a handful of long-term studies have examined the relationship between moderate alcohol consumption and the risk of colon cancer. To date, results have been inconsistent. Several studies have shown that alcohol does not alter colon cancer risk, while others have demonstrated a modest increase in risk. Overall, the epidemiologic evidence suggests that alcohol probably does increase the risk of colon cancer. This may be because alcohol lowers the level of folate in the body, which may in turn influence the risk of colon cancer.

Probable Increased Risk of Hemorrhagic Stroke

Hemorrhagic stroke is much less common than ischemic stroke but tends to be more severe. It occurs when a small blood vessel in the brain ruptures, causing bleeding (hemorrhaging) into or around the brain. Although every stroke is serious, brain hemorrhages are often devastating because they can affect younger people and are more likely to cause death.

It has been suggested but not confirmed that moderate alcohol consumption might increase the risk of hemorrhagic stroke. In the Nurses' Health Study, we found a doubling of risk among women who drank even small amounts of alcohol each day. However, few studies have confirmed these results.

If alcohol does in fact have an effect on the risk of hemorrhagic stroke, it is most likely indirect. Alcohol can raise a woman's blood pressure, enhance blood flow to her brain, and increase the chance of having irregular heartbeats, all of which make it more likely that a blood vessel in the brain will burst and bleed. In addition, high levels of alcohol intake have been shown to increase the tendency for bleeding.

Alcohol and Pregnancy

There is no safe level of drinking during pregnancy. Women who are trying to get pregnant or who are already pregnant should not drink. During the first trimester, regular drinking—or even one period of heavy drinking—can damage the fetus. Women who drink as few as one or two drinks a day while pregnant may give birth prematurely, and their children may have a low birth weight or neurological problems. Even occasional social drinking can increase the risk of miscarriage, particularly in the first trimester. Heavy drinking is not safe for any woman, but is especially harmful to pregnant women. Women who drink alcohol heavily during pregnancy may give birth to babies with fetal alcohol syndrome, a group of birth defects that includes irreversible mental retardation.

How Alcohol Use Affects Length of Life

Drinking in moderation can *decrease* a woman's risk of dying from some diseases, but *increase* her risk of dying from others. The best evidence of this to date comes from the American Cancer Society Cancer Prevention Study II. In that study, women who drank in moderation were about 20 percent less likely to die during the nine-year study period than women who did not drink at all. When researchers looked at specific causes of death, they found that moderate drinkers were much less likely than nondrinkers to die of coronary heart disease and stroke. However, moderate drinkers were also more likely to die of breast cancer. Results in the Nurses' Health Study were similar. Overall, these findings suggest that while moderate drinking does confer an overall mortality benefit—and a great benefit in terms of heart disease—women must still consider the increased risk of breast cancer and possibly other cancers.

WHAT IT ALL MEANS

Alcohol can have a wide range of effects on your health, depending on how much you consume. If you drink heavily (two or more drinks a day), you are at increased risk of cancer, heart disease, alcoholism, cirrhosis, and fatal accidents. This type of drinking has no benefits and is not recommended for women at any age. Moderate drinking, on the other hand, does have some benefits, although it too has risks. If you drink one drink a day, you receive some protection against heart disease and ischemic stroke. However, you are also at increased risk of breast cancer, hip fracture, and probably colon cancer and hemorrhagic stroke. These risks and benefits are the same whether you drink beer, wine, or liquor

Alcohol consumption and risk of postmenopausal breast cancer by subtype: the women's health initiative observational study.

[Li CI](#), [Chlebowski RT](#), [Freiberg M](#), [Johnson KC](#), [Kuller L](#), [Lane D](#), [Lessin L](#), [O'Sullivan MJ](#), [Wactawski-Wende J](#), [Yasmeen S](#), [Prentice R](#).

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Abstract

BACKGROUND: Alcohol consumption is a well-established risk factor for breast cancer. This association is thought to be largely hormonally driven, so alcohol use may be more strongly associated with hormonally sensitive breast cancers. Few studies have evaluated how alcohol-related risk varies by breast cancer subtype.

METHODS: We assessed the relationship between self-reported alcohol consumption and postmenopausal breast cancer risk among 87,724 women in the Women's Health Initiative Observational Study prospective cohort from 1993 through 1998. Multivariable adjusted Cox regression models were used to calculate hazard ratios (HRs) and 95% confidence intervals (CIs). All statistical tests were two-sided.

RESULTS: A total of 2944 invasive breast cancer patients were diagnosed during follow-up through September 15, 2005. In multivariable adjusted analyses, alcohol consumption was positively related to risk of invasive breast cancer overall, invasive lobular carcinoma, and hormone receptor-positive tumors (all $P(\text{trend}) \leq .022$). However, alcohol consumption was more strongly related to risk of certain types of invasive breast cancer compared with others. Compared with never drinkers, women who consumed seven or more alcoholic beverages per week had an almost twofold increased risk of hormone receptor-positive invasive lobular carcinoma (HR = 1.82; 95% CI = 1.18 to 2.81) but not a statistically significant increased risk of hormone receptor-positive invasive ductal carcinoma (HR = 1.14; 95% CI = 0.87 to 1.50; difference in HRs per drink per day among current drinkers = 1.15; 95% CI = 1.01 to 1.32, $P = .042$). The absolute rates of hormone receptor-positive lobular cancer among never drinkers and current drinkers were, 5.2 and 8.5 per 10,000 person-years, respectively, whereas for hormone receptor-positive ductal cancer they were 15.2 and 17.9 per 10,000 person-years, respectively.

CONCLUSIONS: Alcohol use may be more strongly associated with risk of hormone-sensitive breast cancers than hormone-insensitive subtypes, suggesting distinct etiologic pathways for these two breast cancer subtypes.

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Alcoholic Beverages as a Source of Estrogens

JUDITH S. GAVALER, PH.D.

Alcoholic beverages contain not only alcohol but also numerous other substances (i.e., congeners) that may contribute to the beverages' physiological effects. Plants used to produce alcoholic beverages contain estrogenlike substances (i.e., phytoestrogens). Observations that men with alcoholic cirrhosis often show testicular failure and symptoms of feminization have suggested that alcoholic beverages may contain biologically active phytoestrogens as congeners. Biochemical analyses have identified several phytoestrogens in the congeners of bourbon, beer, and wine. Studies using subjects who produced no estrogen themselves (i.e., rats whose ovaries had been removed and postmenopausal women) demonstrated that phytoestrogens in alcoholic beverage congeners exerted estrogenlike effects in both animals and humans. Those effects were observed even at moderate drinking levels. KEY WORDS: alcoholic beverage; congener; estrogens; male; female; plant; alcoholic liver cirrhosis; testicular dysfunction; feminization; hypothesis testing; biochemical mechanism; animal model; ovary; moderate AOD use; prolactin; follicle stimulating hormone; luteinizing hormone; cholesterol; globulins; literature review

The excessive consumption of alcoholic beverages is associated with numerous serious medical, social, and legal problems that exact a high human and economic price. Despite the monumental problems caused by alcohol abuse and dependence, however, the fact is that most people who drink consume moderate amounts of alcoholic beverages. Indeed, an additional direction for alcohol research has been generated by reports of the beneficial effect of moderate drinking on the risk of coronary heart disease (CHD) (Klatsky 1994). Thus, studies have found that compared with abstainers and heavier drinkers, moderate drinkers (i.e., women who consume up to one standard drink¹ per day and men who consume up to two drinks per day) have a significantly reduced risk of CHD. This definition of moderate

drinking also includes people who consume alcoholic beverages only occasionally and corresponds to the recommended limits for low-risk alcohol consumption (U.S. Department of Agriculture and U.S. Department of Health and Human Services 1995).

When discussing the risks and benefits associated with alcoholic beverages, most people think in terms of the beverages' alcohol contents. Consequently, much of the research aimed at determining how alcoholic beverages affect the body has been conducted using alcohol solutions to approximate the effects of alcoholic beverages. Alcoholic beverages, however, contain numerous substances

in addition to alcohol itself (i.e., congeners), which determine a beverage's taste, color, and aroma. Alcoholic beverages differ in both the composition and quantity of congeners. These variations result from the different methods

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¹A standard drink is defined as a 12-ounce bottle of beer or wine cooler, a 5-ounce glass of wine, or 1.5 ounces of 80-proof distilled spirits.

and materials (e.g., grains, fruits, and hops) from which the beverages are produced. This article explores the hypothesis that congeners, particularly phytoestrogens, contribute to the effects of alcoholic beverages on the body.

EVIDENCE OF THE ESTROGENIC ACTIVITY OF CONGENERS

Researchers' interest in the congeners of alcoholic beverages first was spurred by various reports in the agricultural literature. For example, some studies reported that grazing animals feeding on particular forages and grasses showed evidence of impaired reproduction. Subsequently, using those forages, researchers isolated substances that exhibited estrogenlike activity and later identified them as estrogenlike substances of plant origin (i.e., nonsteroidal phytoestrogens) (see the following section). Finally, studies demonstrated that the phytoestrogens found in milled by-products and oils made from various grains, hops, corn, and rice exhibited biological activity both in experimental animals and in studies using cultured cells (see Gavaler et al. 1987*a,b*; 1995*a,b*; and references therein).

Estrogens and Their Activities

Estrogens are female sex hormones that are produced primarily in the ovaries. These hormones play essential roles in the development and maintenance of the female reproductive organs and breasts as well as in pregnancy and lactation. In men, small amounts of estrogens are produced in the testes. (For more information on estrogens and their functions, see the article by Hiller-Sturmhöfel and Bartke, pp. 153–164.) Based on the structure of the molecules, two main classes of estrogens exist: steroidal and nonsteroidal. The steroidal estrogens—estradiol and estrone—are generated by the body. Nonsteroidal estrogens, also known as phytoestrogens, are produced by certain plants.

Estrogens exert their effects by entering their target cells, where they bind to docking molecules (i.e., receptors) in the fluid that fills the cell (i.e., the cytosol).

The estrogen-receptor complexes then move into the cell nucleus, where the transported estrogen is transferred to nuclear estrogen receptors. The nuclear complexes, in turn, interact with a certain type of genetic molecule (i.e., ribonucleic acid [RNA]) in the nucleus, thereby influencing the activity of certain genes and modifying the cell's function. The strength (i.e., specificity and affinity) with which estrogens bind to their receptors differs among the molecules. Thus, steroidal estrogens exhibit greater affinity and specificity for estrogen receptors than do nonsteroidal phytoestrogens (Rosenblum et al. 1993; Hertog et al. 1993; Miksicek 1995; Makela et al. 1995) and therefore generally are more powerful in their actions.

Phytoestrogens in Alcoholic Beverages—A Hypothesis

Case studies have shown that men with liver damage resulting from excessive alcohol consumption (i.e., alcoholic cirrhosis) often suffer from testicular failure—the inability of the testes to produce male sex hormones. In addition, those men also frequently show signs and symptoms of feminization, such as enlarged breasts and a redistribution of body fat into a pattern that mimics that of women (for reviews, see Wright et al. 1992; Gavaler and Van Thiel 1988). These signs and symptoms are consistent with exposure to high levels of estrogen. Surprisingly, however, the levels of the steroidal estrogens in cirrhotic, feminized men are similar to or only slightly elevated compared with the levels in age-matched non-alcoholic men.

The fact that alcoholic beverages are made from many plants and plant by-products that contain phytoestrogens has led to the hypothesis that alcoholic beverages contain biologically active phytoestrogens as congeners. According to this hypothesis, two factors might contribute, at least in part, to the feminization observed in men with alcoholic cirrhosis: (1) prolonged exposure to the phytoestrogens contained in alcoholic beverage congeners and (2) the impaired ability of the alcohol-damaged liver to adequately metabolize and excrete many

compounds, including phytoestrogens. The hypothesis has been tested in biochemical analyses, animal models, and human studies. The results of those analyses are summarized in the following sections.

BIOCHEMICAL ANALYSES

To investigate the hypothesis that some of the effects of alcoholic beverages result from estrogenic congeners, researchers removed all of the alcohol, other volatile substances, and most of the water contained in various alcoholic beverages (e.g., bourbon, wine, and beer) using a technique called rotoevaporation (see figure 1). The resulting congener concentrates then were subjected to sophisticated biochemical analyses, such as gas chromatography and mass spectrometry, to isolate and identify any estrogenic

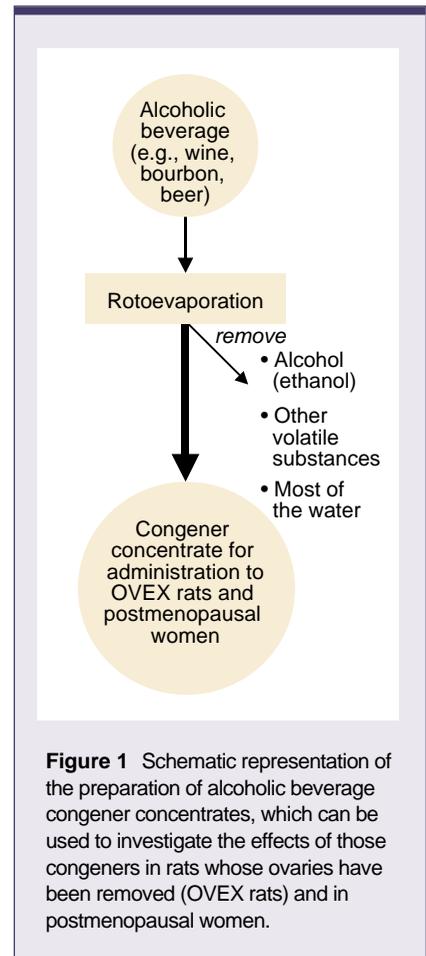


Figure 1 Schematic representation of the preparation of alcoholic beverage congener concentrates, which can be used to investigate the effects of those congeners in rats whose ovaries have been removed (OVEX rats) and in postmenopausal women.

compounds present. Those analyses identified two phytoestrogens—sitosterol and biochanin A—in bourbon; two additional phytoestrogens—daidzein and genistein—were present in beer (Rosenblum et al. 1987, 1991). Other phytoestrogens have been identified in wine (Hertog et al. 1993).

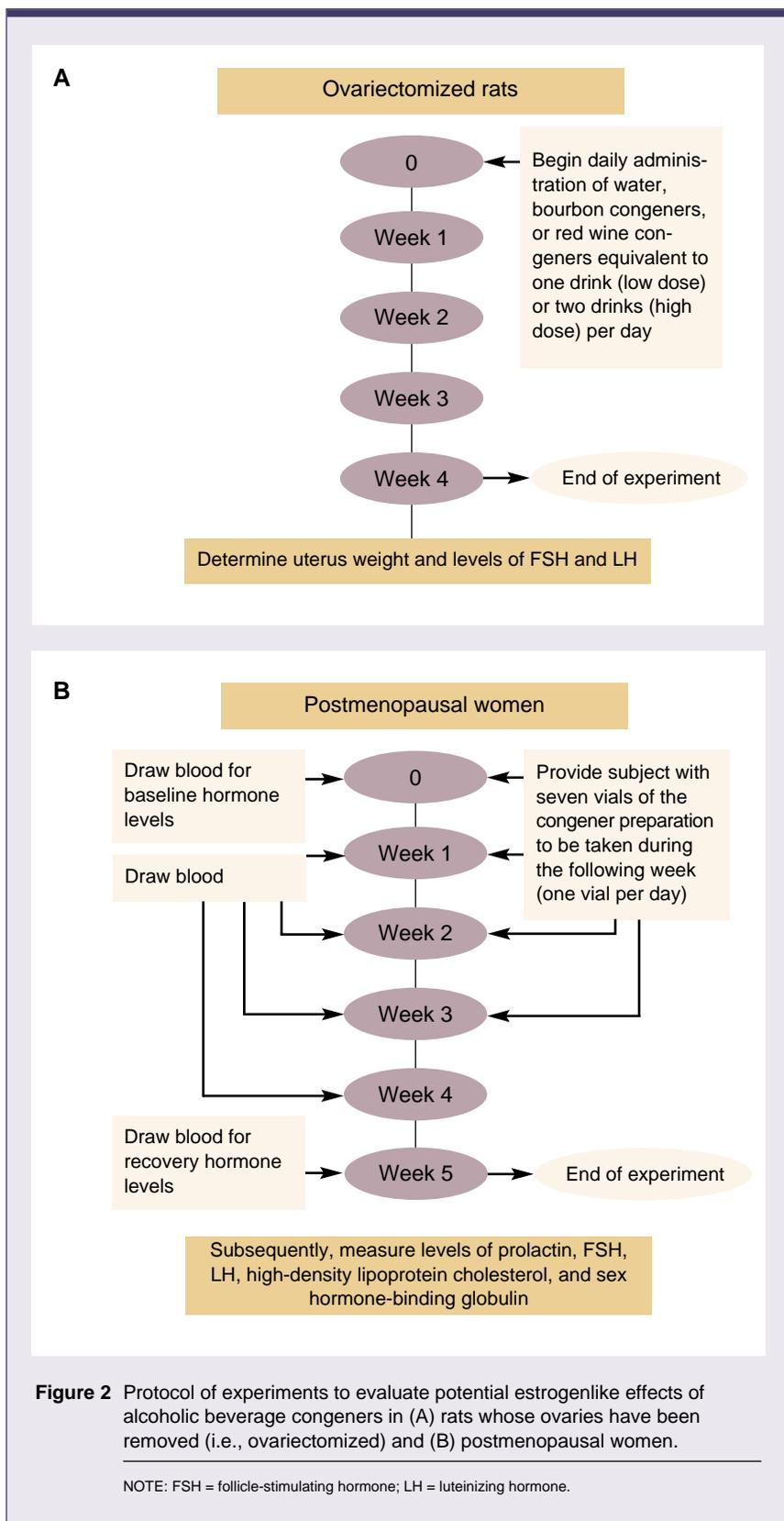
In addition, both the congener concentrates and the purified phytoestrogens were examined for their ability to bind to estrogen receptors and to compete with estradiol for binding to estrogen receptors in the cytosol (Gavaler et al. 1987*b*; Hertog et al. 1993; Makela et al. 1995). Those analyses found that compared with estradiol, phytoestrogens bound less strongly to the estrogen receptors and were less able to compete for binding to the receptors. It is important to note, however, that although those studies were able to determine the relative ability of phytoestrogens to interact with estrogen receptors in the cytosol, they provided no information about whether the molecules also were transported to the nucleus and bound to nuclear receptors.

EXPERIMENTAL ANALYSES OF THE ROLE OF PHYTOESTROGENS IN ANIMAL MODELS

The Experimental Animal Model

To maximize the probability of detecting a response to biologically active phytoestrogens in alcoholic beverage congeners, researchers needed to use animals that produced no or very little estrogen themselves. One such model is a female rat whose ovaries have been removed (i.e., an OVEX rat). In the absence of the ovaries and thus of cyclic ovarian function, the animal's estrogen production is greatly diminished. (This type of rat also can serve as a model for postmenopausal women, whose ovaries have ceased to produce estrogen.)

The loss of ovarian hormone production induces several changes in the body that can serve as markers of the level of ovarian function. First, the body substantially increases the levels of certain hormones (i.e., gonadotropins) that



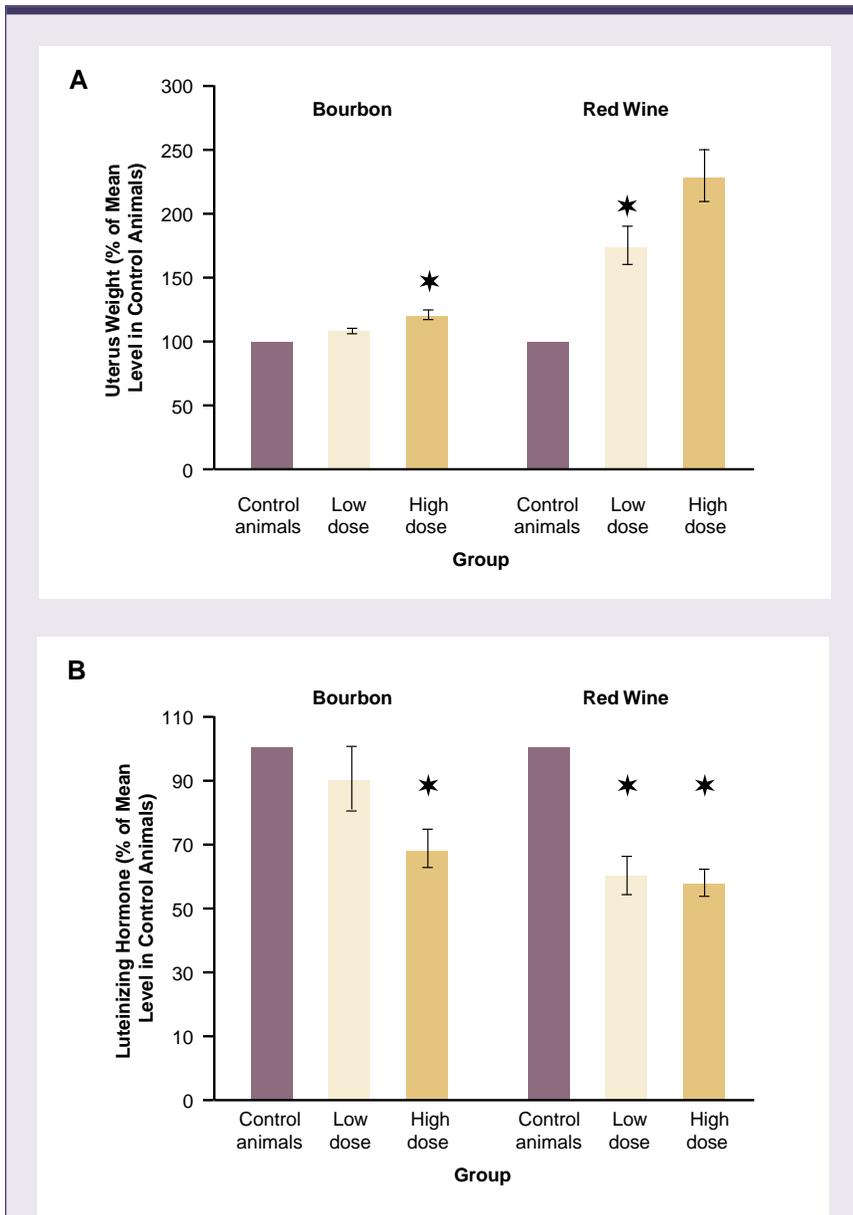


Figure 3 The effects of bourbon and red wine congeners on (A) uterus weight and (B) luteinizing hormone (LH) levels of rats whose ovaries had been removed. The animals received congeners corresponding to one standard drink (low dose) or two standard drinks (high dose) daily in their drinking water for 4 weeks. Uterus weights and LH levels in the congener-exposed animals are expressed as the percentage of the mean level in unexposed control animals (defined as 100 percent). The uterus weights are corrected for the animals' body weights. Both bourbon and red wine congeners induced estrogenlike effects (i.e., increased uterus weight and reduced LH levels). Moreover, red wine congeners induced more pronounced changes than did bourbon congeners.

NOTE: The wide bars represent mean values, whereas narrow brackets represent the standard error of the mean. A star above a bar indicates a statistically significant difference from the value in the control animals ($p < 0.05$).

regulate ovarian estrogen production and secretion, thereby attempting to enhance estrogen production by the unresponsive, or absent, ovaries. Two gonadotropins exist—follicle-stimulating hormone (FSH) and luteinizing hormone (LH)—whose levels in the blood can be measured easily. Thus, when OVEX rats are exposed to exogenously administered estrogenic substances, such as phytoestrogens, the levels of both FSH and LH would be expected to decline compared with unexposed control animals, because the body would no longer need to stimulate ovarian activity to the same extent. Second, estrogen deprivation results in shrinkage, or atrophy, of the uterus and fallopian tubes, the extent of which can be measured by determining those organs' weights. Accordingly, exposure to phytoestrogens would be expected to increase the weight of the uterus (which in the rat includes the fallopian tubes) compared with untreated animals.

For the experiments with OVEX rats, concentrates of red wine and bourbon congeners were prepared the same way as for the biochemical analyses described in the previous section. The concentrates then were diluted so that 100 milliliters (mL) of the animals' drinking water contained the amount of congeners present in one (low-dose) or two (high-dose) standard drinks of each type of alcoholic beverage. The OVEX rats received the congener-supplemented drinking water daily for 4 weeks (see figure 2). Control animals received plain drinking water. After the experimental period, the animals' uterus weight and LH and FSH levels were determined.

Results

The congeners of both bourbon and red wine exerted a dose-dependent estrogenic effect on the OVEX rats' uterus weights and LH levels (see figure 3) (Gavaler et al. 1987b, 1995a). Thus, the animals' mean uterus weights increased, and the LH levels decreased compared with control OVEX rats that had received no congeners. Interestingly, the estrogenic effects on both uterus weight and LH levels were more pronounced in the animals exposed

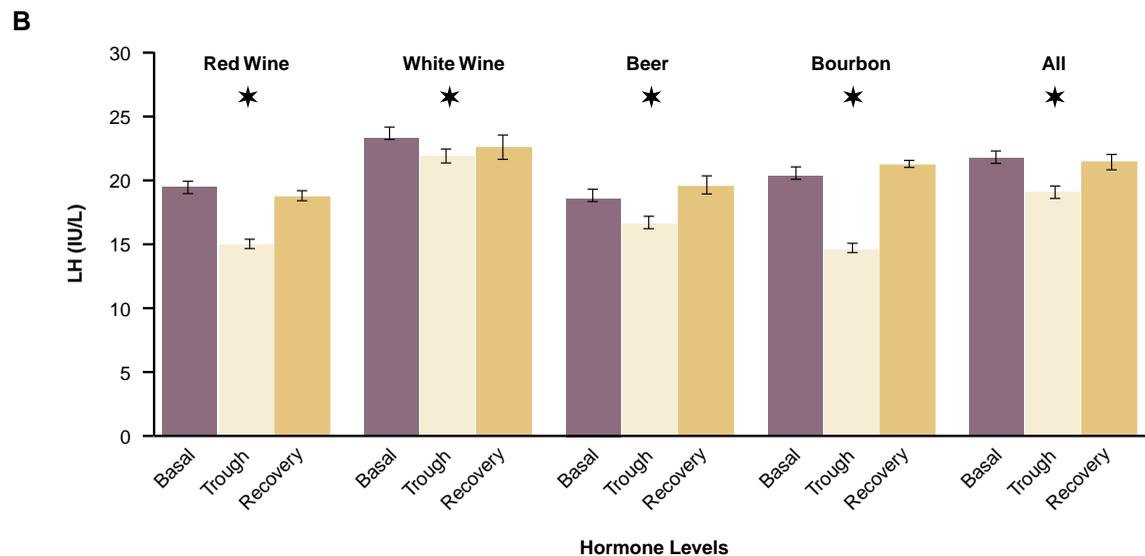
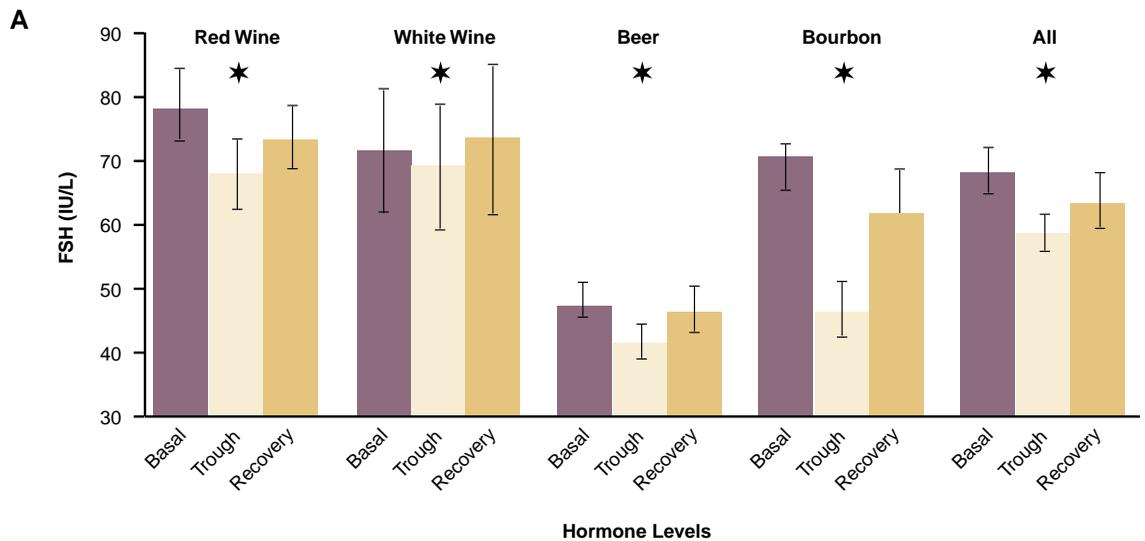


Figure 4 Effects of alcoholic beverage congeners on (A) follicle-stimulating hormone (FSH) and (B) luteinizing hormone (LH) levels in postmenopausal women. For 4 weeks, the women consumed congener amounts corresponding to those present in one standard drink of the beverage daily. Basal hormone levels were determined before the women began the experiment. Trough levels represent the lowest hormone levels that were detected during the 4-week administration period of alcoholic beverage congeners. Recovery levels were determined 1 week after the last ingestion of congeners. All congeners had estrogenlike effects (i.e., resulted in lower FSH and LH levels). The effects of the various congeners did not differ significantly.

NOTE: The wide bars represent mean values, whereas the narrow brackets represent the standard error of the mean. A star above a bar indicates a significant difference from basal levels as determined by paired T-test ($p < 0.025$). The differences in baseline levels result from variations in the mean levels of the subjects in the various groups.

IU/L = International units per liter.

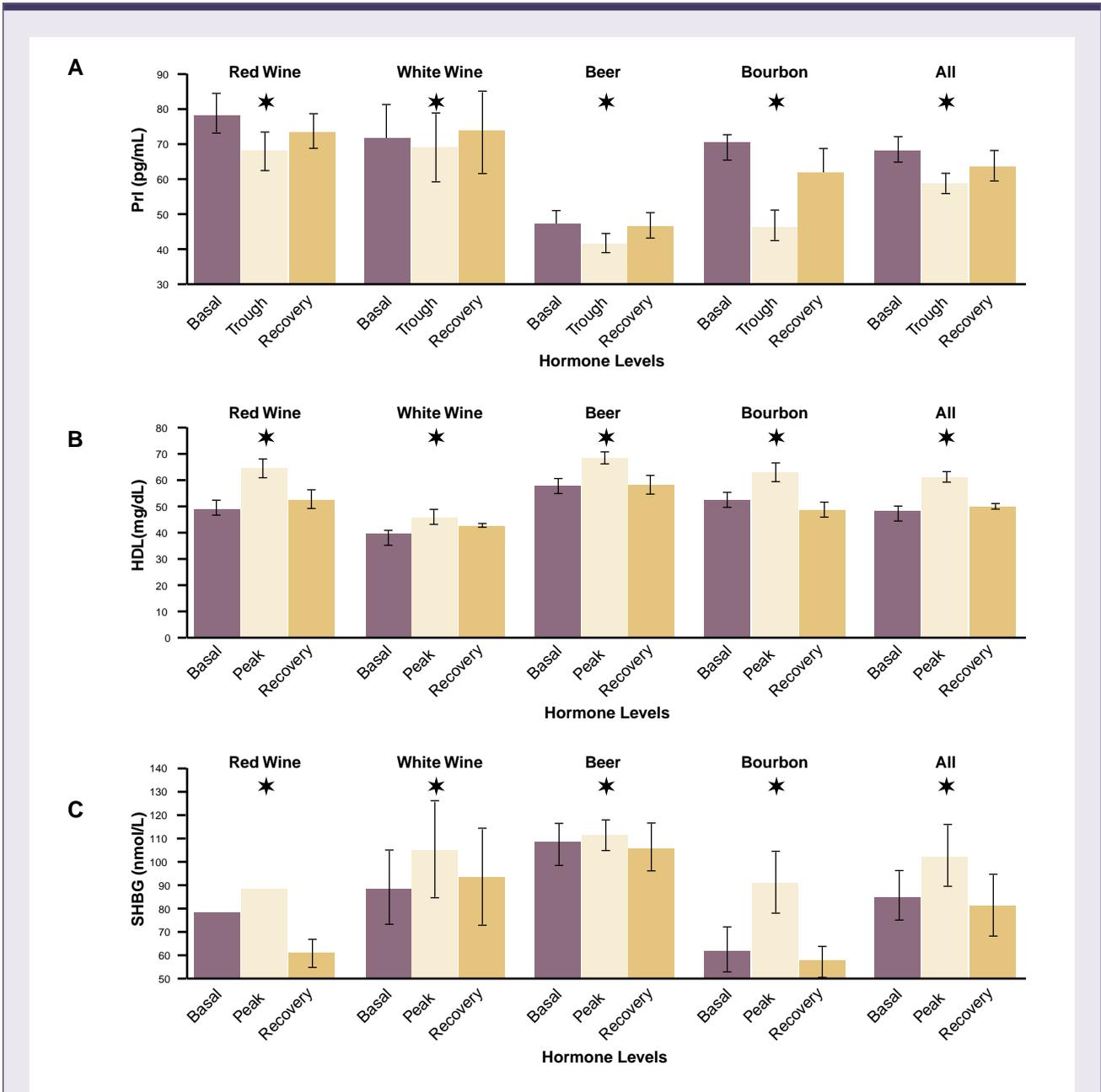


Figure 5 Effects of alcoholic beverage congeners on the levels of (A) prolactin (Prl), (B) high-density lipoprotein (HDL) cholesterol, and (C) sex hormone-binding globulin (SHBG) in postmenopausal women. For 4 weeks, the women consumed congener amounts corresponding to those present in one standard drink of the beverage daily. Basal hormone levels were determined before the women began the experiment. Peak levels represent the highest hormone levels that were detected during the 4-week administration period of alcoholic beverage congeners. Recovery levels were determined 1 week after the last ingestion of congeners. All congeners had estrogenlike effects (i.e., resulted in elevated levels of Prl, HDL cholesterol, and SHBG). The effects of the various congeners did not differ significantly.

to red wine congeners than in the animals exposed to bourbon congeners. In addition, the estrogenic effects reached statistical significance at lower doses of red wine congeners than of bourbon congeners. These findings suggest that red wine contains a higher content and/or biologically more active phytoestrogens than does bourbon.

EXPERIMENTAL ANALYSES OF THE ROLE OF PHYTOESTROGENS IN HUMANS

As described in the previous section, the congeners of two types of alcoholic beverages, bourbon and red wine, produced detectable estrogenic effects in OVEX rats, thereby confirming the hypothesis that alcoholic beverages contain biologically active estrogenic substances. These findings also support the notion that the feminization observed among men with alcoholic cirrhosis might result, at least in part, from high exposure to biologically active estrogenic substances in alcoholic beverages. Because most people consume only moderate amounts of alcoholic beverages, however, it is reasonable to ask whether biologically active estrogenic congeners could elicit a clinically relevant response in humans even at moderate drinking levels.

Three sets of reports, when evaluated together, support the idea that alcoholic beverages may also produce estrogenic effects in moderate drinkers. First, numerous studies have demonstrated a reduced risk of CHD in postmenopausal women who use estrogen replacement therapy. One postulated mechanism underlying this effect involves the ability of estrogen to increase levels of high-density lipoprotein (HDL) cholesterol, or "good" cholesterol. Second, as described previously, several studies have reported a decreased risk of CHD among moderate drinkers (Klatsky

1994). Finally, according to the so-called French Paradox, French people have a low mortality rate from CHD despite a high intake in saturated fats. This effect has been attributed to the French people's relatively high consumption of alcoholic beverages in general and of red wine in particular (Bordeaux Symposium 1998). When analyzed together, these studies suggest that moderate alcohol consumption can have effects similar to estrogen replacement therapy in terms of reducing the drinker's risk of CHD. To investigate this issue in more detail, researchers have used a human model equivalent to the OVEX rats (i.e., postmenopausal woman) to evaluate the hypothesis that alcoholic beverage congeners contain biologically active estrogenic substances that produce a clinically significant effect even at moderate drinking levels.

The Human Study Sample

The study recruited 24 postmenopausal women ranging from ages 57 to 59 (46 percent from minority populations) who were not using estrogen replacement therapy (i.e., were estrogen deficient). The women were all light social drinkers or abstainers and consumed no alcohol during the study. The study evaluated the effects of four types of alcoholic beverage congeners (i.e., from white and red wine, beer, and bourbon) in the women. Thus, six women received white wine congeners, seven women received red wine congeners, six women received beer congeners, and five women received bourbon congeners. Every evening for 4 weeks, each woman consumed a congener preparation corresponding to one standard drink of that beverage. To evaluate whether the women showed a clinically relevant response indicating exposure to biologically active estrogenic substances in the congener preparations, the researchers measured the levels of several hormones and other proteins. These included three hormones produced in the pituitary gland (i.e., FSH, LH, and prolactin²) and two estrogen-responsive proteins produced by the liver (i.e., HDL cholesterol and sex hormone-binding globulin [SHBG]).

If the congeners contained biologically active phytoestrogens, the FSH and LH levels should decrease as described previously, whereas prolactin levels should increase. Similarly, the levels of HDL cholesterol and SHBG should increase following exposure to estrogenic alcoholic beverage congeners.

To determine the baseline levels of the markers before the women were exposed to the congener preparations, blood samples were obtained at the onset of the study (see figure 2, p. 222). During the 4-week period of daily congener ingestion, blood samples were drawn each week. In addition, the subjects were weighed weekly. Finally, blood samples were obtained 1 week after the women had stopped ingesting the beverage congeners to determine whether the amounts of hormones and binding proteins had returned to baseline levels. Thus, each woman served as her own control. The researchers then could determine the highest (i.e., peak) or lowest (i.e., trough) levels of proteins and hormones achieved during the 4-week study period as well as the levels after exposure had been terminated for 1 full week (i.e., the recovery level). For each study participant, the values then were compared with the corresponding levels before congener exposure began.

Results

For all the hormones and other proteins examined, the levels changed as would be expected if the congeners contained biologically active phytoestrogens (see figures 4 and 5, p. 225) (Gavaler et al. 1995a). Thus, the levels of FSH and LH decreased, with trough levels significantly lower than baseline levels. Conversely, the levels of prolactin, HDL cholesterol, and SHBG increased during the study period and reached peak levels that were significantly higher than the baseline levels. The women's weights did not change over the study period. In addition, following the recovery period of 1 week, the levels of all five markers returned to values that did not differ significantly from baseline levels. No statistically significant differences existed in the estrogenic effects of the various congener concentrates.

²Prolactin is essential for the development and growth of the mammary gland and for the initiation and maintenance of milk production in nursing women. Prolactin production is increased in the presence of estrogen.

CONCLUSIONS AND FUTURE DIRECTIONS

The studies described in the previous sections strongly support the hypothesis that congeners present in alcoholic beverages can produce measurable estrogenic effects, even at moderate drinking levels. Specifically, those studies found the following:

- Alcoholic beverage congeners exerted estrogenic effects both in an experimental animal model and in postmenopausal women.
- The estrogenic effects of alcoholic beverage congeners were detectable using a variety of estrogenic markers, including the pituitary hormones LH (in OVEX rats and postmenopausal women), FSH, and prolactin (in postmenopausal women); uterus weight (in OVEX rats); and the estrogen-responsive liver proteins HDL cholesterol and SHBG (in postmenopausal women).
- In both the experimental animals and the postmenopausal women, the changes in the levels of all estrogenic markers were consistent with the presence of biologically active phytoestrogens in the congeners.
- Red wine congeners and bourbon congeners produced similar estrogenic effects in experimental animals and in postmenopausal women.

Various aspects of the estrogenic effects of alcoholic beverage congeners, however, remain to be elucidated. For example, it is currently unknown whether and how phytoestrogens in alcoholic beverage congeners affect the lining of the uterus and the mineral content of the bones, both of which are influenced by estrogens

produced in the body. These issues should be explored in clinical trials in which the participants are randomly assigned to receiving congeners. Furthermore, researchers must address the question of how the phytoestrogenic congeners interact with the alcohol in alcoholic beverages. So far, the effects of these substances have only been investigated separately; however, every person who consumes alcoholic beverages ingests both the alcohol and the congeners. Scientists have yet to determine how these potential interactions can best be evaluated. ■

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Coffee, tea, caffeine and risk of breast cancer: a 22-year follow-up.

Int J Cancer. 2008 May 1;122(9):2071-6

Authors: Ganmaa D, Willett WC, Li TY, Feskanich D, van Dam RM, Lopez-Garcia E, Hunter DJ, Holmes MD

The relation between consumption of coffee, tea and caffeine and risk of breast cancer remains unsettled. We examined data from a large, long-term cohort study to evaluate whether high intake of coffee and caffeine is associated with increased risk of breast cancer. This was a prospective cohort study with 85,987 female participants in the Nurses' Health Study. Consumption of coffee, tea and caffeine consumption was assessed in 1980, 1984, 1986, 1990, 1994, 1998 and the follow-up continued through 2002. We documented 5,272 cases of invasive breast cancer during 1,715,230 person-years. The multivariate relative risks (RRs) of breast cancer across categories of caffeinated coffee consumption were: 1.0 for <1 cup/month (reference category), 1.01 (95% confidence interval: 0.92-1.12) for 1 month to 4.9 week, 0.92 (0.84-1.01) for 5 week to 1.9 days, 0.93 (0.85-1.02) for 2-3.9 days, 0.92 (0.82-1.03) for \geq 4 cups per day (p for trend = 0.14). Intakes of tea and decaffeinated coffee were also not significantly associated with risk of breast cancer. RRs (95% CI) for increasing quintiles of caffeine intake were 1.00, 0.98 (0.90-1.07), 0.92 (0.84-1.00), 0.94 (0.87-1.03) and 0.93 (0.85-1.01) (p for trend = 0.06). A significant inverse association of caffeine intake with breast cancers was observed among postmenopausal women; for the highest quintile of intake compared to the lowest RR 0.88 (95% CI = 0.79-0.97, p for trend = 0.03). We observed no substantial association between caffeinated and decaffeinated coffee and tea consumption and risk of breast cancer in the overall cohort. However, our results suggested a weak inverse association between caffeine-containing beverages and risk of postmenopausal breast cancer.

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If You Drink Coffee Make Sure it is Organic

Posted By [Dr. Mercola](#) | January 30 2010

Many Mesoamerican farmers here are starting to give up on organic coffee. The premium price that it used to fetch is disappearing.

From Mexico to Costa Rica, at least 10 percent of growers have returned to chemical fertilizers and pesticides in the past three years, at a significant cost to the environment.

Although organic still pays a premium of as much as 25 percent over conventional coffee, it's not enough to cover the added cost of production and make up for the smaller yields.

Under specialty "green" labels at places like Wal-Mart and McDonald's, organic beans and brews have become cheaper and more widely available recently.

Sources:

» [Christian Science Monitor December 29, 2009](#)

Dr. Mercola's Comments:

Americans drink 400 million cups of coffee every day, which adds up to over \$4-billion worth of imported coffee each year.

Now I am not a fan of coffee -- personally I never acquired a taste for it, and it is far from a health food -- but it is a sad state of affairs that Latin American farmers are abandoning their organic coffee crops faster than rats leaving a sinking ship.

These farmers were promised they would benefit financially from ditching their toxic pesticides in favor of organic crops, but in order to profit they need to be certified. And farmers cannot become certified organic until their soil is free of pesticides and chemical fertilizers for three years.

This means the farmers have to absorb the extra costs of organic farming for three years before they'll start to see the returns, and many just could not do it.

Meanwhile, while there is some demand for organic coffee, the market is still very small. Starbucks, for example, reported that only 3 percent of its coffee purchases in 2009 were organic.

Now, as more organic coffee growers abandon their crops, it's not only limiting the quantities available but also driving up prices. This, in turn, is keeping the organic coffee market from really merging into the mainstream ...

And this is a very bad trend not only for the environment, but also for your health.

Most Coffee is Heavily Sprayed With Pesticides

Most people are not aware that regular coffee consumption can be a significant source of pesticides. According to the CS Monitor, conventional farmers apply up to 250 pounds of chemical fertilizers per acre!

Pesticides contribute to a wide range of health problems, including prostate and other types of cancers, Parkinson's disease, and miscarriages in pregnant women.

So when you sip on your non-organic morning brew, you are also sipping on pesticide residues. Further, the U.S. has limited input and control over the type and quantity of pesticides used in the countries from which we import.

Since the vast majority of coffee, both organic and non-organic, consumed in the U.S. is grown outside this country, a return to non-organic farming of coffee beans in Latin America means a return to heavy use of pesticides.

Now is a Good Time to Kick Your Habit

If you're going to drink coffee, going organic is the "healthiest" way to do it. Of course, coffee is really not *healthy* at all.

Caffeine is a drug.

It's a legal and widely available drug, but a drug nonetheless, and very powerful. My position is that coffee is not nearly as bad for your health as soda or high fructose corn syrup, but nevertheless it is something you or your family would best be served by avoiding -- or strictly limiting your consumption.

Caffeine actually alters the way your brain works, and can cause temporary changes in your behavior and mood. If you are especially sensitive to the drug, as is the case with many protein [nutritional types](#), the effects are even more pronounced.

Just a few of the symptoms of caffeine use include:

- A rise in blood pressure and stress hormone levels

- Heart palpitations
- Feeling jittery, nervous, anxious and even panicky
- Insomnia

More Coffee Adverse Effects

Coffee increases your risk for rheumatoid arthritis, leukemia, stomach cancer, and [stroke](#). It can further wreak havoc on your health by:

- Raising your [cholesterol](#)
- Sending your insulin levels out of control
- Damaging your blood vessels
- Increasing your risk of heart disease
- Damaging your body's [metabolism](#)
- Increasing your risk of osteoporosis

Coffee also interferes with your body's ability to use folate and vitamins B12 and B6. These nutrients are important in order to keep your homocysteine level in the healthy range. Elevated homocysteine levels are associated with a wide range of devastating health conditions.

Coffee also stimulates your adrenals -- the hormones that activate your fight or flight response. If your adrenal hormones are stimulated too often, which is bound to happen if you are a daily coffee drinker, your adrenal glands may eventually burn out.

When your adrenals no longer function effectively, your body will go in search of a replacement hormone -- which happens to be progesterone.

Progesterone has its own full-time job to do, part of which is to keep your body's estrogen in balance. As your progesterone is used up compensating for your exhausted adrenals, you run the risk of becoming estrogen dominant.

Estrogen dominance can lead to osteoporosis.

Coffee also raises the acidity level of your blood, causing calcium to be pulled from your bones and teeth for use as a buffering agent. The combination of estrogen dominance and high blood acidity puts you at an even greater risk for osteoporosis. In fact, research has established an undeniable link between coffee consumption and hip fractures.

If You're Planning a Family, Coffee Should Not be on the Menu

If you're pregnant or planning to be, you should avoid coffee altogether.

Over 300 mg of caffeine a day, which is the equivalent of two to three eight ounce cups of coffee, can increase your risk of:

- Miscarriage
- Delivering a low birth weight baby
- Having a child with certain birth defects like cleft palate

Four or more cups of coffee a day may increase your baby's risk of SIDS.

When you're pregnant, any caffeine you ingest passes easily through the placenta to your unborn child.

It is also transferred through breast milk, and stays in your body – and the body of your unborn child or infant – longer than average. Your unborn baby has no ability to detoxify this drug.

If You Must Drink Coffee ...

If you simply MUST drink coffee here are a few tips to help reduce the chances of harmful effects:

1. **Use organic coffee** – Again, coffee is a heavily sprayed crop, so drinking organic coffee might reduce or eliminate the exposure to toxic herbicides, pesticides, and fertilizers. The only drawback is that the countries where coffee is produced probably have less control and monitoring for compliance to organic practices. You will also be helping to protect the health of the people working in the coffee fields, as you will be helping to reduce their toxic exposure as well.

If you want to go a step further, look for fair-trade certified coffee, which means the coffee farmers have been paid fairly and treated well.

2. **"Swiss Water Process" decaf** -- If you are going to drink decaffeinated coffee, be sure that it is one that uses a non-chemical based method of decaffeination. The "Swiss Water Process" is a patented method and is the best choice. Most of the major brands are chemically decaffeinated, even if it says "Naturally Decaffeinated" right on the container. If you are unsure of the methods, contact the manufacturer.
3. **Avoid sugar and/or milk** -- These are actually much worse for you than the coffee itself. Don't compound the detrimental health effects by adding milk or sugar to your coffee.
4. **Unbleached filters** -- If you use a "drip" coffee maker, be sure to use non-bleached filters. The bright white ones, which most people use, are chlorine bleached and some of this chlorine will be extracted from the filter during the brewing process.

What Makes a Healthy Coffee Alternative?

As my regular readers know, my first recommendation for a healthy beverage is always pure water. It is by far the best choice you can make.

But if you're looking to kick your coffee habit to improve your health, a cup of high-quality tea can be a great alternative as a warm, soothing morning beverage.

When I drink *green* tea, I personally prefer Matcha tea, as the color is a vibrant bright green and it is far less processed and of much higher quality than most green teas.

Also, rather than being steeped and strained like typical tea, matcha tea is made of tea leaves ground into a powder, and the powder gets added right into the water. Because you are actually consuming the whole leaf, matcha tea is said to be one of the healthiest green teas out there.

My other favorite is [Tulsi tea](#), which is a powerful adaptogenic herb that provides important therapeutic benefits. The combination of antioxidants and phytochemicals found in tulsi can promote your overall health in a variety of ways, including:

- Support for your immune system
- Improving digestion
- Increasing your resistance to stress
- Promoting healthy metabolism
- Maintaining healthy blood sugar and cholesterol levels
- Providing you with skeletal and joints support

Whatever you do, avoid substituting fruit juice or soda for coffee, as they are much worse for you. The sugar, especially fructose, is a far more serious metabolic poison than coffee.

If you use coffee as a crutch to get a quick burst of energy, remember that cultivating a healthy lifestyle will supply all the power you need to get through your day.

And, again, if you do choose to drink coffee, at least switch over to an organic variety for the sake of your health and the environment.

Red Wine Ingredient Resveratrol Stops Breast Cancer Growth, Study Suggests

Source: <http://www.sciencedaily.com/releases/2011/09/110929103222.htm>

Sep. 29, 2011 — A new research report appearing in the October 2011 issue of The *FASEB Journal* shows that resveratrol, the "healthy" ingredient in red wine, stops breast cancer cells from growing by blocking the growth effects of estrogen. This discovery, made by a team of American and Italian scientists, suggests for the first time that resveratrol is able to counteract the malignant progression since it inhibits the proliferation of hormone resistant breast cancer cells. This has important implications for the treatment of women with breast cancer whose tumors eventually develop resistance to hormonal therapy.

"Resveratrol is a potential pharmacological tool to be exploited when breast cancer become resistant to the hormonal therapy," said Sebastiano Andò, a researcher involved in the work from the Faculty of Pharmacy at the University of Calabria in Italy.

To make this discovery, Andò and colleagues used several breast cancer cell lines expressing the estrogen receptor to test the effects of resveratrol. Researchers then treated the different cells with resveratrol and compared their growth with cells left untreated. They found an important reduction in cell growth in cells treated by resveratrol, while no changes were seen in untreated cells. Additional experiments revealed that this effect was related to a drastic reduction of estrogen receptor levels caused by resveratrol itself.

"These findings are exciting, but in no way does it mean that should people go out and start using red wine or resveratrol supplements as a treatment for breast cancer," said Gerald Weissmann, M.D., Editor-in-Chief of The *FASEB Journal*. "What it does mean, however, is that scientists haven't finished distilling the secrets of good health that have been hidden in natural products such as red wine."

Story Source:

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1. F. De Amicis, F. Giordano, A. Vivacqua, M. Pellegrino, M. L. Panno, D. Tramontano, S. A. W. Fuqua, S. Ando. **Resveratrol, through NF- κ B/p53/Sin3/HDAC1 complex phosphorylation, inhibits estrogen receptor gene expression via p38MAPK/CK2**

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Disclaimer: This article is not intended to provide medical advice, diagnosis or treatment. Views expressed here do not necessarily reflect those of ScienceDaily or its staff.

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ANTI-INFLAMMATORY DIET

Try and eat only organically grown foods as they reportedly have 2-5x more nutrients and it will decrease exposure to pesticides. There is no restriction on the amount of food you can eat. The foods listed are only examples of foods to eat. Try to compose meals of approximately 40% carbohydrates, 30% protein and 30% healthy fats. Try to eat any 1 food no more than 5 times a week. Plan your meals ahead of time and try to find at least 10 recipes you enjoy.

Steamed vegetables:

- The primary reason for using steamed vegetables is that steaming improves the utilization or the availability of the food nutrients allowing the GI mucosa to repair itself. Use minimal raw vegetables except as a salad. Include at least 1 green vegetable daily.
- Eat a variety of any and all vegetables (except tomatoes, potatoes) that you can tolerate. It is best to try and eat mostly the lower carbohydrate (3, 6%) vegetables. For example:
3% - asparagus, bean sprouts, beet greens, broccoli, red & green cabbage, cauliflower, celery, Swiss chard, cucumber, endive, lettuce (red, green, romaine), mustard greens, parsley, radish, spinach, watercress
6% - string beans, beets, Bok Choy, Brussel sprouts, chives, collards, eggplant, kale, kohlrabi, leeks, onion, parsley, red pepper, pumpkin, rutabagas, turnip, zucchini
15% - artichoke, parsnip, green peas, squash, carrot
20+% - yam. Add your favorite spices to enhance the taste of these vegetables.

Grains:

- Eat one to two cups of cooked grains per day of those you tolerate, unless you have indications of high insulin levels such as overweight, high blood pressure, high cholesterol or diabetes.
- Allowed grains include: amaranth, barley, buckwheat, millet, oatmeal, quinoa, basmati or brown rice, rye, teff.
- Other grain foods that may be eaten are rice crisps and wasa crackers.

Legumes:

- Eat a variety of any legumes that you are able to tolerate. Soak for 48-72 hours and cook slowly: split peas, lentils, kidney beans, pinto beans, fermented soy (tempeh or miso), mung beans, garbanzo beans, aduki & azuki beans.

Fish:

- Poach, bake, steam, or broil deep-sea ocean (Vs. farmed) fish (cod, haddock, halibut, mackerel, sardines, summer flounder, wild Pacific salmon) is preferred - no shellfish (shrimp, lobster, crab, clam)

Chicken/ Turkey:

- Eat only the meat & not the skin of free - range or organically grown chicken/turkey. Bake, broil, steam.

Meat:

- lamb, buffalo, venison, elk are OK

Fruit:

- Eat only 1 or 2 pieces of practically any fruit except citrus. If possible, it is preferred to eat the fruit baked (such as a baked apple or pear). Like the vegetables, try to eat mostly the low carbohydrate fruits. For example:

3% - cantaloupe, rhubarb, strawberries, melons

6% - apricot, blackberries, cranberries, papaya, peach, plum, raspberries, kiwi

15% - apple, blueberries, cherries, grapes, mango, pear, pineapple, pomegranate

20+% - banana, figs, prunes

Sweeteners:

- Occasionally maple syrup, rice syrup, barley syrup, raw honey or stevia - use ONLY with meals.
- Absolutely no sugar, NutraSweet, or any other sweetener is allowed.

Seeds and Nuts

- grind flax, pumpkin, sesame or sunflower seeds and add to steamed vegetables, cooked grains etc. You may also eat nut and seed butters - almond, Brazil, cashew, sesame etc.

Butter/Oils:

- For butter, mix together 1 pound of organic butter and 1 cup of extra virgin olive oil (from a new dark jar). Whip at room temperature and store in the refrigerator.
- Use extra virgin olive oil for all other situations requiring oil.

Spices:

- to add a delightful flavor to your food choices, add whatever spices you enjoy.

To Drink:

- A MINIMUM of 6 to 8 glasses of spring, bottled, filtered or reverse-osmosis filtered water every day. Drink 1/2 your body weight in ounces of water daily. Sip the water, try to drink 1 glass per hour. A few drops of chlorophyll will add a pleasant taste. NO distilled water.
- Small amounts of soy, rice, or oat milk are allowed ONLY on cooked grains or in cooking.

For the time being, avoid the following foods:

all animal milks	all animal cheeses	all corn products
commercial eggs (organic OK)	potatoes - red or white	tomatoes
all wheat products including	breads	white flour
citrus fruits	all fruit juices	all dried fruit
peanuts/ peanut butter	any processed food	fried foods
meat - red meat (beef, pork)	all caffeinated teas, coffee	alcohol

Exposure to exogenous estrogen through intake of commercial milk produced from pregnant cows.

[Maruyama K](#), [Oshima T](#), [Ohyama K](#).

Interdisciplinary Graduate School of Medicine and Engineering, Department of Clinical Nursing and Pediatrics, University of Yamanashi, Yamanashi, Japan.

Abstract

BACKGROUND: Modern genetically improved dairy cows continue to lactate throughout almost the entire pregnancy. Therefore, recent commercial cow's milk contains large amounts of estrogens and progesterone. With regard to the exposure of prepubertal children to exogenous estrogens, the authors are particularly concerned about commercial milk produced from pregnant cows. The purpose of the present study was therefore to examine concentrations of serum and urine sex hormones after the intake of cow milk. **METHODS:** Subjects were seven men, six prepubertal children, and five women. The men and children drank 600 mL/m(2) of cow milk. Urine samples were collected 1 h before the milk intake and four times every hour after intake. In men the serum samples were obtained before and 15, 30, 45, 60, 90 and 120 min after milk intake. Women drank 500 mL of cow's milk every night for 21 days beginning on the first day of the second menstruation. In three successive menstrual cycles, the day of ovulation was examined using an ovulation checker. **RESULTS:** After the intake of cow milk, serum estrone (E1) and progesterone concentrations significantly increased, and serum luteinizing hormone, follicle-stimulating hormone and testosterone significantly decreased in men. Urine concentrations of E1, estradiol, estriol and pregnanediol significantly increased in all adults and children. In four out of five women, ovulation occurred during the milk intake, and the timing of ovulation was similar among the three menstrual cycles. **CONCLUSIONS:** The present data on men and children indicate that estrogens in milk were absorbed, and gonadotropin secretion was suppressed, followed by a decrease in testosterone secretion. Sexual maturation of prepubertal children could be affected by the ordinary intake of cow milk.

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Foods High in Estrogen

By DarienC, eHow Contributor

Source: http://www.ehow.com/list_7258154_foods-high-estrogen.html?ref=Track2&utm_source=ask



Soy-bean products, such as tofu, are high in phytoestrogens.

Estrogen is a hormone present in humans. It can be naturally supplemented through dietary choices. Many plant-based foods contain natural estrogen called phytoestrogens. The two main types of phytoestrogens are lignans and flavonoids. Lignans are phytoestrogens themselves. Flavonoids, such as isoflavones, flavones and coumestans, are polyphenals commonly found in fruits and vegetables. There are thousands of different polyphenals, and many of them contain phytoestrogens. The highest quantities of phytoestrogens are in found in flaxseed and in soy beans and soy bean products. However, several other foods are significant sources of phytoestrogens.

1. Flaxseed

- Flaxseed contains lignans and provides the highest concentrations of phytoestrogens. According to a chart provided on the Dietary Fiber Food site, flaxseed contains approximately 379,380 micrograms of phytoestrogens per 100 grams. Flaxseed also contains soluble fiber, which helps the body to process phytoestrogens. The phytoestrogens in flaxseed are present in its whole-seed, ground-meal or powder forms. Flaxseed oil lacks both the fiber and much of the lignans present in the other forms.

Soy Beans and Soy Bean Products

- Soy beans and soy bean products, such as tofu and soy yogurt, are rich in flavonoids and contain the second-highest levels of phytoestrogens. Soy beans provide approximately 103,920 micrograms of phytoestrogens per 100 grams; tofu provides approximately 27,150 micrograms per 100 grams and soy yogurt

provides approximately 10,275 micrograms per 100 grams. Because of the serving proportions compared to the quantity of phytoestrogens present, soy beans and tofu may be an easier way to consume high levels of phytoestrogens.

o

Other Food Sources

- o While flaxseed and soy beans are the richest sources of phytoestrogens, there are several other foods that provide significant quantities of phytoestrogens. Seeds, nuts, grains, legumes and sprouts are generally good sources of phytoestrogens. Sesame seeds, for instance, provide approximately 8,008 micrograms of phytoestrogens per 100 grams. Multigrain breads contain 4,798 micrograms per 100 grams; hummus, at 993 micrograms per 100 grams and garlic at 603 micrograms per 100 grams, are other sources of relatively high levels of phytoestrogens. Many fruits and vegetables, such as blueberries and onions also contain phytoestrogens, though in lesser amounts. Even coffee and milk provide small quantities of phytoestrogens, six micrograms and one microgram per 100 grams, respectively.

Phytoestrogen supplements are also available at many health food stores and pharmacies.

Read more: [Foods High in Estrogen | eHow.com http://www.ehow.com/list_7258154_foods-high-estrogen.html#ixzz26DBvH86o](http://www.ehow.com/list_7258154_foods-high-estrogen.html#ixzz26DBvH86o)

http://www.ehow.com/list_7258154_foods-high-estrogen.html?ref=Track2&utm_source=ask

The Evidence Against Soy

There is no evidence that consuming soy products can improve health, reduce environmental degradation or slow global warming. In fact, the evidence suggests quite the opposite.

The studies below regarding the effects of soy on health are eye-opening, particularly the review by the American Heart Association -- which no longer supports the health claims about soy endorsed by the U.S. government.

Below are the Hyperlinks from PubMed regarding the effects of Soy. For further studies/research please go to Pubmed website: <http://www.ncbi.nlm.nih.gov/pubmed/>

[Overall risks and benefits of soy assessed](#)

[Latest review by American Heart Association](#)

[Soy inhibits iron absorption](#)

[Poor iron bioavailability](#)

[Poor calcium bioavailability](#)

[Calcium and zinc absorbed better from milk than from soy -- even without phytates](#)

[Soy provides no benefits with respect to heart disease risk](#)

[Soy causes bladder cancer](#)

[Soy isoflavones during pregnancy increase breast cancer risk in female offspring](#)

[High levels of cadmium in soy formula](#)

[Soy linked to peanut allergy and increased risk for asthma](#)

[Whole milk vs. soy beverage -- asthma risk](#)

[Persistent sexual arousal syndrome associated with increased soy intake](#)

[Genistein: Does it prevent or promote breast cancer?](#)

The Flax Myth

By Wendy Sellens, L.Ac. and William Hobbins, M.D. Breast cancer is on the rise.

Source: <http://www.cfnmedicine.com/Article/The-Flax-Myth>

Breast cancer is on the rise. The American Cancer Society estimated that the number of women diagnosed increased from 175,000 in 1999 to 211,300 in 2003. Not only are the numbers increasing, but the women afflicted with breast cancer are getting younger.

One of the reasons for this increase is due to the rise in environmental estrogens found in our food, water, air and household products. Phytoestrogens, one type of environmental estrogen, are derived from plants. They mimic estrogen in the body, but because it comes from a plant, its effect is different. Soy, flax and bio-identical products contain Phytoestrogens.

When estrogen becomes dominant in the system, it creates a hormonal imbalance, often seen as PMS and symptoms of menopause, along with an increased risk for breast cancer. Estrogens, as well as Phytoestrogens, cause breast cells to grow rapidly, so if there is a cancer cell present, it has the possibility of being stimulated as well.

Stimulation of breast cells in breast thermography is referred to as “vascularity.” Vascularity is stimulation from all types of estrogens and produces an increase in blood flow. In normal, healthy, balanced breasts there is no vascularity. With the Bales Tip infrared image analysis, an integral element of breast thermography, measurement of an increase or growth of vascularity can be monitored. Hormone levels of estrogen and progesterone can be determined with accuracy because the analysis measures the effects of all estrogens, including environmental.

Most women who are analyzed are estrogen stimulated or relatively free of adequate progesterone to reduce the effects of estrogen. Again, these symptoms are seen as PMS or the side effects of menopause. If a woman is hormonally balanced, she will not experience either. We recently conducted a pilot study to prove that flax, which contains Phytoestrogens, would increase breast cell stimulation, or vascularity, thus putting the breast at risk. It was challenging to find a subject who was relatively balanced to proceed with the study.

The study was to last for six months. Due to the fact that we added an exogenous (outside the body) estrogen, flax, to a relatively hormonally stable system, the subject had such adverse side effects she refused to continue. Her side effects are similar to those caused by the synthetic estrogens found in birth control pills: severe mood swings, breast tenderness, weight gain around the abdomen and severe cramps. As seen in the accompanying images, six weeks was enough



time to prove that flax, which contains Phytoestrogens, increases vascularity in the breasts, thus increasing risk. There is a misconception that women need more estrogen—women are bombarded all day by environmental estrogens. Most women are actually progesterone deficient due to this environmental stress. We rarely see women who need estrogen. At one time, flax may have been a great health supplement, but now, due to the prevalence of environmental estrogens, this is simply not true—it actually increases the risk of breast cancer.

Try it for yourself! Remember, most of you are estrogen dominant or progesterone deficient, so you may already have these complaints. If you add flax to your diet, watch the symptoms increase. Conversely, if you are taking flax, stop and see what happens. When we have our patients remove flax from their diet, they notice a decrease in weight, breast tenderness, hair loss, hot flashes and PMS, with an improvement in sleep, energy and mood.

Find out if you have breast vascularity by contacting our Patient Services Associates at (949) 680-1880 to schedule your Thermographic Breast Imaging.

This "Miracle Health Food" Has Been Linked to Brain Damage and Breast Cancer

Posted By [Dr. Mercola](#) | September 18 2010 |

If you were to carefully review the thousands of studies published on soy, I strongly believe you would reach the same conclusion as I have—which is, the risks of consuming unfermented soy products FAR outweigh any possible benefits.

Notice I said *unfermented soy products*.

For centuries, [Asian people](#) have been consuming [fermented soy products](#) such as natto, tempeh, and soy sauce, and enjoying the health benefits. Fermented soy does not wreak havoc on your body like unfermented soy products do.

Unfortunately, many Americans who are committed to healthy lifestyles have been hoodwinked and manipulated into believing that unfermented and processed soy products like soymilk, soy cheese, soy burgers and soy ice cream are good for them.

How Did Soy Foods Become So Popular?

If it seems like soy foods appeared out of nowhere to be regarded as the “miracle health food” of the 21st Century, it’s because they did.

From 1992 to 2006, soy food sales increased from \$300 million to nearly \$4 billion, practically overnight, according to the Soyfoods Association of North America. This growth came about due to a massive shift in attitudes about soy. And this shift was no accident—it was the result of a massive investment in advertising by the soy industry that’s been wildly successful.

Soy is indeed big business, very big business.

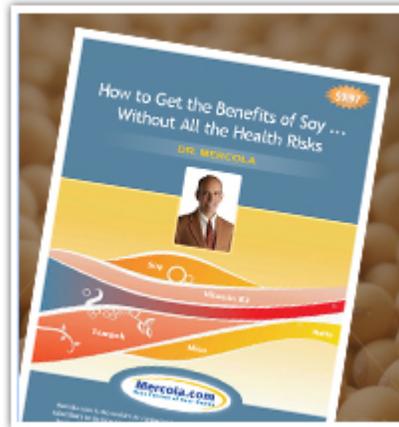
From 2000 to 2007, U.S. food manufacturers introduced more than 2,700 new soy-based foods, and new soy products continue to appear on your grocer’s shelves.

According to the survey [Consumer Attitudes About Nutrition 2008](#) (by the United Soybean Board):

- As of 2007, 85 percent of consumers perceive soy products as healthful
- 33 percent of Americans eat soy foods or beverages at least once a month
- 70 percent of consumers believe soybean oil is good for them
- 84 percent of consumers agree with the FDA’s claim that consuming 25 grams of soy protein daily reduces your risk of heart disease

This is a tragic case of shrewd marketing and outright lies taking root among the masses with the end result of producing large profits for the soy industry and impaired health for most who have been deceived into using unfermented soy long-term..

As you can see from the extensive list of articles below, there is a large amount of scientific research showing that soy is not the nutritional panacea of the 21st Century.



The Dark Side of Soy

The vast majority of soy at your local market is not a health food. The exception is fermented soy, which I'll explain more about later and even worse GMO soy that is contaminated with large pesticide residues as the reason it is GMO is so they can spray the potent toxic herbicide Roundup on them to improve crop production by killing the weeds.

Unlike the Asian culture, where people eat small amounts of whole non-GMO soybean products, western food processors separate the soybean into two golden commodities—protein and oil. And there is nothing natural or safe about these products.

Dr. Kaayla Daniel, author of *The Whole Soy Story*, points out thousands of studies linking soy to malnutrition, digestive distress, immune-system breakdown, thyroid dysfunction, cognitive decline, reproductive disorders and infertility—even cancer and heart disease.

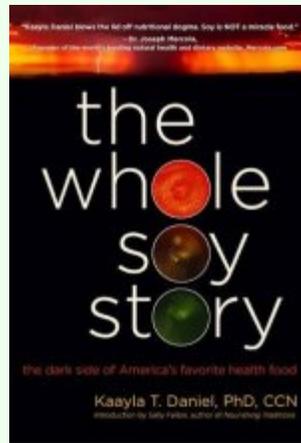
Here is just a sampling of the health effects that have been linked to soy consumption:

- [Breast cancer](#)
- [Brain damage](#)
- [Infant abnormalities](#)
- [Thyroid disorders](#)
- [Kidney stones](#)
- [Immune system impairment](#)
- [Severe, potentially fatal food allergies](#)
- [Impaired fertility](#)
- [Danger during pregnancy and nursing](#)

[Soy proponents](#) will argue that soy-based foods (they lump the fermented ones with the unfermented) will protect you from everything from colon, prostate and breast cancer to strokes, osteoporosis, and asthma.

But said enthusiasts never mention the studies that illuminate soy's downside and all of the dangers posed to your health, which are based on sound research.

Another unfortunate fact is that 80 percent of the world's soy is used in farm animal feed, which is why soy production is contributing to deforestation. Some soy propagandists have suggested that the solution to this is for all of us to [become vegetarians](#)—a reckless recommendation rooted in total ignorance about nutrition—whereas a far better solution is [a major overhaul in how farm animals are fed and raised](#).



The Whole Soy Story

In The Whole Soy Story, you'll find:

- The real reasons why soy is NOT a health food
- Shocking personal accounts of real people whose health and lives were put at risk from eating soy products
- Hard evidence linking soy to malnutrition, digestive problems, thyroid dysfunction, cognitive decline, reproductive disorders, immune system breakdowns--even heart disease and cancer
- That soy has NEVER been proven safe, and learn the truth about how misleading propaganda played a huge role in how it became so popular in America
- Get more critical advice about the dangers of soy as author Dr. Kaayla Daniel shares her insights in this [exclusive interview](#) with Dr.

Mercola.

[Read More About The Whole Soy Story Now!](#)

What Makes Soy Such a Risky Food to Eat?

Here is a summary of soy's most glaring problems.

1. **91 percent of soy grown in the US is genetically modified (GM).** The genetic modification is done to impart resistance to the toxic herbicide Roundup. While this is meant to increase farming efficiency and provide you with less expensive soy, the downside is that your soy is loaded with this toxic pesticide. The plants also contain genes from bacteria that produce a protein that has never been part of the human food supply.

[GM soy has been linked to an increase in allergies.](#) Disturbingly, the *only published human feeding study on GM foods ever conducted verified that the gene inserted into GM soy transfers into the DNA of our gut bacteria and continues to function.* This means that years after you stop eating GM soy, you may still have a potentially allergenic protein continuously being produced in your intestines.

Even more frightening is the potential for [GM soy to cause infertility in future generations](#), which has been evidenced by recent Russian research.

2. **Soy contains natural toxins known as “anti-nutrients.”**

Soy foods contain anti-nutritional factors such as saponins, soyatoxin, phytates, protease inhibitors, oxalates, goitrogens and estrogens. Some of these factors interfere with the enzymes you need to digest protein. While a small amount of anti-nutrients would not likely cause a problem, the amount of soy that many Americans are now eating is extremely high.

3. **Soy contains hemagglutinin.**

[Hemagglutinin](#) is a clot-promoting substance that causes your red blood cells to clump together. These clumped cells are unable to properly absorb and distribute oxygen to your tissues.

4. **Soy contains goitrogens**

[Goitrogens](#) are substances that block the synthesis of thyroid hormones and interfere with iodine metabolism, thereby interfering with your thyroid function.

5. **Soy contains phytates.**

Phytates (phytic acid) bind to metal ions, preventing the absorption of certain minerals, including calcium, magnesium, iron, and zinc -- all of which are co-factors for optimal biochemistry in your body. This is particularly problematic for vegetarians, because eating meat reduces the mineral-blocking effects of these phytates (so it is helpful—if you do eat soy—to also eat meat).

6. **Soy is loaded with the isoflavones genistein and daidzein**

Isoflavones are a type of phytoestrogen, which is a plant compound resembling human estrogen. These compounds mimic and sometimes block the hormone estrogen, and have been found to have adverse effects on various human tissues. Soy phytoestrogens are known to disrupt endocrine function, may cause infertility, and may promote breast cancer in women.

Drinking even two glasses of soymilk daily for one month provides enough of these compounds to alter your menstrual cycle. Although the FDA regulates estrogen-containing products, no warnings exist on soy.

7. **Soy has toxic levels of aluminum and manganese**

Soybeans are processed (by acid washing) in aluminum tanks, which can leach high levels of aluminum into the final soy product. [Soy formula has up to 80 times higher manganese](#) than is found in human breast milk.

8. **[Soy infant formula](#) puts your baby's health at risk.**

Nearly 20 percent of U.S. infants are now fed soy formula, but the estrogens in soy can irreversibly harm your baby's sexual development and reproductive health. Infants fed soy formula take in an estimated five birth control pills' worth of estrogen every day.

Infants fed soy formula have up to [20,000 times the amount of estrogen](#) in circulation as those fed other formulas!

There is also the issue of [pesticides](#) and [genetic modification](#).

Soy foods are both heavily sprayed with pesticides and genetically modified (GM). More than 80 percent of the soy grown in the United States is GM. And [more than 90 percent of American soy crops are GM](#).

Since the introduction of GM foods in 1996, we've had an upsurge in low birth weight babies, infertility, and other problems in the U.S. population, and [animal studies thus far have shown devastating effects from consuming GM soy](#).

You may want to steer clear of soy products for no other reason than a commitment to avoiding GM foods... unless you wish to be a lab animal for this massive uncontrolled experiment by the biotech industry.

What Soy Products are Good For You?

I want to be clear that I am not opposed to *all* soy. Soy can be incredibly healthful, but **ONLY** if it is organic and properly fermented.

After a long fermentation process, the phytate and “anti-nutrient” levels of soybeans are reduced, and their beneficial properties become available to your digestive system.

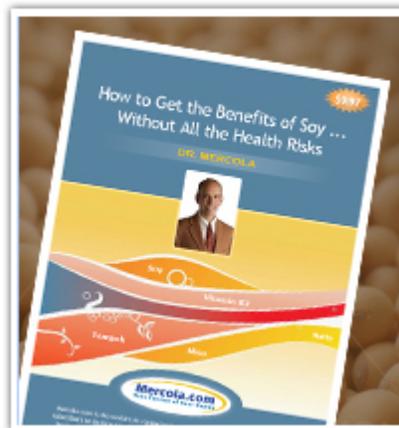
You may have heard that Japanese people live longer and have lower rates of cancer than Americans because they eat so much soy—but it’s primarily *fermented soy* that they consume, and it’s always been that way.

Fermented soy products are the only ones I recommend consuming.

These are the primary fermented soy products you’ll find:

- **Tempeh** a fermented soybean cake with a firm texture and nutty, mushroom-like flavor.
- **Miso**, a fermented soybean paste with a salty, buttery texture (commonly used in miso soup).
- **Natto**, fermented soybeans with a sticky texture and strong, cheese-like flavor.
- **Soy sauce**, which is traditionally made by fermenting soybeans, salt and enzymes; be wary because many varieties on the market today are made artificially using a chemical process.

Please note that [tofu is NOT on this list](#). Tofu is not fermented, so is not among the soy foods I recommend.



Vitamin K2: One of the Major Benefits of Fermented Soy

One of the main benefits of fermented soy, especially natto, is that it is the best food source of [vitamin K2](#). Vitamin K2 is essential to preventing osteoporosis, cardiovascular disease, and diseases of the brain such as dementia, and protecting you from various cancers including prostate, lung, liver cancer and leukemia.

Vitamin K acts synergistically with [vitamin D](#) to keep you healthy.

Vitamin K is sometimes referred to as the “forgotten vitamin” because its benefits are often overlooked. It was named after the word “Koagulation,” to reflect its essential role in blood clotting. In fact, the enzyme [nattokinase](#)—derived from natto—is safer and more powerful than aspirin in dissolving blood clots, and has been used safely for more than 20 years.

If you enjoy natto or some of the other fermented soy foods, you can get several milligrams of vitamin K2 from them each day (this level far exceeds the amount of vitamin K2 found even in dark green vegetables).

Unfortunately, the health benefits of many of the fermented soy foods fall by the wayside because many Americans do not enjoy their flavor.

If you don’t want to consume natto to get your vitamin K2, the next best thing would be to get use supplemental [Vitamin K2 \(MK-7\)](#). Remember, vitamin K must be taken with a source of fat in order to be absorbed.

I suggest adults consume about 150 mcg of vitamin K2 daily.

[Medical Problems
Caused by Soy:
Legal Action Request](#)

Tips for Avoiding Unwanted Soy Foods

For a simple rule of thumb, just remember that unless soy is fermented (tempeh, miso, natto, or traditionally made soy sauce), you’re better off avoiding it.

Soy foods to avoid include:

Tofu

TVP (texturized vegetable protein) or soy protein isolate, which contains a large amount of [msg](#), which you should definitely not consume

- [Soybean oil](#)
- [Soymilk](#)
- Soy cheese, soy ice cream, soy yogurt
- [Soy “meat”](#) (meatless products made of TVP)
- Soy protein
- Edamame
- Soy infant formula

The best way to eliminate non-fermented soy from your diet is to [avoid all processed foods](#) and instead purchase whole foods that you prepare yourself.

If you do buy packaged foods, you can check the label to see if it contains soy. The Food Allergen Labeling and Consumer Protection Act, which took effect in January 2006, requires that food manufacturers list soy on the label, because it's one of the top eight food allergens.

So, even if soy is hidden in colors, flavors, or spice blends added to foods, it must be clearly stated on the label.

One other common source of soy is lecithin which is used as an emulsifier in many foods and supplements. Most lecithin in the US is derived from soy but there are some newer products that extract it from organic sunflower. We switched over to the organic sunflower lecithin a few years ago in all of our products.

If you wish to know more about soy, I have provided a list of links below to the many articles I've posted over the years on this subject. Remember, the only way to avoid falling victim to shrewd marketing and misinformation is to become knowledgeable about what the research actually says, and this is often different from what is commonly passed around as "fact."

Soy is NOT a Health Food

- [Newest Research On Why You Should Avoid Soy](#)
- [Which Veggie Burgers Were Made With a Neurotoxin?](#)
- [The Evidence Against Soy](#)
- [What's So Bad About Tofu?](#)
- [Why Soy Is NOT the Health Food You Think it Is](#)
- [The Whole Soy Story: The Dark Side of America's Favorite Health Food](#)
- [Concerns Regarding Soybeans](#)
- [More Evidence Soy is Not as Healthy as Originally Believed](#)
- [Soy Milk is Unhealthy](#)
- [Experts Finally Recognize The Dangers With Soy](#)
- [Soy Myth Exposed: Soy is Not a Health Food](#)
- [The Truth About Soy](#)
- [What You Don't Know About America's Favorite Health Food](#)
- [Think Soy is Healthy? Here's Why it's Not as Good as You Think](#)
- [Soy Milk is Gaining Popularity in America](#)
- [Researchers Take a Second Look at Soy Foods](#)
- [Response To Those Who Believe Soy Is Healthy](#)
- [They're Taking The Joy Out Of Soy](#)
- [ABC News does special on soy Friday.](#) (Special on 20/20 about dangers of soy)
- [New Avoid Soy Update](#)
- [Soy: Too Good to be True](#)
- [Learn the Truth About Soy. Just How Much Soy Do Asians Eat?](#)

The Danger of Soy for Infants, Children and Pregnant Women

- [Pregnant Women Should Not Eat Soy Products](#)
- [Link Between High Soy Diet During Pregnancy and Nursing and Eventual Developmental Changes in Children](#)
- [Using Soy in Schools?](#)
- [Soy Weakens Your Immune System](#)
- [Soy is an Endocrine Disrupter and Can Disrupt Your Child's Health](#)

How Soy Infant Formulas Can Devastate Your Child's Health

- [Which Infant Formulas Contain Hidden Toxic Chemicals?](#)
- [Soy Formula Exposes Infants To High Hormone Levels](#)
- [Finally Infant Soy Formula Under Investigation](#)
- [Healthy Alternative to Conventional Infant Formula, Part I](#)
- [Soy Formula May Stunt the Intestinal Growth in Your Baby](#)
- [Soy Formula Kills Three Babies](#)
- [Soy Baby Formula Linked to Behavioral Problems](#)
- [Experts Dispute JAMA Soy Infant Formula Study](#)
- [Australian Pediatric Soy Protein Formula Policy](#)
- [Soy Milk Is Safe! That Is What the Formula Industry Says](#)
- [Responses to Manganese in Soy Infant Formula Article](#)
- [How Safe is Soy Infant Formula?](#)
- [Learn the Truth About Soy. Just How Much Soy Do Asians Eat?](#)
- [Genetically Engineered Soybeans May Cause Allergies](#)
- [Monsanto Under Investigation by Seven U.S. States](#)
- [FDA Scientists Wary of Soy](#)

Government and Agribusiness Shenanigans

- [Why Silk Soy Milk's Parent Company is Throwing American Farmers and Consumers Under the Bus](#)
- [Weston A. Price Foundation to FDA: Soy is No Health Food](#)
- [Soy Ruled No Health Food](#)
- [Research Uncovers Yet Another Soy Myth](#)
- [Soy 'Miracle' Turns Bad in Argentina](#)
- [If You're Suffering From a Medical Problem Caused by Soy, You May Now be Able to Take Legal Action](#)
- [The Shadow of Soy](#)
- [Scientists Protest Soy Approval](#)
- [Soybean Crisis](#)

Soy and Your Reproductive System

- [Soy Supplements Fail to Help Menopause Symptoms](#)
- [Soy Has Little, if Any, Effect on Heart Disease, Hot Flashes](#)
- [Eating Soy Can Decrease Your Fertility](#)

- [Soy-Based Foods No Good As A Hormone Replacement](#)
- [What Works Better for Hormones--Soy or Flax?](#)
- [Soy Supplements can Decrease Sexual Behavior](#)
- [Chemical in Soybeans Causes Sexual Dysfunction in Male Rats](#)
- [Caution Urged on Soy Menopause Remedies](#)
- [Even Cheetahs Can't Tolerate Soybeans](#)
- [Doubt Cast On Soy for Menopause](#)
- [Cancer, Heart Health: Making Sense of Soy](#)
- [Study Doubts Soy For Hot Flashes-Supplements May Not Work](#)

Soy and Your Thyroid

- [Fatigue, Dry Skin, Gaining Weight? See Why You'd Better Check Your Thyroid!](#)
- [Soy Formulas and the Effects of Isoflavones on the Thyroid](#)

Soy and Your Brain

- [Why Tofu Wrecks Your Brain](#)
- [Too Much Tofu Induces Brain Aging](#)
- [Soy and Brain Damage](#)
- [Soy May Cause Cancer and Brain Damage](#)

Soy and Your Heart

- [Soy Has Little, if Any, Effect on Heart Disease, Hot Flashes](#)
- [Soy No Help to Women With Heart Disease Prevention](#)
- [Soy Can Increase Heart Disease Risk](#)
- [Soy: Too Good To Be True](#)

Soy and Your Kidneys

- [Soy Can Lead to Kidney Stones](#)

Soy and Cancer Risk

- [Soy Maker Omits Studies That Soy May Cause Cancer](#)
- [Certain Soy and Oyster Sauces Containing Cancer-Causing Chemicals](#)
- [Experts Concerned About Soy and Breast Cancer](#)
- [Soy May Cause Cancer and Brain Damage](#)

Soy and Allergies

- [Genetically Engineered Soybeans May Cause Allergies](#)
- [Soy Can Cause Severe Allergic Reactions](#)

Estrogenic Herbs are to be avoided

by Ingrid Edstrom, FNP, M.Ed

Estrogenic Herbs should be avoided if you have breast cancer concerns because they may increase vascular activity in the breast tissue and bind with estrogen receptors.

Eight botanical preparations of estrogenic herbs that are commonly used for the treatment of menopausal symptoms were tested for estrogenic activity. Methanol extracts of red clover, chasteberry and hops showed significant competitive binding to estrogen receptors alpha (ER alpha) and beta (ER beta). Asian ginseng, North American ginseng, Dong quai, licorice and Black cohosh are also estrogenic herbs.

ESTROGEN DEPENDENT TUMORS AND HERBS:

How Modern Conditions Change Traditional Practices

Essay by Subhuti Dharmananda, Ph.D., Director, Institute for Traditional Medicine, Portland, Oregon

A few years ago, if I were able to confidently provide women with an herbal therapy, especially one in a convenient form, that would boost their own production of estrogens, the demand for such an item would have been difficult to meet. For, at that time, millions of women were taking exogenous estrogens (or faced with the prospect of doing so in the near future) that were derived from animals or synthetically produced from plant precursors. These hormones have been used to alleviate menopausal symptoms for several decades, but there was a growing movement (among a minority of women, however) to reject that approach and seek something they deemed more natural as an alternative. Some were opposed to pharmaceutical interventions on general principle (that it is not natural and, therefore, harmful). One specific fear of the pharmaceutical estrogens was that they could increase the risk of breast cancer; this increased risk was interpreted, by most of these concerned women, as the result of using an unnatural product. Therefore, a natural means of increasing estrogen was thought to be safer.

For a while, women turned to certain products that were held out to be natural estrogens: for example, extracts of wild yam (*Dioscorea sp.*) which were claimed to either contain natural estrogens or to provide precursors that the body could transform to estrogens. Today, most women have learned that this was a fallacy: wild yam neither contains estrogens nor does it contain precursors that can be modified by the body; however, it does contain precursors that can be modified in the pharmaceutical factories to yield estrogens. Other herbs have been described as containing phyto-estrogens, plant compounds that act like estrogen or can indirectly induce an estrogen-like response. As with wild yam, these herbs have been sought after by women, but most of the herbs have extremely weak estrogen activity, especially in the dosage form usually provided.

The situation has changed completely in the past few years. No longer does anyone ask if an herb therapy can provide estrogens, nor does anyone ask if an herb can increase the body's production of estrogens, unless they are hoping and praying that it won't do so. I am not asked for sources of estrogen enhancing herbs for women entering menopause, but, instead, I am asked to provide assurance that an herb therapy *won't* increase estrogen levels at all.

Why the change? Because modern research has shown that estrogen, whether naturally occurring in the body or introduced externally from any source, can stimulate the growth of breast cancer cells (and ovarian cancer cells; but with breast cancer being so much more common, it will be the focus of this article). Some breast cancer cells are more sensitive to estrogen than others: they have a relatively large quantity of a particular type of estrogen receptor; these cells are called estrogen-dependent or estrogen-receptor positive. While estrogen apparently doesn't cause cancer by itself, it has been learned recently that metabolites of estrogen (such as the 4-hydroxy derivatives) that are naturally produced in the body can transform normal cells to cancer cells. These metabolites are produced in varying amounts, dependent on factors that have not yet been

fully determined (high alcohol consumption has been linked to higher risk of breast cancer and may be due to induction of liver enzymes that produce the 4-hydroxy estrogen derivatives). In addition, estrogen and its metabolites can increase the chances that a cell that already has the cancer-promoting genetic structure will multiply rather than disappear: this is the role of the estrogen receptors at the cell membrane. Thus, for women who fear experiencing breast cancer (for the first time or as a recurrence), avoiding estrogen-regardless of source-is the objective based on the current medical model.

Researchers and doctors have known for decades that there is a connection between estrogen and breast cancer, because it was known that removing the ovaries (which is the body's single largest source of estrogen) could inhibit breast cancer growth. But much more has been learned during the past decade, with testing now available to determine whether cancer cells (removed by biopsy or surgery) are highly estrogen-dependent or not. Such testing has not allayed the fears of those with the cancers that have low estrogen-activation; the word in the literature is that when a person has breast cancer, estrogen is bad.

While dietary cancer-promoting substances and environmental chemicals are sometimes blamed for the relatively high incidence of breast cancer observed in modern times, especially in the U.S., the change in child-bearing practices and the longer lifespan appear to be the dominant causes. Lifetime pregnancy rates have dropped dramatically over the past century and pregnancies are mostly occurring later in life than before. Epidemiological research shows that full-term pregnancy early in life is the most effective natural protection against breast cancer in women. Most breast cancer cases still occur late in life, even though the premenopausal cases are particularly of concern. The incidence of cancer in general, not just breast cancer, and the incidence of other life-threatening diseases increase with age due to a variety of age-related factors. The average female life span is now about 25 years past menopause-more than a decade longer than the average a century ago. The resulting change in breast cancer incidence related to these factors has led to intensive measures to warn women about every contributory risk known or suspected in relation to this disease. Herbal therapies have become one of the targets of this warning.

CHINESE HERBS AND ANTI-AGING THERAPIES

While breast cancer can strike at a relatively early age (usually because of strong genetic factors), most cases occur after age 40. At this stage of life, there are usually several signs of aging compared to earlier years, such as dryness of skin and hair, graying of hair, weakening of bones, loss of muscular tone, lowered stamina, and, for many people, onset of some degenerative conditions, perhaps affecting connective tissue, the vascular system, or the nervous system. If a woman goes to a practitioner of Chinese medicine at this time in her life, regardless of her specific medical complaint, the remedy is likely to be one that includes the "anti-aging" type of herb ingredients. The inclusion of such medicinal materials need not be based on any patient request to deal with a specific concern about aging, but, instead arises because the diagnosis will almost always take into account factors that are characteristic of the persons advanced age. Many of these herbs are classified as tonics, though not all of them are in that category.

In the pre-modern era of Chinese medicine, the treatments for men and women of this age group were aimed, at least in part, at nourishing the kidney and liver and replenishing the essence (and/or preserving the essence from loss). When modern scientific investigation of Chinese herbs was introduced during the 20th century, Chinese researchers designed experiments to determine what the herbs do, from a biochemical and physiological viewpoint, when they provide this anti-aging effect. One of the findings is that they enhance the endocrine system functions: they help to restore earlier levels of hormones that had declined with age (see: *The endocrine impact of Chinese medicine*). Thus, for example, here is a statement from an article on anti-aging herbal medicines (6):

The functional status of the endocrine system is also closely related to aging. To various extents, most of the endocrine functions deteriorate along with the increase in age. Derangement of any of the regulatory steps in the neuro-endocrine set-up, whether neurotransmitters, releasing hormones, stimulating hormones, or target hormones, will inevitably accelerate the aging process....Some of the herbs known to possess gonadal hormone-like effects or gonadotropic effects include epimedium, gecko, deer antler, cordyceps, and ginseng. Galenicals [formulas] such as *Zhibao Sanbian Wan*, *Kangbao*, *Huangjingjian*, and *Shoutao Wan* can elevate the body gonadal hormone levels. A point worth mentioning here is that all these individual herbs and compound prescriptions have been traditionally employed as 'kidney-replenishing' medicines.

Many people in the West involved with anti-aging approaches are aware of the potential benefit of hormones such as DHEA (dehydroepiandrosterone; an adrenal hormone, precursor to testosterone and other sex hormones), melatonin (pineal gland hormone that regulates the sleep cycle), growth hormone (usually referred to as human growth hormone), and, the sex hormones testosterone, estrogen, progesterone, and their variants. All of these hormones are present in relatively larger amounts early in life (before age 30), and decline, sometimes dramatically, later in life. Administering these hormones can sometimes alleviate characteristic signs of aging; Western conferences and publications on slowing the aging process are filled with reports on the use of hormones. The increased level of hormones in the bodies of older persons is what the Chinese had accomplished through administering herbs, rather than administering hormones (see: *The treatment of menopausal syndrome with Chinese herbs*). Had isolated or partially purified hormones (including estrogen) been accessible to the Chinese in ancient times, there is little doubt that they would have been used and proclaimed "first class" remedies.

Herbal therapies are not the only Chinese medical practices said to increase endocrine function and improve estrogen levels. In a report on the anti-aging effect of qigong practice, it was reported that menopausal women who practiced qigong would experience a substantial increase in the level of estradiol (the estrogen compound which is deemed one of the strongest promoters of breast cancer of all the naturally-occurring estrogens). This increase in estradiol is reported as evidence of the benefits of qigong practice. The authors state that: "This finding is particularly important in anti-aging treatment, especially for post-menopausal patients, as it has generally been accepted that ovary degeneration and decreased estradiol level in this period of life is an irreversible process."

As with the proposed effect of qigong, a therapeutic result of taking herbs that is characterized by increase in endocrine function and more hormones flowing through the blood would have

been hailed as a great contribution to natural health care only a few years ago. Indeed, in a 1998 publication showing that kidney tonic herbs (mainly rehmannia, epimedium, dioscorea, cuscuta, cornus) could raise estrogen levels substantially during menopause and even 10 years after menopause, the authors wrote: "The results indicated that the hormonal disorders in post-menopausal females could be corrected by kidney tonic herbs by way of raising the levels of estrogen and calcitonin, and reducing the levels of parathyroid hormone." The authors took the view that the problem with hormone replacement therapy was the use of a single hormone which can present side effects, where as "kidney tonic herbs mobilize all positive factors through general regulation."

Now, as a result of publicized concerns about the impact of estrogen on cancer, all women who wish to avoid having any more estrogen in their system must avoid the use of Chinese herbs (perhaps qigong as well), at least many of the herbs that are aimed at treating the characteristic symptoms the woman is facing at this stage in her life. The reason that many of the herbs-rather than just tonic herbs-come into question is that there is theoretical and clinical evidence to support the ability of herbs other than tonics to accomplish the same goal. Tonic herbs are just the most frequently used group of herbs to treat the deficiency syndrome that often characterizes menopause.

In the book **Aging and Blood Stasis** (7), menopausal syndrome is described by differentiation in three categories: heart spirit bewildered and chaotic; heart blood deficiency; and liver qi depression and binding. In each case, consistent with the thesis of the book that aging involves blood stasis syndrome, a significant portion of the formula involves herbs that "quicken the blood and transform stasis," such as salvia, tang-kuei, cnidium, carthamus, and persica. According to the author, these herbs may be combined with others that have functions such as calming the heart (spirit) and regulating the liver qi. Regardless of the specific ingredients, if the therapy is successful, it is possible, perhaps even likely, that the endocrine system has responded and produced a somewhat higher amount of estrogen.

In the continuation of their article on anti-aging Chinese herbs (mentioned above), Chen and Li list the following herbs as having an "estrogen action:" curculigo, cuscuta, schizandra, rubus, lily, cyperus, soja (processed soy bean), and rhubarb. These herbs come from several therapeutic categories of the *Materia Medica* and not all of them fit the usual concept of anti-aging remedies as tonics. In one recent study, a therapy claimed to consist of Chinese herb extracts to be used for prostate cancer patients was reported to have a strong estrogenic activity, similar to that of standard medical hormone therapy (see: *Questionable cancer therapies*). Only one of its ingredients, ganoderma, might fit into the usual category of anti-aging herbs.

Most of the concern related to estrogen levels and herbs is currently focused on women who have a diagnosis of breast cancer (even if it is fully in remission) or ovarian cancer. In these cases, Chinese herbs cannot be advocated as part of the therapeutic regimen. The same restriction would apply to other herbs that are not classified as Chinese, and also to men with prostate cancer who are concerned about the adverse impact of testosterone on cancer development (certain testosterone metabolites stimulate growth of prostate cancer cells). While herbalists may believe that the beneficial effects of the herbs outweigh any risk (associated with raising estrogen

levels), there is a lack of convincing evidence that this is actually the case; therefore, one cannot make a reliable claim.

In the near future, one can expect the concern about use of these herbs to be raised for *any* woman who is deemed at elevated risk of getting breast or ovarian cancer, such as those who have a family member that experienced the disease. This is especially so in light of the recent studies suggesting that estrogen metabolites produced in the body can actually cause cancer (8). As hormone replacement therapy advances, the large scale clinical trials will demonstrate that there are some combinations of hormones that have a high rate of effectiveness for alleviating menopause-related problems (e.g., osteoporosis) with a very low rate of risk for breast cancer, ovarian cancer, and other disorders (in current medical practice, the risk of these cancers is only marginally elevated or not at all, depending on the study). In addition, new non-hormone treatments for osteoporosis and other menopausal concerns are becoming available. Women and their physicians will naturally ask if the Chinese herbs administered for similar purposes have the same effects and the same lack of risks, and it will have to be admitted that there is inadequate evidence to determine whether or not they are comparable.

There is no easy way out of the conundrum. One recent laboratory animal experiment, designed to show that a food component, tangeretin (found in citrus fruits) might inhibit breast cancer in the same manner as Tamoxifen does (based on initial *in vitro* experiments), turned out to indicate that this natural compound canceled out the effect of Tamoxifen. While the results of this initial study may not end up applying to humans due to some differences in the metabolic pathways, at this time, there is no evidence to contradict the concern that the study raises. Most doctors and their patients would rather err on the side of caution.

Tangeretin is a citrus flavonoid; other flavonoids might also have this effect, they simply haven't been tested yet. Flavonoids are found in several herbs and in some herbs they are major active constituents; the Chinese rely on more than a dozen citrus materials in making herbal prescriptions (see: [Synephrine: Is chih-shih toxic?](#)), and each of them contains flavonoids that either include tangeretin or molecules very similar in structure and effect. The citrus materials are used by the Chinese to aid digestion, help resolve breast lumps, and regulate the bowels, all of which are areas of concern in menopausal women. Thus, women with breast cancer or at risk for breast cancer who are taking Tamoxifen might be cautioned about taking herbs (or including the otherwise healthful citrus fruits in their diet).

CONSIDERATIONS FOR ANTI-DEPRESSANTS AND MAO LEVELS

Many women with breast cancer take anti-depressants: having a diagnosis of breast cancer may, in itself, be depressing; the Chinese medical view is that depression is one of the contributors to developing cancer (see: [Oriental perspectives on cancer and its treatment](#); and [How emotions may contribute to cancer](#)). Doctors caution against taking anything that inhibits an enzyme system called MAO (monoamine oxidase; an enzyme system that helps transform some of the neurotransmitters, which are monoamines, into an inactive form) when taking the anti-depressant drugs. This caution, which is applied especially to some drugs that are strong MAO inhibitors themselves, is made to avoid having the antidepressant (or other) drug therapy yield harmful

levels of the neurotransmitters. Recently, a popular Western herbal remedy for depression, St. John's Wort (also traditionally used by the Chinese, but not for depression), was reported to inhibit MAO, which led to quick calls for avoiding its combination with Western drugs and separating its use from that of drug therapies by three weeks time. It appears that this report was fallacious, but the response to it made it quite clear that use of herbs in this circumstance has become a serious concern.

With aging, MAO levels increase. This increase in the enzyme causes the level of neurotransmitters to decline, with resulting losses in memory, clarity of thought, and neuromuscular control. Thus, the MAO increase contributes to some of the symptoms of aging, including those that women complain about during menopause. Anti-aging herbal approaches may inhibit MAO; as with the increases in hormones, this is regarded, by Chinese researchers, as an advantage to the use of the herbs (restoring MAO levels closer to those of youth). Even if an herb therapy is at a dosage that is too low to affect MAO (see: *MAO inhibition and Chinese herbs*), the effective level for the herbs is not well-defined and doctors may advise erring on the side of caution. Therefore, here is yet another reason to avoid Chinese herbs-or other herbs-in women with breast cancer.

At this time, there is no direct evidence that use of Chinese herbs increases the risk of breast or ovarian cancer (or prostate cancer in men), nor that Chinese herbs cause harm when combined with anti-depressant drugs. Rather, the concerns are based on pharmacology research and its connection to clinical and epidemiological observations. This is one of the ways in which modern conditions affect the practice of traditional medicine. Not everyone will worry about the potential interactions of herbs with the hormonal system and drug therapies, but these are questions increasingly raised. Certainly, the impact of Chinese herbs is expected to be dependent on the dosage administered. In terms of affecting risk factors for a disease that will occur much later, such as the role of increased estrogen on breast cancer, the biggest concern will be the duration of use. Though short-term administration of low to moderate doses of herbs may still cause some people to be worried, the practice is less likely to produce any adverse effect than either high dosage or long-term administration of herbs.

ONE POSSIBLE TREATMENT FROM THE ORIENT

Epidemiologists have noted a lower incidence of breast cancer in Japan compared to the U.S., an incidence level that usually changes when Japanese women move to the U.S. Originally, the difference in incidence rate was thought to be due to a difference in saturated fat intake. However, a recent large-scale evaluation of diet and breast cancer has indicated that the role of dietary fat was probably overestimated and may be minor (elevated dietary fat is still believed to have an impact on cardiovascular disease, colon cancer, obesity, and other health problems). It is now proposed that one reason for the lower Japanese incidence of breast cancer in Japan is the elevated use of soy products in Japanese cuisine (see: *The role of dietary and herbal flavonoids in gastro-intestinal health*). Age-adjusted breast cancer death rates are 2-8 times higher in Western countries (U.S. and Western Europe) than in Asian countries (China, Japan, Korea). On average, women in the Orient consume 20-50 times more soy products than women in Western countries. The countries with relatively high soy intake also have lowered incidence of prostate and colon cancers. Prostate cancer, like breast cancer, is often hormone-dependent; colon cancer

is strongly influenced by dietary components, since the unabsorbed components have direct contact with intestinal cells.

Soybeans contain substantial amounts of two isoflavones, one is genistein and the other is daidzein (see: *Soybeans for cancer patients*; *Soybeans for health*; & [Legumes](#)). Daidzein is metabolized in the intestines to produce equol, which may be the most potent of the isoflavones in terms of alleviating menopausal symptoms, but genistein has been studied most intensively in relation to cancer and it appears to be of some potential benefit to women who are concerned about estrogen dependent tumors.

Genistein is classified by some as a phytoestrogen. This term is somewhat misleading, in that genistein neither has a chemical structure like estrogen nor does it act in the body in the same way as estrogen. It does interact with estrogen receptor sites, but it appears to interact preferentially with a subclass of estrogen receptors that do not stimulate tumor cells. That is, genistein can interact with receptors that will alleviate some estrogen-deficiency symptoms (e.g., hot flashes) with little stimulus to the receptors that affect the tumors. In addition, it appears that genistein can inhibit the growth of breast cancer cells by promoting the internally-programmed cell death, which is otherwise halted by the cancerous condition (9).

Therefore, by consuming genistein, women may be able to help alleviate menopausal symptoms (but, certainly, not all aging symptoms) without the risk of stimulating breast cancer cell growth. Genistein is found in most legumes, but especially in peanuts, soybeans, and yellow peas. Genistein-enriched soy products, and encapsulated or tableted genistein products are also available. Effective levels for treatment are not firmly established, but ingestion of soy isoflavones in the dosage range 60-180 mg/day appears reasonable with the current state of knowledge.

The research is still preliminary. But, for those who are initially seeking Chinese herbs as a remedy and who are concerned about their potential estrogenic effects, the practitioner may wish to shift the emphasis away from the use of Chinese herbs to a genistein-based therapy. It will be necessary for both practitioners and patients to keep up with the emerging literature in order to assure that the most appropriate therapy is followed. As with all traditional, alternative, and complementary therapies, the evidence for effectiveness and safety is limited and views are subject to change, as has been described above.

GENISTEIN AND BREAST CANCER

Breast cancer cells alter their metabolism and growth (production of new cells) in response to various stimuli. Not all growth stimulants have been identified, but two stimulant groups are the estrogens (the main one being estradiol, called E2) and the peptide growth factors (such as epidermal growth factor, EGF). When one of the growth stimulants interacts with a cancer cell surface receptor, a cascade of signal transducers lead to DNA stimulation, which then manages the reproductive cycle of the cell. It is here, in the DNA, that abnormalities in growth and life cycle characteristic of the cancer cell are stored. One of the steps in the pathway to the DNA is an enzyme called tyrosine protein kinase (TPK). Genistein has been shown to inhibit both estrogen- and peptide-growth-factor-stimulated growth of breast cancer cells.

Cancer cells not only have the ability to grow more rapidly under certain stimuli, but there are other stimuli can inhibit cancer cell growth. For example, the p53 protein induces cell death (apoptosis) in cancer cells. Studies have shown that people with a genetic background that leads to low p53 levels are more susceptible to experience cancer and die from it. Genistein has been shown to help induce apoptosis of breast cancer cells via the p53 protein. Further, cancer cells have a mechanism for protection against apoptosis; this protective mechanism includes the production of stress proteins. The stress response is inhibited by genistein. In human breast cancer cells, another protein, p21, is especially important to the reproduction of the cells. *In vitro* experiments show that genistein induces expression of p21, resulting in arrest of the cancer cell cycle.

These various mechanisms of action, mostly observed in laboratory studies and not yet in humans, may help explain the reduced incidence of breast cancer among women who consume a considerable amount of soy products on a regular basis. It may also indicate a means of aiding the treatment of breast cancer, probably relying on a larger dosage of genistein than is characteristic of dietary levels that help prevent cancer. The *in vitro* studies usually rely on levels of genistein that exceed (by a factor of 10 or more) the levels experienced by cancer cells in the breasts of women who consume soy foods.

The fact that soy isoflavones reduce menopausal symptoms and yet may help prevent or even help treat breast cancer seems contradictory. It has been postulated that this apparent contradiction may arise from different binding capabilities or different primary binding sites for phytoestrogens compared to estrogen. In rat tissues, the isoflavones tend to bind more strongly to estrogen receptor beta (ER-b), while it is estrogen receptor alpha (ER-a) that estrogen binds to in producing several estrogenic effects; breast tissue is mainly supplied with ER-a receptors; there is only weak expression of ER-b in human breast tumor cells. Therefore, while an estrogen-like action is observed in relation to menopause, the estrogen-dependent tumor cells remain unstimulated.

ONE POSSIBLE TREATMENT FROM THE WEST

A nutrient substance, coenzyme Q10 (CoQ10), has been investigated since 1957 by a research group headed by Karl Folkers (who was involved in the initial isolation, identification, and animal testing of the compound). The researchers have been pursuing the possibility that CoQ10 may have preventive and therapeutic effects in the treatment of cancer for more than ten years, and much of their efforts have focused on breast cancer. Coenzyme Q10 is best known for its effects on cardiac muscle, which is where this substance is concentrated (CoQ10 is utilized mainly in the mitochondria of all cells; this organelle carries out energy transformation, and is needed to keep the heart pumping). Originally, tiny amounts of CoQ10 were obtained from beef hearts; a technology for large scale production in batch culture was developed in Japan in 1974, which made it possible for CoQ10 to be utilized as a therapeutic substance.

CoQ10 already has a limited role in breast cancer therapy. It can be used to protect the hearts of patients who are being treated with chemotherapy regimens that includes the commonly-used drug adriamycin (as well as analogues with similar properties), which produces significant risk

of heart damage. Evidence for the possibility that CoQ10 might have some additional value for women with breast cancer, regardless of estrogen receptor status, includes the following:

1. There is a significant prevalence of low blood levels of CoQ10 in patients with breast cancer. Typically, these patients have about 2/3 the CoQ10 level found in non-cancer patients. In one study, a correlation was found between the extent of the deficiency and poor outcome of the breast disease (11, 12).
2. Administration of CoQ10 significantly raises blood levels of this substance, showing that oral administration is a viable method of delivering adequate doses. The therapeutic doses raise the blood levels above those normally encountered and the raised blood levels correlated with cases of tumor regression in women with breast cancer (13).
3. Animal studies indicate anticancer and immune-enhancing properties of CoQ10 (14).
4. A small number of uncontrolled human trials have indicated tumor shrinkage in some patients and possible prolonged survival in those without tumor shrinkage with administration of CoQ10. Breast cancer patients with and without metastatic cancer, have been treated with CoQ10 and reported to respond. Antioxidants and essential fatty acids were also administered in one trial (15).

Unlike some other proposed natural therapies for cancer (see: [Questionable Cancer Therapies I: PC-Spes](#)), this one has been pursued at several research institutes and the effort has been joined by investigators aside from the original group (from Denmark). CoQ10 is already an approved drug (listed in the **Physicians Desk Reference**, but not indicated for cancer therapy at this time) and is a well-established food supplement (unregulated; available for sale without prescription). This substance is currently under investigation for possible therapeutic benefits in the treatment of atherosclerosis and heart disease, early-onset diabetes, deafness, Parkinson's disease and other degenerative neurological disorders. It is not purported to be a cure for cancer or any of these other diseases, but a contributor to improved outcomes.

The therapeutic dosage may be as low as 60 mg per day in some cases, but the most recent studies with women having breast cancer relied on 390 mg per day (a few practitioners have tried even higher doses, but there is no evidence to support the need for more than this amount). Although CoQ10 is a natural product, the doses given therapeutically are higher than occur naturally. The dietary levels are normally only a few milligrams per day; this fat soluble compound is mainly found in beef and pork, fatty fish (such as sardines and mackerel), wheat germ, and soybean and sesame oils. Women pursuing a low fat and mostly vegetarian diet aimed at maintaining health and reducing cancer risk may have very low dietary intake of this nutrient. CoQ10 is also produced in the human body from tyrosine, but the combination of dietary sources and biosynthesis will yield a blood plasma level that usually does not exceed 1 ug/ml in healthy individuals, while supplementation at 390 mg of CoQ10 daily has been shown to increase the level to over 3 ug/ml in patients with breast cancer.

There is no known impact of CoQ10 on hormone levels and, at this time, no reason to suspect a significant effect on estrogens or other sex hormones. CoQ10 administration is currently considered safe by most authorities and there are few adverse effects (at the high dosages, some nausea or bloating may occur, which is generally alleviated by dividing the dosage into smaller amounts taken more times per day; there may be some changes in the urine at doses of 200 mg or

more per day). In laboratory animals, life-long feeding of high levels of CoQ10 did not produce any evident adverse effect and did not affect life span (16).

Although there are several natural substances that are under consideration for prevention of cancer (4, 17), CoQ10 is one of the few that has been specifically aimed at use in treatment of breast cancer. Therefore, as with soy isoflavones, this substance is of potential interest to practitioners who are pressed to natural therapies that are not likely to increase the perceived risk associated with endocrine system enhancement.

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Estrogenic activity of herbs commonly used as remedies for menopausal symptoms.

[Amato P](#), [Christophe S](#), [Mellon PL](#).

Source

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Abstract

OBJECTIVE:

Women are increasingly turning to herbal therapies in an effort to manage their menopausal symptoms. In this study, we investigate the estrogenic activity of four selected herbs commonly used in menopause, namely dong quai, ginseng, black cohosh, and licorice root.

DESIGN:

We investigated the effect of these selected herbs on cell proliferation of MCF-7 cells, a human breast cancer cell line. We also assessed their estrogenic activity in a transient gene expression assay system using HeLa cells co-transfected with an estrogen-dependent reporter plasmid in the presence of human estrogen receptor ER alpha or ER beta cDNA. Finally, we investigated the estrogenic activity of these herbs using a bioassay in mice.

RESULTS:

Dong quai and ginseng both significantly induced the growth of MCF-7 cells by 16- and 27-fold, respectively, over that of untreated control cells, while black cohosh and licorice root did not. The herbs tested failed to show transactivation of either hER alpha or hER beta and had no effect on uterine weight in vivo when administered orally to mice for a period of 4 days.

CONCLUSIONS:

Our studies show that dong quai and ginseng stimulate the growth of MCF-7 cells independent of estrogenic activity. Because of the lack of efficacy and the potential for adverse effects, use of these herbs in humans warrants caution pending further study.

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Evaluation of estrogenic activity of plant extracts for the potential treatment of menopausal symptoms.

[Liu J](#), [Burdette JE](#), [Xu H](#), [Gu C](#), [van Breemen RB](#), [Bhat KP](#), [Booth N](#), [Constantinou AI](#), [Pezzuto JM](#), [Fong HH](#), [Farnsworth NR](#), [Bolton JL](#).

Source

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Abstract

Eight botanical preparations that are commonly used for the treatment of menopausal symptoms were tested for estrogenic activity. Methanol extracts of red clover (*Trifolium pratense* L.), chasteberry (*Vitex agnus-castus* L.), and hops (*Humulus lupulus* L.) showed significant competitive binding to estrogen receptors alpha (ER alpha) and beta (ER beta). With cultured Ishikawa (endometrial) cells, red clover and hops exhibited estrogenic activity as indicated by induction of alkaline phosphatase (AP) activity and up-regulation of progesterone receptor (PR) mRNA. Chasteberry also stimulated PR expression, but no induction of AP activity was observed. In S30 breast cancer cells, pS2 (presenelin-2), another estrogen-inducible gene, was up-regulated in the presence of red clover, hops, and chasteberry. Interestingly, extracts of Asian ginseng (*Panax ginseng* C.A. Meyer) and North American ginseng (*Panax quinquefolius* L.) induced pS2 mRNA expression in S30 cells, but no significant ER binding affinity, AP induction, or PR expression was noted in Ishikawa cells. Dong quai [*Angelica sinensis* (Oliv.) Diels] and licorice (*Glycyrrhiza glabra* L.) showed only weak ER binding and PR and pS2 mRNA induction. Black cohosh [*Cimicifuga racemosa* (L.) Nutt.] showed no activity in any of the above in vitro assays. Bioassay-guided isolation utilizing ER competitive binding as a monitor and screening using ultrafiltration LC-MS revealed that genistein was the most active component of red clover. Consistent with this observation, genistein was found to be the most effective of four red clover isoflavones tested in the above in vitro assays. Therefore, estrogenic components of plant extracts can be identified using assays for estrogenic activity along with screening and identification of the active components using ultrafiltration LC-MS. These data suggest a potential use for some dietary supplements, ingested by human beings, in the treatment of menopausal symptoms.

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Avocados Naturally Overcome Aging and Disease

Submitted by [Anthony Gucciardi](#) on May 5, 2012

Source: <http://wakeup-world.com/2012/04/28/avocados-naturally-overcome-aging-and-disease/>

Contrary to many anti-aging pills and creams, avocados are extremely inexpensive and also quite a delicious addition to any seasonal meal. The best part, however, is that they are actually effective in fighting both again and bolstering your immune system to fight off disease — no expensive medical interventions required.

The powerful yet 100% natural effect has to do with how the oil from the fruit can combat free radicals, which have been linked to countless conditions including cancer and heart disease (as well as aging, and in many cases *accelerated* aging).

What's most amazing about the antioxidants found in avocados is their ability to 'deeply' penetrate inside the body and actually enter the mitochondria, a tiny 'powerhouse' which actually turns food into energy inside your body. Your mitochondria are actually teeming with free radicals, which are assaulting the tiny energy assimilators on a daily basis.

While other fruits and vegetables — powerful in many ways as well — offer beneficial antioxidants, avocados possess the unique ability to actually make their way inside mitochondria. This is an effect that has scientists raving over the usage of avocados in the prevention of disease and aging. Researcher Christian Cortes-Rojo summarized the findings, explaining:

“The problem is that the antioxidants in [other] substances are unable to enter mitochondria. So free radicals go on damaging mitochondria, causing energy production to stop and the cell to collapse and die”

It is these free radicals, brought upon by toxins that enter the body, which are causing serious damage to public health. Breeding disease through the destruction of DNA and cell membranes, free radicals are unwanted invaders of the body. Avocados present themselves as an excellent way to fend off the issue, and researchers say that avocado oil can even allow certain cells to survive in the presence of high iron concentrations — an element that produces a particularly 'huge' amount of free radicals. It is also interesting to note that avocado oil is similar to olive oil in terms of composition. Not only has olive oil been found to benefit your overall health, but the consumption of olive oil has been linked to unusually low levels of serious disease in some Mediterranean countries.

Healthy Eating

By Louise Tolzmann, ND

Can diet really make a difference with breast cancer? This is a question I hear a lot. More often than not, the unspoken question is: Did the way I eat cause my breast cancer? Unfortunately, the answers are more complicated than a simple yes or no.

What we now know is that there is no one thing that causes breast cancer (or any cancer for that matter). There are many different factors that influence our bodies and our risks for either developing or not developing cancer. This is simultaneously frustrating and liberating.

The frustrating part is that with so many determining factors, we can feel that we have no control over our health. You've probably heard some of the breast cancer risk factors: family history, late or no pregnancy, breast feeding for less than six months, obesity, working night shifts, etc. Yet you've most likely met someone who doesn't meet any of those specifications and still developed cancer. There's the woman in her mid-thirties who had two kids, nursed each for several years, exercised religiously, ate healthy, had no family history, and BOOM she's diagnosed with breast cancer! Why did that happen?

This too is complicated. Here's what we know: Certain gene mutations (BRCA 1 and 2, for example) increase the likelihood of developing cancer. Also, there are clearly some connections between a woman's circulating hormones and her cancer risk. What we don't know is why only some of the women with the gene mutations get cancer. And we don't fully understand the role of all the different hormones, how they impact each other or the chances of getting cancer.

We need to understand the interaction between all the risks. The genes are there, but whether or not they get turned on has to do with what else is going on in your body. If you are exposed to certain toxins, those toxins can signal your body to turn on particular genes. The same goes for hormones. Circulating hormones, much more complex than simply estrogen and progesterone, affect not only how quickly a tumor will grow, but also whether a tumor will grow in the first place. Even stress changes which hormones and how much of them are circulating, (as does laughter and exercise and feeling love).

So what does this have to do with healthy eating? We now have scientific studies verifying that the food we eat can affect us on a genetic level. That's right: food contributes to turning your genes on and off. And not surprisingly, the foods that can turn off cancer forming genes or turn on cancer-killing genes, are the foods we've always been told are good for us. They are fruits and vegetables, spices, herbs (like green tea), whole grains, beans, nuts and seeds. And beyond that it gets more complicated. Dairy and meat and soy and fish are more controversial, with differing results depending on the study.

And this is the liberating part! While we can't always control the air we breathe or our genetic make-up, we can control our diets. When we understand how food works in our bodies, we have the power to choose foods that help us to stop cancer from forming or to prevent it from growing and spreading. Knowing that you can do something every day, knowing that what you ate for breakfast was a little dose of anti-cancer medicine, that is incredibly liberating.

Breast cancer cells destroyed by peach and plum extracts

Tuesday, June 08, 2010 by: Sherry Baker, Health Sciences Editor

Even the most aggressive types of breast cancer cells couldn't stand up to treatments with peach and plum extracts. That's the outcome of a natural fruit-derived treatment tested in the Texas AgriLife Research Lab which resulted in cancer cells dying while normal cells were not harmed at all.

"It was a differential effect which is what you're looking for because in current cancer treatment with chemotherapy, the substance kills all cells, so it is really tough on the body," Dr. David Byrne, an AgriLife Research plant breeder and scientist, said in a press statement. "Here, there is a five-fold difference in the toxic intensity. You can put it at a level where it will kill the cancer cells -- the very aggressive ones -- and not the normal ones."

So what could be in peaches and plums (fruits known as "stone" fruits because of their large, stone-like seeds) that zaps even the most deadly breast cancer cells? In their study, which was published in the *Journal of Agriculture and Food Chemistry*, Dr. Byrne and fellow AgriLife food scientist Dr. Luis Cisneros-Zevallos concluded two phenolic compounds were responsible for the cancer cell deaths.

Phenols are organic compounds that occur in fruits. Slightly acidic, phenols are associated with the color, smell and taste of specific fruits. In a statement to the media, Dr. Cisneros-Zevallos explained that two specific phenolic acid components -- known as chlorogenic and neochlorogenic compounds -- were responsible for killing the breast cancer cells in the AgriLife study. Although very common in fruits, stone fruits such as plums and peaches are especially rich in these types of phenols.

In addition to their successful research showing the stone fruit phenols killed breast cancer cells, the research team also found that animal studies provided even more evidence that the fruit extracts have power anti-cancer properties. The compounds prevented cancer from growing in animals given the fruit treatments.

As NaturalNews has reported, researchers are zeroing in on how a host of phytonutrients in foods are potent breast cancer fighters. For example, University of Michigan (U-M) Comprehensive Cancer Center scientists recently discovered that a natural component of broccoli and broccoli sprouts has the remarkable ability to target cancer stem cells -- the specific cells responsible for fueling the growth of cancerous breast tumors (http://www.naturalnews.com/028822_b...). In addition, University of Missouri scientists have found that curcumin, a popular Indian spice derived from the turmeric root, could reduce the risk of breast cancer risk in women exposed to hormone replacement therapy (HRT) (http://www.naturalnews.com/026674_c...).

For more information:

<http://www.eurekaalert.org/multimedi...>

<http://www.ncbi.nlm.nih.gov/pubmed/...>

About the author

Sherry Baker is a widely published writer whose work has appeared in Newsweek, Health, the Atlanta Journal and Constitution, Yoga Journal, Optometry, Atlanta, Arthritis Today, Natural Healing Newsletter, OMNI, UCLA's "Healthy Years" newsletter, Mount Sinai School of Medicine's "Focus on Health Aging" newsletter, the Cleveland Clinic's "Men's Health Advisor" newsletter and many others.

More evidence that spicing up broccoli boosts its cancer-fighting power

URBANA – Teaming fresh broccoli with a spicy food that contains the enzyme myrosinase significantly enhances each food’s individual cancer-fighting power and ensures that absorption takes place in the upper part of the digestive system where you’ll get the maximum health benefit, suggests a new University of Illinois study.

“To get this effect, spice up your broccoli with broccoli sprouts, mustard, horseradish, or wasabi. The spicier, the better; that means it’s being effective,” said Elizabeth Jeffery, a U of I professor of nutrition.

In the study, when fresh broccoli sprouts were eaten with broccoli powder, the scientists were able to measure bioactive compounds in the blood 30 minutes later. When these peaked at three hours, they were much higher when the foods were eaten together than when either was eaten alone. Urine samples corroborated the blood results, said Jenna Cramer, lead author of the study.

It’s no secret that many people cook the benefits right out of broccoli instead of steaming it lightly for two to four minutes to protect its healthful properties, she said.

“However, this study shows that even if broccoli is overcooked, you can still boost its benefits by pairing it with another food that contains myrosinase,” she said.

Myrosinase is the enzyme necessary to form sulforaphane, the vegetable’s cancer-preventive component, co-author Margarita Teran-Garcia explained.

Note what happened with the fresh broccoli sprouts and broccoli powder eaten in this experiment. The powder doesn’t contain myrosinase, but it does contain the precursor to the anti-cancer agent sulforaphane. Eaten together, the sprouts were able to lend their myrosinase to the powder. As predicted, both foods produced sulforaphane and provided greater anti-cancer benefit, Jeffery said.

Other foods that will boost broccoli’s benefits if they are paired together include radishes, cabbage, arugula, watercress, and Brussels sprouts.

“Here’s another benefit of protecting and enhancing the myrosinase in your foods,” Jeffery said. “If myrosinase is present, sulforaphane is released in the ileum, the first part of your digestive system. Absorption happens well and quickly there, which is why we saw bioactivity in 30 minutes.”

An earlier Jeffery study showed that microbiota are capable of releasing sulforaphane in the lower gut, but absorption happens more slowly in the colon than in the upper intestine, she said.

Scientists say that as little as three to five servings of broccoli a week provide a cancer-protective benefit.

“But it pays to spice it up for added benefits and find ways to make it appealing so you don’t mind eating it if you’re not a broccoli fan. I add fresh broccoli sprouts to sandwiches and add them as one of my pizza toppings after the pie is out of the oven,” Cramer said.

The study is available pre-publication online in the [*British Journal of Nutrition*](#)

Source: Elizabeth Jeffery, 217-333-3820, ejeffery@illinois.edu

News writer: Phyllis Picklesimer, 217-244-2827, p-pickle@illinois.edu

Broccoli ‘could aid breast cancer fight’ – scientists

Submitted by [Drew Kaplan](#) on May 5, 2010 – 6:23 pm

The vegetable, already hailed as a so-called “superfood”, contains a chemical capable of targeting the cells which fuel the growth of tumours.

A component of broccoli called sulforaphane targets and kills cancer stem cells as well as preventing new tumours from growing, according to researchers at the University of Michigan. Current chemotherapies do not work against cancer stem cells. Researchers believe that eliminating the cancer stem cells is key to controlling cancer.

The study, published in the journal *Clinical Cancer Research*, charts how scientists at the university’s Comprehensive Cancer Centre tested the effects of sulforaphane in experiments involving mice and cell cultures.

Prof Duxin Sun, the author of the study, said: “Sulforaphane has been studied previously for its effects on cancer, but this study shows that its benefit is in inhibiting the breast cancer stem cells.

“This new insight suggests the potential of sulforaphane or broccoli extract to prevent or treat cancer by targeting the critical cancer stem cells.”

Researchers took mice with breast cancer and injected varying concentrations of sulforaphane from the broccoli extract.

They then used several established methods to assess the number of cancer stem cells in the tumours.

These measures showed a marked decrease in the cancer stem cell population after treatment with sulforaphane, with little effect on the normal cells.

Cancer cells from mice treated with sulforaphane were also unable to generate new tumours.

The researchers then tested sulforaphane on human breast cancer cell cultures in the lab, finding similar decreases in the cancer stem cells.

Researchers are currently developing a method to extract and preserve sulforaphane.

The tests involved higher concentrations of sulforaphane than are available by simply eating broccoli.

<http://www.telegraph.co.uk/health/healthnews/7679711/Broccoli-could-aid-breast-cancer-fight-scientists.html>

Broccoli (Sprouts or Extract) May Halt Growth of Breast Cancer Cells



Posted By [Dr. Mercola](#) | September 22 2004 | 8,405 views

In recent years, medical researchers have been battling a top killer of women -- breast cancer. One study may have found answer in a component of broccoli.

Indole-3-carbino, which is found in broccoli, interferes with the breast cancer cell's life cycle in a way that hints at a totally new signaling pathway in the cell. The chemical seems to be working by a very unusual mechanism. It turns off a gene for an enzyme important in the cell's growth cycle.

The chemical Indole-3-carbino (I3C) is a component of broccoli and other members of the Brassica family, such as brussels sprouts, bok choy, kale, chard and turnips.

I3C has low toxicity but seems to be very effective in fighting breast cancer cells. According to the study, it is an effective agent at blocking tumorigenesis in rats. When fed to them, I3C can block 95 percent of all breast cancers in rats. The compound also works independently of the hormone estrogen, unlike breast cancer treatment drugs like Tamoxifen.

I3C would be a good candidate for use in combination therapy with drugs those that do interfere with estrogen.

In fact, research shows that I3C does not act on estrogen at all. Instead the chemical actually stops the cell cycle. When I3C reacts with stomach acid, the byproducts are the ones responsible for the anti-estrogen and certain toxic effects of the broccoli compounds. I3C initiates a sudden drop in the generation of the enzyme CDK6, or cyclin-dependent kinase 6.

[Nutrition and Cancer](#) 2004;48(1):84-94

Dr. Mercola's Comments:

From every way that I look at it I3C sure seems vastly superior to the drug [Tamoxifen](#) to treat breast cancer. It also is likely to be very beneficial in the treatment of prostate cancer since the two diseases have very similar contributing factors. However does that mean you should absolutely rush out and purchase [supplements](#) of I3C?

Absolutely not!!!

My strong recommendation would be to get the entire family of [beneficial nutrients](#). One way to do this would be to eat [broccoli](#) but the best way is to consume [broccoli sprouts](#), which are hundreds of times more potent than regular broccoli.

I first wrote about this in 1997 when I posted information on using [broccoli sprouts](#). They are an inexpensive and more effective cancer-treating alternative to eating the whole vegetable. You can purchase [organic broccoli seeds](#) from Johnny's at (207) 861-3901. Reference item #148, four ounces are \$9, 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.

Eating sprouts is not the only course of action I recommend for preventing or treating breast and prostate cancer. Here are a few other guidelines:

- [Lower iron levels](#) by donating blood. Excess iron can be a major cause of many cancers
- [Increase Vitamin D](#). [Sunlight](#) is the best source
- [Balance your omega-3 to omega-6 intake](#).
- [Cut out sugar](#) from your diet
- Eat according to your [nutritional type](#)
- [Avoid pesticides](#)

Related Articles:

[More Reasons to Eat Your Vegetables](#)

[Vegetables That Prevent and Cure Cancer](#)

[Tamoxifen Increases Endometrial Cancer Incidence and Severity](#)

[100+ Nutrition Facts About 25 Well-Known Foods](#)

[Recommended Vegetables List](#)

Can Celery Be Useful to Treat Breast Cancer?

June 04 2012

By Dr. Mercola

The University of Missouri was abuzz with excitement recently when researchers announced they'd found a non-toxic treatment that can stop breast cancer in its tracks.

In the study, this treatment worked even on deadly, fast-growing breast tumors, inhibiting cell proliferation (growth) and reducing expression of a gene associated with cancer malignancy.

But the ingredient needed for the treatment—apigenin—is cheap and is as close as your garden or grocery store, as it's a natural, active ingredient in celery, parsley, thyme, and a number of other fruits, vegetables, and spices. The trouble is, the researchers are having a hard time finding anyone to fund further studies on humans ...

Celery, Parsley Compound Shrinks Breast Cancer Tumors

When mice that were implanted with cells of a particularly deadly, fast-growing human breast cancer were treated with apigenin, the cancerous growth slowed and the tumors shrank.¹ Blood vessels feeding the cancer tumors also shrunk and restricted nutrient flow to the tumor cells, starving them of the nutrients need to spread. A study conducted last year showed similarly promising results; when rats with breast cancer were treated with apigenin, they developed fewer tumors and had significant delays in tumor formation.

Though apigenin, a flavonoid, is most prevalent in celery and parsley, it's also found in many other natural foods, including:

Apples	Chamomile	Basil
Oregano	Tarragon	Cilantro
Endive	Broccoli	Cherries
Leeks	Onions	Tomatoes
Grapes	Tea	Beans and barley

Human exposure to apigenin occurs mostly through the consumption of apigenin-containing fruits and vegetables, although researchers are not sure how much is absorbed into the bloodstream. While the study used an injection of apigenin, you also obtain biologically significant quantities through a healthy diet. Researchers of the 2011 study noted:ⁱⁱ

" ... it appears that keeping a minimal level of apigenin in the bloodstream is important to delay the onset of breast cancer ... It's probably a good idea to eat a little parsley ... every day to ensure the minimal amount. However, you can also find this compound in pill supplements ... "

Funding Hard to Come by When the Active Ingredient Can be Grown in Your Garden ...

Apigenin appears so promising in the fight against cancer that researchers said injections of the substance could be a safe alternative to toxic chemotherapy. While chemo is notorious for its sometimes-lethal side effects (which occur because the drugs are poisons that indiscriminately kill healthy cells right along with cancerous ones), apigenin caused no side effects, even at high doses. But imagine the frustration these researchers must feel, knowing they've found a potential safe, inexpensive and natural cancer fighter, but being unable to convince anyone to fund further research ...

According to study co-author Salman Hyder:ⁱⁱⁱ

"Clinical trials of apigenin with humans could start tomorrow, but we have to wait for medical doctors to carry out that next step. One problem is, because apigenin doesn't have a known specific target in the cancer cell, funding agencies have been reticent to support the research. Also, since apigenin is easily extracted from plants, pharmaceutical companies don't stand to profit from the treatment; hence the industry won't put money into studying something you can grow in your garden."

Some of the Best Cancer Cures Come From Nature

The healing, restorative power of natural substances like vegetables has been researched and known for some time, but remains largely obscured and overshadowed by the massive marketing of pharmaceutical drugs, which focus on toxic chemotherapy, radiation and surgery for cancer treatment.

This may be precisely why nearly everyone reading this is familiar with chemo, but a far smaller percentage will be aware of these safe, natural and potentially *ground-breaking* cancer treatments that receive precious little, if any, media attention:

- [Curcumin](#), the most active component in the curry spice turmeric. Among all nutrients, curcumin has the most evidence-based literature supporting its use against cancer. Researchers have found that curcumin can affect more than 100 different pathways, once it gets into a cell
- [Cream containing eggplant extract](#), known as BEC and BEC5, which appears to cure and eliminate most non-melanoma skin cancers in several weeks time
- [Vitamin D](#), optimizing your skin's natural production of vitamin D from safe sun exposure, is important for cancer prevention and treatment. Vitamin D increases

the self-destruction of mutated cells (which, if allowed to replicate, could lead to cancer), reduces the spread and reproduction of cancer cells, causes cells to become differentiated (cancer cells usually lack differentiation), reduces the growth of new blood vessels from pre-existing ones, which is a step in the transition of dormant tumors turning cancerous.

These are but a few examples, as the truth is, eating a diet based on whole foods is one of the best ways to fight cancer, as you will naturally be consuming anti-cancer substances found in veggies and fruits, like flavonoids, carotenoids, lycopene and [sulforaphane](#). Part of the explanation for why food can have such a powerful influence on serious diseases such as cancer is due to its influence on a biological process called angiogenesis -- the process your body uses to build blood vessels. Cancerous cells, like all other cells in your body, cannot thrive without the oxygen and nutrients supplied by your capillaries.

Excessive angiogenesis (the production of new blood vessels) are associated with the progression of diseases such as cancer.

Most of us actually carry around microscopic cancer cell clusters in our bodies all the time. The reason why we all don't develop cancer is because as long as your body has the ability to balance angiogenesis properly, it will prevent blood vessels from forming to feed these microscopic tumors. Trouble will only arise if, and when, the cancer cells manage to get their own blood supply, at which point they can transform from harmless to deadly. As our ancestors intuitively understood, nature has laced a large number of foods and herbs with naturally occurring inhibitors of angiogenesis, rendering them natural "anti-cancer medicines."

Simply by consuming these anti-angiogenic foods you can naturally boost your body's defense system and prevent blood vessels from forming and feeding the microscopic tumors that exist in your body at any given time.

GreenMedInfo has compiled research on over 600 natural substances, many of them in food, that have shown promise in treating and/or preventing cancer.^{iv} This includes compounds in garlic, berries, coffee, sprouts, mushrooms, black pepper and much, much more – the list is incredibly diverse, which is why a varied diet is also one of the best ways to "cover your bases" for cancer protection.

When "Thinking Outside of the Box" Might Save Your Life

The conventional medical approach is to "search and destroy" cancer cells using surgery, extremely potent toxins and dangerous radiation. Most of the conventional treatments still considered 'standard care' were created during a time when knowledge of cancer was *minimal*. For example, chemotherapy was invented in 1960, when poison gas was found to kill cancerous tumors in one mouse. As it turns out, they were not quite able to replicate the success on other mice, but for some reason, for that initial one, it seemed to work quite well.

This 'fluke' of an experiment was the original foundation of chemotherapy. When it became clear that chemo wasn't all that effective on its own, radiation was added, and now chemotherapy in conjunction with radiation therapy is the norm for many types of cancer.

The trouble is, chemotherapy is not all that effective on many types of cancer ... and even when it is, the patient often dies from chemo-induced side effects. But as stated in the documentary film [Cut, Poison, Burn](#), as long as the cancer is killed before the patient dies, the treatment is largely heralded as a success ...

If you think chemo is your only option, that's because the system is set up this way. The cancer industry has become a massive for-profit business that is doing everything in its power to maintain the status quo. It is, quite simply, not interested in truly reducing cancer rates; it's interested in *treating* cancer by suppressing its gross symptoms, e.g. tumor size, while often driving the surviving cancer cells into greater malignancy, ensuring it will recur with a vengeance years later.

From that perspective, the more cancer cases the better ... Even many oncologists, whom most regard as the go-to specialist upon receiving a cancer diagnosis, may be better described as chemotherapy specialists than cancer specialists.

But there *are* other options. I've already written two articles about [Dr. Burzynski's gene-specific treatment using antineoplastons](#), peptides and derivatives of amino acids that act as molecular and genetic switches. They turn off oncogenes, the genes that cause cancer, and activate chemo suppressor genes; the genes that fight cancer. Furthermore, it's completely non-toxic, and patients suffer virtually no side effects at all. Best of all, once the cancer is gone, the rate of recurrence is slim to none.

As a testament to the safety and effectiveness of antineoplastons, Dr. Burzynski has patients who have survived with "incurable" cancers for over 20 years, and are still cancer free after going through his program. Some of these cases are highlighted in his film *Burzynski: The Movie*.

Dr. Nicholas Gonzalez was not interviewed in this film but he is another prominent alternative cancer physician who shared his run-ins with the conventional cancer model in [my interview with him earlier this year](#). The bottom line is, if you're facing a health challenge, I recommend seeking out a qualified natural health consultant – and this might mean thinking outside of the box. A good place to look for recommendations is at your local health food store. Get to know the people who work there, the owners, and those who frequent the store, and obtain a consensus as to who the best clinician for you is in your area. Word travels fast in the natural medical community, so if there's a knowledgeable practitioner in your area that's getting awesome results, his or her reputation will be known. Of course, when it comes to cancer, you'll want to identify someone that is well known and respected for their work in treating cancer patients.

Top Steps for Breast Cancer Prevention

I recently interviewed Dr. Christine Horner, a board certified general and plastic surgeon, who shared her extensive knowledge about breast cancer—its causes and treatments, and the pro's and con's of various screening methods. I suggest you listen to that interview now, in addition to learning about the many all-natural cancer-prevention strategies below.

[Download Interview Transcript](#)

- **[Eat healthy](#)**. This means avoid sugar, especially fructose, as all forms of sugar are detrimental to your health in general and promote cancer. Also, focus on eating whole foods and fresh vegetables while avoiding cancer-causing foods.
- **[Exercise](#)**. Research suggests that one of the most powerful ways to lower breast cancer risk substantially is through the simple act of exercise.
- **[Vitamin D](#)**. There's overwhelming evidence pointing to the fact that vitamin D deficiency plays a crucial role in the promotion of cancer. You can decrease your risk of cancer by MORE THAN HALF simply by optimizing your vitamin D levels with adequate sun exposure. And if you are being treated for cancer it is likely that higher blood levels—probably around 80-90 ng/ml—would be beneficial. The health benefits of optimizing your levels, either by safe sun exposure (ideally), a safe tanning bed, or oral supplementation with vitamin D3 as a last resort, simply cannot be overstated.
- **Get proper sleep**, both in terms of getting enough sleep and sleeping between certain optimal hours. According to Ayurvedic medicine, the ideal hours for sleep are between 10 pm and 6 am. Modern research has confirmed the value of this recommendation as certain hormonal fluctuations occur throughout the day and night, and if you engage in the appropriate activities during those times, you're 'riding the wave' so to speak, and are able to get the optimal levels. Working against your biology by staying awake when you should ideally be sleeping or vice versa, interferes with these beneficial hormonal fluctuations.
- **Effectively address your stress**. The research shows that if you experience a traumatic or highly stressful event, such as a death in the family, your risk of breast cancer is 12 times higher in the ensuing five years. So be sure you tend to your emotional health in addition to your physical health.

References:

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 - ⁱⁱ [News Bureau University of Missouri May 9, 2011](#)
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Cancer's Secret Weakness

Posted By [Dr. Mercola](#) | January 30 2010 | 313,498 views

Donald (“Donnie”) Yance, an internationally known herbalist and nutritionist who founded the Centre for Natural Healing in 1992, and the Mederi Foundation in 2006, shares his vast botanical knowledge, including how you can use herbs to help restore your health and overcome the flu.

Sources:

- » [The New Paradigm for Healing Cancer: ETMS](#)
- » [Healing Plants Can Transform Your Health at Its Deepest, Most Profound Level](#)
- » [Donald Yance Interview Transcript](#)

Dr. Mercola's Comments:

In the past I have regarded herbs, in many cases, as an alternative to drugs, useful for treating various symptoms but not to treat the underlying cause.

I have since revised my opinion on this quite significantly, and now realize that herbs can help support your health from a very basic level, just as foods do.

Donnie Yance is a clinical master herbalist, and he explains that foods and herbs share quite a few similarities, including being pleiotropic -- which means they produce more than one effect.

Donnie expands:

“There are different ways to think of the role of herbs in people’s health. From my perspective, working from that vitalistic tradition, herbs are what are called trophorestorative, so they actually do work on the deepest level.

What’s very interesting now, with the explosion of science and to the field of herbal medicine, is that we’re learning that plants transfer information genetically to our genes that do nothing but add benefit to our health in a genetic level.”

Herbs, Like Food, Should be Whole and Minimally Processed

Using herbs on a holistic level can support your health the way a healthy diet can. But this does not hold true when herbs are manipulated into man-made drugs. As Donnie Yance explains:

"Pharmaceutical medicine sees your body as broken and needs to do one of two things: replace something, but most of the time, it's blocking something ...

Now, plants aren't going to block or eliminate or replace anything unless you abuse them, unless you either manipulate them, by taking everything away from them but maybe one compound, and then using it inappropriately, like the wrong dosage.

So you can manipulate a plant to be used pharmacologically. But if you look at it from my perspective, which is providing plant medicines like you do food, like what I say is a gourmet meal -- I put plants together like you would put a great gourmet healthy meal together for someone -- and that's more a traditional way.

I'm just looking to find ways to lend a helping hand to the body so that the body is as much responsible for the healing as the plants, so there is a cooperative effort. I'm not looking at the body as some broken mechanistic machine; everything relates to everything."

I heartily applaud this approach, unfortunately most people, including most practitioners, do not have the proper depth of understanding to use herbs in this way.

An Innovative Healing System for Chronic Illness, Including Cancer

Donnie Yance has developed and taught a proprietary diagnostic and therapeutic approach to healing called the Eclectic Triphasic Medical System (ETMS).

You can [read about it in detail in the full interview transcript](#), but simply speaking it is a system that provides a framework for treating chronic illness using the fullest degree of botanical, nutritional, and biomedical principles.

"Without overlooking the human being's constitution and environmental influences -- or their unique manifestation of disease -- the ETMS aims for balance and harmony in executing optimal care. It was designed as a way to employ the oldest healing principles in conjunction with the most cutting-edge science in both assessment and treatment," Donnie explains.

Two of the principles upon which this innovative system is based are intellect and logic, two factors, particularly the latter, that are sorely missing from conventional, mainstream medicine. As Donnie points out, in conventional medicine, logic is often displaced by fear, especially in the treatment of cancer.

"...Fear is the great obstacle to healing and when people have cancer, all of a sudden they're filled with fear. The whole medical system set-up is based in fear.

Many physicians, even good people, really good people that would actually take a different approach to their patient care, are afraid because they are in a system that locks them down. And then if they deviate from that system, they expose themselves in every possible way and very few people are willing to take that risk," he says.

Why Conventional Cancer Treatments Often Fail

The ETMS model, however, places its focus on the whole of your body system rather than the disease itself. It addresses the factors that contributed to the disease in the first place, rather than attacking the disease as though it is an alien invader. Donnie expands:

“A person with cancer often can feel betrayed by her body. There is a feeling of being invaded, as if something alien and foreign has taken hold.

The language of oncology endorses this adversarial view in talking of ‘the war on cancer’ and in cutting, poisoning, and burning as fast as possible, as if simply obliterating the offending part will solve the problem.

But cancer is not an alien. It is, in fact, both of you and not of you. Tumors are not some external, malign parasite, but instead are actually comprised of normal body cells whose only uniqueness is that they have lost their ability to communicate properly and to receive growth control messages from adjacent cells.

Nothing a cancer cell does is unique to cancer. All of the metabolic activities of cancer cells also can be carried out by normal, healthy cells. Cancer cells simply do not know when to stop.

Thus, in designing drugs to address specific facets or aspects of cancer cell function, it is virtually impossible to avoid side effects and corollary damage because healthy cells are carrying out the same metabolic activities.

For this reason, many cytotoxic agents necessarily have a relatively narrow “therapeutic margin” and, for many patients, result in side effects that limit quality of life and even the ability to tolerate the prescribed treatments.

... The ETMS emphasizes the practice of ‘healthy medicine,’ which is aimed at the source of ill health, the primary focus being to bring about harmony and balance throughout the body with nontoxic or low-toxicity, target-specific, cancer-suppressing agents.

This is achieved through the application of synergistic, multi-targeting herbal and nutritional formulations (naturally phytochemically complex medicines) and dietary therapeutics, and other specific cancer-targeting therapies as indicated.”

Tips for Finding Quality Herbs

There can be enormous differences in the quality of various herbal preparations, just as there can be differences in the nutritive qualities of foods. About 90 percent of the herbs on the market right now are low quality, according to Donnie, so if you want to receive some of the benefits that herbs can provide, it’s important to know what to look for.

I asked Donnie to share a few insights on how to pick out the highest quality herbs, and this is what he said:

“I think the safest way for people to have an insight to that is to know who is responsible for the herbs that you’re buying, where are they coming from and who’s taking responsibility for that, and if that’s a person you can trust.

And so, the herbs, when you go to buy the herb on a shelf, what company is providing that herb for you and who is behind that company, and do you believe that is somebody you can trust. That’s probably the easiest and best way ...”

Cancer prevention in Europe: the Mediterranean diet as a protective choice.

[Giacosa A](#), [Barale R](#), [Bavaresco L](#), [Gatenby P](#), [Gerbi V](#), [Janssens J](#), [Johnston B](#), [Kas K](#), [La Vecchia C](#), [Mainguet P](#), [Morazzoni P](#), [Negri E](#), [Pelucchi C](#), [Pezzotti M](#), [Rondanelli M](#).

Source

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Abstract

In the coming years, European death rates because of cancer will further decline, but the overall number of cases will increase, mostly as a consequence of the ageing of the population. The target for cancer prevention in Europe will remain a healthy diet and control of obesity in addition to a decrease in smoking. A healthy diet model in European countries is the traditional Mediterranean diet, which is based on abundant and variable plant foods, high consumption of cereals, olive oil as the main (added) fat, low intake of (red) meat and moderate consumption of wine. The Mediterranean diet is associated with a reduced risk of cardiovascular disease and cancer. The biological mechanisms for cancer prevention associated with the Mediterranean diet have been related to the favourable effect of a balanced ratio of omega 6 and omega 3 essential fatty acids and high amounts of fibre, antioxidants and polyphenols found in fruit, vegetables, olive oil and wine. The Mediterranean diet also involves a 'Mediterranean way of drinking', that is, regular, moderate consumption of wine mainly with food. This pattern of drinking increases longevity, reduces the risk of cardiovascular disease and does not appreciably influence the overall risk of cancer. However, heavy alcohol drinking is associated with digestive, upper respiratory tract, liver and breast cancers; therefore, avoidance or restriction of alcohol consumption to two drinks/day in men and one drink/day in women is a global public health priority.

PMID:

22644232

[PubMed - in process]

Cancer Risk Minimized with Vegetarian Diet

Complimentary prescriptions

Source: http://www.cpmedical.net/articles/cancer-risk-minimized-with-vegetarian-diet?utm_content=cancer-risk-minimized-with-vegetarian-diet&utm_source=bn20130212m&utm_campaign=bn&utm_medium=email&utm_term=ctype-M

In November 2012, a new study reported that a vegetarian diet confers some protection against developing cancer. The National Cancer Institute reports that more than 41 percent of men and women born today will be diagnosed with cancer at some point during their lifetime.

The investigators assessed dietary patterns in 69,120 subjects enrolled in the Adventist Health Study-2. The researchers assessed cancer incidence from cancer registries.

The researchers identified 2,939 cancer cases. The investigators determined that the subjects who consumed a vegetarian diet had an eight percent decrease in the risk of developing cancer compared to the non-vegetarians. Furthermore, the researchers found that a vegetarian diet decreased the risk of developing a gastrointestinal cancer by 24 percent.

Further analysis showed that a vegan diet was associated with a 16 percent decrease in overall risk of cancer in men and women combined, and a 34 percent decrease in the risk of female-specific cancers. The researchers also found that lacto-ovo vegetarians had a 25 percent decreased risk of developing a gastrointestinal tract cancer.

The researchers concluded, "Vegetarian diets seem to confer protection against cancer. Vegan diet seems to confer lower risk for overall and female-specific cancer compared to other dietary patterns. The lacto-ovo vegetarian diets seem to confer protection from cancers of the gastrointestinal tract."

Reference:

Tantamango-Bartley Y, et al. Cancer Epidemiol Biomarkers Prev. 2012 Nov 20. [Epub ahead of print.]

Curcumin

Written in November 2005 by: Jane Higdon, Ph.D. Linus Pauling Institute Oregon State University

Updated in January 2009 by: Victoria J. Drake, Ph.D. Linus Pauling Institute Oregon State University

Reviewed in January 2009 by: Chung S. Yang, Ph.D. Professor II and Chair Department of Chemical Biology Ernest Mario School of Pharmacy Rutgers, The State University of New Jersey

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Summary

- Turmeric is a spice derived from the rhizomes of *Curcuma longa*, a member of the ginger family. Curcuminoids are [polyphenolic compounds](#) that give turmeric its yellow color; curcumin is the principal curcuminoid in turmeric.
- The results of phase I clinical trials in [colorectal cancer](#) patients suggest that biologically active levels of curcumin can be achieved in the [gastrointestinal](#) tract through oral curcumin supplementation. Such trials provide support for further clinical evaluation in people at risk for gastrointestinal cancers. ([More Information](#))
- Until the safety and efficacy of curcumin in individuals with [cystic fibrosis](#) has been evaluated in clinical trials, the Cystic Fibrosis Foundation does not recommend the use of curcumin as a therapy for cystic fibrosis. ([More Information](#))
- Although a few preliminary trials suggest that curcumin may have anti-inflammatory activity in humans, larger randomized controlled trials are needed to determine whether oral curcumin supplementation is effective in the treatment of inflammatory diseases. ([More Information](#))
- As a result of promising findings in animal models of [Alzheimer's disease](#), clinical trials of curcumin supplementation in patients with early Alzheimer's disease are under way. ([More Information](#))

Introduction

Turmeric is a spice derived from the rhizomes of *Curcuma longa*, which is a member of the ginger family (*Zingiberaceae*). Rhizomes are horizontal underground stems that send out shoots as well as roots. The bright yellow color of turmeric comes mainly from fat-soluble, polyphenolic pigments known as curcuminoids ([Figure 1](#)). Curcumin, the principal curcuminoid found in turmeric, is generally considered its most active constituent ([1](#)). Other curcuminoids found in turmeric include demethoxycurcumin and bisdemethoxycurcumin. In addition to its use as a spice and [pigment](#), turmeric has been used in India for medicinal purposes for centuries. More recently, evidence that curcumin may have anti-inflammatory and anticancer activities has renewed scientific interest in its potential to prevent and treat disease.

Metabolism and Bioavailability

[Clinical trials](#) in humans indicate that the systemic [bioavailability](#) of orally administered curcumin is relatively low (1-3) and that mostly metabolites of curcumin, instead of curcumin itself, are detected in [plasma](#) or [serum](#) following oral consumption (4, 5). In the intestine and liver, curcumin is readily [conjugated](#) to form curcumin glucuronides and curcumin sulfates or, alternately, [reduced](#) to hexahydrocurcumin ([Figure 2](#)) (6). Curcumin metabolites may not have the same biological activity as the parent compound. In one study, conjugated or reduced [metabolites](#) of curcumin were less effective inhibitors of inflammatory enzyme [expression](#) in cultured human colon cells than curcumin itself (7). In a clinical trial conducted in Taiwan, [serum](#) curcumin concentrations peaked 1-2 hours after an oral dose; peak serum concentrations of curcumin were 0.5, 0.6, and 1.8 micromoles/liter following doses of 4, 6, and 8 g of curcumin, respectively (8). Curcumin could not be detected in serum at lower doses than 4 g/day. More recently, a clinical trial conducted in the UK found that plasma concentrations of curcumin, curcumin sulfate, and curcumin glucuronide were in the range of 10 nanomoles/liter (0.01 micromole/liter) one hour after a 3.6 g oral dose of curcumin (9). Curcumin and its metabolites could not be detected in [plasma](#) at doses lower than 3.6 g/day. Curcumin and its glucuronidated and sulfated metabolites were also measured in urine after a dose of 3.6 g/day. There is some evidence that orally administered curcumin accumulates in [gastrointestinal](#) tissues. For instance, when [colorectal cancer](#) patients took 3.6 g/d of curcumin orally for seven days prior to surgery, curcumin was detected in [malignant](#) and normal colorectal tissue (10). In contrast, curcumin was not detected in the liver tissue of patients with liver [metastases](#) of colorectal cancer after the same oral dose of curcumin (11), suggesting that oral curcumin administration may not effectively deliver curcumin to tissues outside the gastrointestinal tract.

Biological Activities

Antioxidant Activity

Curcumin is an effective [scavenger](#) of [reactive oxygen species](#) and [reactive nitrogen species](#) in the test tube ([in vitro](#)) (12, 13). However, it is not clear whether curcumin acts directly as an [antioxidant in vivo](#). Due to its limited oral [bioavailability](#) in humans (see [Metabolism and Bioavailability](#) above), [plasma](#) and tissue curcumin concentrations are likely to be much lower than that of other fat-soluble antioxidants, such as alpha-tocopherol ([vitamin E](#)). However, the finding that oral curcumin supplementation (3.6 g/day) for seven days decreased the number of oxidative [DNA](#) adducts in [malignant](#) colorectal tissue suggests that curcumin taken orally may reach sufficient concentrations in the gastrointestinal tract to inhibit oxidative DNA damage (11). In addition to direct antioxidant activity, curcumin may function indirectly as an antioxidant by inhibiting the activity of inflammatory [enzymes](#) or by enhancing the [synthesis](#) of [glutathione](#), an important intracellular antioxidant (see below).

Anti-inflammatory Activity

The metabolism of arachidonic acid in [cell membranes](#) plays an important role in the inflammatory response by generating potent chemical messengers known as [eicosanoids](#) (14). Membrane [phospholipids](#) are [hydrolyzed](#) by phospholipase A2 (PLA2), releasing arachidonic acid, which may be metabolized by cyclooxygenases (COX) to form prostaglandins and thromboxanes, or by lipoxygenases (LOX) to form leukotrienes. Curcumin has been found to

inhibit PLA2, COX-2, and 5-LOX activities in cultured cells (15). Although curcumin inhibited the [catalytic](#) activity of 5-LOX directly, it inhibited PLA2 by preventing its [phosphorylation](#) and COX-2 mainly by inhibiting its [transcription](#). Nuclear factor-kappa B (NF-kB) is a transcription factor that binds [DNA](#) and enhances the transcription of the COX-2 [gene](#) as well as other pro-inflammatory genes, such as inducible nitric oxide synthase (iNOS). In inflammatory cells, such as [macrophages](#), iNOS catalyzes the synthesis of [nitric oxide](#), which can react with superoxide to form peroxynitrite, a [reactive nitrogen species](#) that can damage proteins and DNA. Curcumin has been found to inhibit NF-kB-dependent gene transcription (16), and the [induction](#) of COX-2 and iNOS in cell culture and animal studies (17, 18).

Glutathione Synthesis

[Glutathione](#) is an important intracellular [antioxidant](#) that plays a critical role in cellular adaptation to stress (19). Stress-related increases in cellular glutathione levels result from increased [expression](#) of glutamate cysteine ligase (GCL), the rate-limiting enzyme in glutathione synthesis. Studies in cell culture suggest that curcumin can increase cellular glutathione levels by enhancing the transcription of genes that encode GCL (20, 21).

Effects on Biotransformation Enzymes Involved in Carcinogen Metabolism

Biotransformation enzymes play important roles in the [metabolism](#) and elimination of a variety of biologically active compounds, including drugs and [carcinogens](#). In general, phase I biotransformation enzymes, including those of the [cytochrome P450](#) (CYP) family, [catalyze](#) reactions that increase the reactivity of hydrophobic (fat-soluble) compounds, preparing them for reactions catalyzed by phase II biotransformation enzymes. Reactions catalyzed by phase II enzymes generally increase water solubility and promote the elimination of these compounds (22). Although increasing biotransformation enzyme activity may enhance the elimination of potential carcinogens, some carcinogen precursors ([procarcinogens](#)) are metabolized to active carcinogens by phase I enzymes (23). CYP1A1 is involved in the metabolic activation of several chemical carcinogens. In cell culture and animal studies, curcumin has been found to inhibit procarcinogen bioactivation or measures of CYP1A1 activity (24-27). Increasing phase II biotransformation enzyme activity is generally thought to enhance the elimination of potential carcinogens. Several studies in animals have found that dietary curcumin increased the activity of phase II enzymes, such as glutathione S-transferases (GSTs) (26, 28, 29). However, curcumin intakes ranging from 0.45-3.6 g/day for up to four months did not increase leukocyte GST activity in humans (9).

Induction of Cell Cycle Arrest and Apoptosis

After a cell divides, it passes through a sequence of stages—collectively known as the [cell cycle](#)—before it can divide again. Following DNA damage, the cell cycle can be transiently arrested to allow for DNA repair or, if the damage cannot be repaired, for activation of pathways leading to cell death ([apoptosis](#)) (30). Defective cell-cycle regulation may result in the propagation of [mutations](#) that contribute to the development of cancer. Curcumin has been found to induce cell-cycle arrest and apoptosis in a variety of cancer cell lines grown in culture (1, 31-35). The mechanisms by which curcumin induces apoptosis are varied but may include inhibitory

effects on several [cell-signaling](#) pathways. However, not all studies have found that curcumin induces apoptosis in cancer cells. Curcumin inhibited apoptosis induced by the tumor suppressor protein p53 in cultured human colon cancer cells (36, 37), and one study found that curcumin inhibited apoptosis induced by several [chemotherapeutic](#) agents in cultured breast cancer cells at concentrations of 1-10 micromoles/liter (38).

Inhibition of Tumor Invasion and Angiogenesis

Cancerous cells invade normal tissue with the aid of [enzymes](#) called matrix metalloproteinases. Curcumin has been found to inhibit the activity of several matrix metalloproteinases in cell culture studies (39-43). To fuel their rapid growth, invasive tumors must also develop new blood vessels by a process known as [angiogenesis](#). Curcumin has been found to inhibit angiogenesis in cultured [vascular endothelial](#) cells (44, 45) and in an animal model (46).

Note: It is important to keep in mind that many of the biological activities discussed above were observed in cells cultured in the presence of curcumin at higher concentrations than are likely to be achieved in cells of humans consuming curcumin orally (see [Metabolism and Bioavailability](#) above).

Disease Prevention

Cancer

The ability of curcumin to induce [apoptosis](#) in cultured cancer cells by several different mechanisms has generated scientific interest in the potential for curcumin to prevent some types of cancer (1). Oral curcumin administration has been found to inhibit the development of chemically-induced cancer in animal models of oral (47, 48), stomach (49, 50), liver (51), and colon (52-54) cancer. Apc^{Min/+} mice have a mutation in the Apc (adenomatous polyposis coli) gene similar to that in humans with [familial adenomatous polyposis](#), a genetic condition characterized by the development of numerous [colorectal adenomas](#) (polyps) and a high risk for colorectal cancer. Oral curcumin administration has been found to inhibit the development of intestinal adenomas in Apc^{Min/+} mice (55, 56). In contrast, oral curcumin administration has not consistently been found to inhibit the development of mammary (breast) cancer in animal models (52, 57, 58).

Although the results of animal studies are promising, particularly with respect to colorectal cancer, there is presently little evidence that high intakes of curcumin or turmeric are associated with decreased cancer risk in humans. A [phase I clinical trial](#) in Taiwan examined the effects of oral curcumin supplementation up to 8 g/day for three months in patients with precancerous lesions of the mouth (oral leukoplakia), cervix (high grade [cervical intraepithelial neoplasia](#)), skin (squamous carcinoma in situ), or stomach (intestinal metaplasia) (8). Histologic improvement on biopsy was observed in two out of seven patients with oral leukoplakia, one out of four patients with cervical intraepithelial neoplasia, two out of six patients with squamous carcinoma in situ, and one out of six patients with intestinal metaplasia. However, cancer developed in one out of seven patients with oral leukoplakia and one out of four patients with cervical intraepithelial neoplasia by the end of the treatment period. This study was designed

mainly to examine the [bioavailability](#) and safety of oral curcumin, and interpretation of its results is limited by the lack of a control group for comparison. As a result of the promising findings in animal studies, several controlled clinical trials in humans designed to evaluate the effect of oral curcumin supplementation on precancerous colorectal lesions, such as adenomas, are under way [\(59\)](#).

Disease Treatment

Cancer

The ability of curcumin to induce [apoptosis](#) in a variety of cancer cell lines and its low toxicity have led to scientific interest in its potential for cancer therapy as well as cancer prevention [\(60\)](#). To date, most of the controlled clinical trials of curcumin supplementation in cancer patients have been [Phase I trials](#). Phase I trials are clinical trials in small groups of people, which are aimed at determining [bioavailability](#), safety, and early evidence of the efficacy of a new therapy [\(61\)](#). A phase I clinical trial in patients with advanced colorectal cancer found that doses up to 3.6 g/day for four months were well-tolerated, although the systemic bioavailability of oral curcumin was low [\(62\)](#). When colorectal cancer patients with liver [metastases](#) took 3.6 g/day of curcumin orally for seven days, trace levels of curcumin metabolites were measured in liver tissue, but curcumin itself was not detected [\(11\)](#). In contrast, curcumin was measurable in normal and [malignant](#) colorectal tissue after patients with advanced colorectal cancer took 3.6 g/day of curcumin orally for seven days [\(10\)](#). These findings suggest that oral curcumin is more likely to be effective as a therapeutic agent in cancers of the [gastrointestinal](#) tract than other tissues. [Phase II trials](#) are clinical trials designed to investigate the effectiveness of a new therapy in larger numbers of people, and to further evaluate short-term side effects and safety of the new therapy. Phase II clinical trials of curcumin in patients with colorectal cancer are currently under way [\(59\)](#). A phase II clinical trial in patients with advanced pancreatic cancer found that curcumin exhibited some anticancer activity in two out of 21 patients; however, bioavailability of curcumin was extremely poor [\(63\)](#). Due to low systemic bioavailability and the fact that curcumin is [hydrophobic](#), the authors proposed that intravenous administration of liposome-encapsulated curcumin be used in future clinical trials [\(63\)](#).

Inflammatory Diseases

Although the anti-inflammatory activity of curcumin has been demonstrated in cell culture and animal studies, few controlled clinical trials have examined the efficacy of curcumin in the treatment of inflammatory conditions. A preliminary intervention trial that compared curcumin with a nonsteroidal anti-inflammatory drug (NSAID) in 18 [rheumatoid arthritis](#) patients found that improvements in morning stiffness, walking time, and joint swelling after two weeks of curcumin supplementation (1,200 mg/day) were comparable to those experienced after two weeks of phenylbutazone (NSAID) therapy (300 mg/day) [\(64\)](#). A [placebo](#)-controlled trial in 40 men who had surgery to repair an inguinal hernia or hydrocele found that oral curcumin supplementation (1,200 mg/day) for five days was more effective than placebo in reducing post-surgical [edema](#), tenderness and pain, and was comparable to phenylbutazone therapy (300 mg/day) [\(65\)](#). Two uncontrolled studies found that oral curcumin (1,125 mg/day) for 12 weeks or longer improved anterior uveitis and idiopathic inflammatory orbital pseudotumor, two

inflammatory conditions of the eye (66, 67). However, without a control group, it is difficult to draw conclusions regarding the anti-inflammatory effects of curcumin in these conditions. Larger randomized controlled trials are needed to determine whether oral curcumin supplementation is effective in the treatment of inflammatory diseases, such as rheumatoid arthritis.

Cystic Fibrosis

[Cystic fibrosis](#) is a hereditary disease caused by [mutations](#) in the cystic fibrosis transmembrane conductance regulator (CFTR) gene (62). CFTR is a transmembrane protein that acts as a chloride channel and plays a critical role in [ion](#) and fluid transport. In the lungs, CFTR mutations ultimately result in increased mucus concentration and decreased mucus clearance, which leads to progressive lung disease. The most common CFTR mutation contributing to the development of cystic fibrosis is the delta F508 mutation, which results in CFTR protein misfolding and degradation before the protein can be targeted to the cell membrane. However, the mutated protein retains some ability to function as a chloride channel if it can be inserted in the cell membrane. In 2004, a study in mice with the delta F508 mutation found that oral curcumin administration corrected abnormal ion transport and improved the survival of these mice (68). However, unlike humans, mice with the delta F508 mutation experience only the digestive complications of cystic fibrosis without the lung complications, and treatment benefits in the mouse model are not always realized in humans (62). More recently, another group of scientists was unable to duplicate the beneficial effects of curcumin in the same mouse model given the same dose of curcumin (69). It is unclear whether curcumin supplementation will be of benefit to humans with cystic fibrosis. In a [phase I clinical trial](#) funded by the Cystic Fibrosis Foundation, curcumin did not correct the function of the defective CFTR protein; a follow-up study using higher curcumin dosages is currently under way (70). Until the safety and efficacy of curcumin in individuals with cystic fibrosis has been evaluated in clinical trials, the Cystic Fibrosis Foundation does not recommend the use of curcumin as a therapy for cystic fibrosis (71).

Alzheimer's Disease

In [Alzheimer's disease](#), a [peptide](#) called amyloid beta forms aggregates (oligomers), which accumulate in the brain and form deposits known as amyloid plaques (72). Inflammation and oxidative damage are also associated with the progression of Alzheimer's disease (73). Curcumin has been found to inhibit amyloid beta oligomer formation [in vitro](#) (74). When injected peripherally, curcumin was found to cross the blood brain barrier in an animal model of Alzheimer's disease (74). In animal models of Alzheimer's disease, dietary curcumin has decreased [biomarkers](#) of inflammation and oxidative damage, amyloid plaque burden in the brain, and amyloid beta-induced memory deficits (74-77). It is not known whether curcumin taken orally can cross the blood brain barrier or inhibit the progression of Alzheimer's disease in humans. As a result of the promising findings in animal models, clinical trials of oral curcumin supplementation in patients with early Alzheimer's disease are under way (59, 78). The results of a 6-month trial in 27 patients with Alzheimer's disease found that oral supplementation with up to 4 g/day of curcumin was safe (4). Larger controlled trials are needed to determine whether or not oral curcumin supplementation is efficacious in Alzheimer's disease.

Sources

Food Sources

Turmeric is the dried ground rhizome of *Curcuma longa* Linn (79). It is used as a spice in Indian, Southeast Asian, and Middle Eastern cuisines. Curcuminoids comprise about 2-9% of turmeric (80). Curcumin is the most abundant curcuminoid in turmeric, providing about 75% of the total curcuminoids, while demethoxycurcumin provides 10-20% and bisdemethoxycurcumin generally provides < 5%. Curry powder contains turmeric along with other spices, but the amount of curcumin in curry powders is variable and often relatively low (81). Curcumin extracts are also used as food-coloring agents (82).

Supplements

Curcumin extracts are available as dietary supplements without a prescription in the U.S. The labels of a number of these extracts state that they are standardized to contain 95% curcuminoids, although such claims are not strictly regulated by the U.S. Food and Drug Administration (FDA). Some curcumin preparations also contain piperine, which may increase the bioavailability of curcumin by inhibiting its metabolism. However, piperine may also affect the metabolism of drugs (see [Drug Interactions](#) below). Optimal doses of curcumin for cancer chemoprevention or therapeutic uses have not been established. It is unclear whether doses less than 3.6 g/day are biologically active in humans (see [Metabolism and Bioavailability](#) above).

Safety

Adverse Effects

In the United States, turmeric is generally recognized as safe (GRAS) by the FDA as a food additive by the FDA (82). Serious adverse effects have not been reported in humans taking high doses of curcumin. A dose escalation trial in 24 adults found that single oral dosages up to 12 g were safe, and adverse effects were not dose-related (5). In a [phase I trial](#) in Taiwan, curcumin supplementation up to 8 g/day for three months was reported to be well-tolerated in patients with precancerous conditions or noninvasive cancer (8). In another clinical trial in the UK, curcumin supplementation ranging from 0.45-3.6 g/day for four months was generally well-tolerated by people with advanced colorectal cancer, although two participants experienced diarrhea and another reported nausea (9). Increases in serum alkaline phosphatase and lactate dehydrogenase were also observed in several participants, but it was not clear whether these increases were related to curcumin supplementation or cancer progression (1). Curcumin supplementation of 20-40 mg has been reported to increase [gallbladder](#) contractions in healthy people (83, 84). Although increasing gallbladder contractions could decrease the risk of gallstone formation by promoting gallbladder emptying, it could potentially increase the risk of symptoms in people who already have gallstones.

Pregnancy and Lactation

Although there is no evidence that dietary consumption of turmeric as a spice adversely affects pregnancy or lactation, the safety of curcumin supplements in pregnancy and lactation has not been established.

Drug Interactions

Curcumin has been found to inhibit [platelet](#) aggregation [in vitro](#) (85, 86), suggesting a potential for curcumin supplementation to increase the risk of bleeding in people taking [anticoagulant](#) or antiplatelet medications, such as aspirin, clopidogrel (Plavix), dalteparin (Fragmin), enoxaparin (Lovenox), heparin, ticlopidine (Ticlid), and warfarin (Coumadin). In cultured breast cancer cells, curcumin inhibited [apoptosis](#) induced by the [chemotherapeutic](#) agents, camptothecin, mechlorethamine, and doxorubicin at concentrations of 1-10 micromoles/liter (38). In an animal model of breast cancer, dietary curcumin inhibited cyclophosphamide-induced tumor regression. Although it is not known whether oral curcumin administration will result in breast tissue concentrations that are high enough to inhibit cancer chemotherapeutic agents in humans (11), it may be advisable for women undergoing chemotherapy for breast cancer to avoid curcumin supplements (38). Some curcumin supplements also contain piperine, for the purpose of increasing the [bioavailability](#) of curcumin. However, piperine may also increase the bioavailability and slow the elimination of a number of drugs, including phenytoin (Dilantin), propranolol (Inderal), and theophylline (87, 88).

References

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Eating diet of processed foods proven to raise cancer risk in women

Source: Naturalnews.com Tuesday, September 11, 2007 by: David Gutierrez, staff writer

Elevated blood sugar can increase women's risk of pancreatic, skin, urinary tract, womb and breast cancer, according to a Swedish study published in the journal *Diabetes Care*.

The link between a diet high in junk food and high levels of blood sugar has been solidly established, as has the fact that elevated blood sugar can lead to Type 2 diabetes. Type 2 diabetes, sometimes called adult onset diabetes, occurs when the body becomes desensitized to the sugar-regulating hormone insulin, and has been shown to lead to increased [cancer risk](#). However, the Swedish study demonstrated a correlation between [blood sugar levels](#) and cancer risk, independent of the occurrence of [diabetes](#).

Researchers studied nearly 65,000 adults between the ages of 40 and 60 for 13 years. They found that the 25 percent of women with the highest [blood sugar](#) had a 26 percent higher chance of developing [cancer](#) than the 25 percent with the lowest blood [sugar](#) levels. Breast cancer [risk](#) in particular was increased only among pre-menopausal women. Blood sugar levels did not correlate with cancer risk in men.

While it is impossible to conclude from the study whether elevated [blood](#) sugar actually causes cancer, the researchers did adjust for body mass index (another risk factor) and found that the correlation still held up.

Dr. Greg Martin, science and [research](#) manager for the UK branch of the World Cancer Research Fund -- which sponsored the study -- said it is very easy to reduce blood sugar levels with a healthy diet high in fruits and vegetables, and by maintaining a healthy body weight.

"We know that up to 40 percent of cancer cases can be prevented by this type of healthy lifestyle, so this is just another reason for people to make those small changes that could make a big difference," Martin said.

Eating Walnuts may Prevent Breast Cancer

Friday, April 24, 2009 by: Sherry Baker, Health Sciences Editor

Elaine Hardman, Ph.D. at American Association for Cancer Research's 100th Annual Meeting 2009 in Denver,

Addressing the American Association for Cancer Research's 100th Annual Meeting 2009 in Denver, Elaine Hardman, Ph.D., offered this advice based on her cancer research: eat more walnuts. The study she presented at the meeting strongly suggests the nuts can reduce the risk of breast cancer -- a disease the National Cancer Institute says took about 50,000 lives last year in the U.S.

Dr. Hardman, associate professor of medicine at Marshall University School of Medicine, and her research team studied mice bred to develop breast tumors. The animals in one group received a daily diet that contained what the scientists estimated was about the human equivalent of two ounces of walnuts. A control group of mice were not fed walnuts.

"These laboratory mice typically have 100 percent tumor incidence at five months; walnut consumption delayed those tumors by at least three weeks," Dr. Hardman said in a press statement. However, the scientists found that when the mice ate walnuts regularly, there was a significant decrease in the incidence of breast tumors, the number of glands with a tumor and the size of tumors.

Molecular analysis determined omega-3 fatty acids found in walnuts contributed to the decrease in tumor incidence and size. But the researchers also found other parts of the walnut apparently had tumor-fighting abilities. Dr. Hardman pointed out that eating walnuts may provide the body with not only essential omega-3 fatty acids, but also antioxidants and phytosterols that reduce the risk of breast cancer.

"With dietary interventions you see multiple mechanisms when working with the whole food," Dr. Hardman said in a media statement. "It is clear that walnuts contribute to a healthy diet that can reduce breast cancer."

"Walnuts are better than cookies, French fries or potato chips when you need a snack," Dr. Hardman added. "We know that a healthy diet overall prevents all manner of chronic diseases."

In fact, there's a host of evidence accumulating that walnuts have multiple health benefits. For example, scientists at Barcelona's Hospital Clinico previously published research in the journal *Circulation* suggesting that eating walnuts can reduce damage to arteries and keep them flexible. And another study by Japanese researchers published recently in the *Journal of Agriculture and Food Chemistry* found that polyphenols in walnuts can prevent liver damage induced by toxic chemicals, including the cleaning solvent carbon tetrachloride.

Green Tea



RESEARCH INDICATED BENEFITS OF GREEN TEA:

- Antioxidant activity
- Increased energy expenditure
- Improved fat metabolism
- Reduced appetite
- Blood glucose management
- Neuroprotection
- Cardiovascular support
- Reduced risk of development of various cancers and metastasis
- Supports chemotherapy
- Reduction of inflammation
- Supports detoxification
- Antiviral/antibacterial
- Testosterone metabolism

and it's active constituent EGCG

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GREEN TEA -- AN IMPRESSIVE ARRAY OF BENEFITS

by Cristiana Paul, M.S.

Consumption of green tea has been documented since 2700 BC, and many epidemiological and interventional studies have shown either a strong correlation or a cause-effect relationship with many beneficial health effects of drinking 3-10 cups of tea per day.

In addition, many intervention studies have been performed on various extracts of green tea in an attempt to identify the mechanism of action of the individual components, especially the polyphenols.

EGCG (EpiGallo-Catechin-3-Gallate) is one of the more extensively studied green tea polyphenols, as it was believed and proven to account for many of the benefits observed from dry green tea or green tea extract consumption.

An average cup of green tea is typically made from 5 g dry green tea leaves which provide about 240-320 mg polyphenols¹⁹, and among these, EGCG constitutes about 200 mg.¹² It peaks in the plasma 2 hours after consumption and levels return to baseline after 24 hrs.

By isolating a single compound for interventions, studies have been able to elucidate the mechanisms of action behind specific physiological effects, although for supplementation/consumption purposes, it is still advisable to consume the tea or tea extracts that contain a wide array of naturally occurring substances.

In general, the overall effect of naturally occurring mixtures of substances tend to exhibit a greater effect than the sum of the individual components, often due to synergy. For quality and effectiveness, standardized extracts are advisable, as they guarantee a potent amount of the desirable active component with research proven benefits, as is the case with EGCG.

Antioxidant Activity

Consumption of green tea was shown to increase antioxidant activity in the blood.¹⁹

Increased Energy Expenditure¹

Administration of a green tea extract containing 375 mg catechins (270 mg EGCG) and 150 mg of caffeine three times per day, to human sedentary subjects, has increased the 24-hr EE (Energy Expenditure) by 4% which can translate into an average of an extra 100-150 calories burned per day. This was thought to be due to the increase in the post meal thermogenesis component of the EE by approximately 40%. Given that the subjects were sedentary, it is conceivable that the difference could have been more substantial with additional exercise induced thermogenesis. More studies on this are needed. The effect was clearly proven to be due to more than that of the caffeine content alone. The mechanism of action of green tea polyphenols is believed to be the inhibition of the COMT enzyme, which degrades NE (norepinephrine), thus prolonging its lipolytic effect. Tyrosine supplementation may be helpful in supporting the optimal production of norepinephrine, especially during stressful states.

Improved Fat Metabolism¹

In the same study mentioned above, the percentage of calories derived from fat burned for the 24-hr EE, was 41% in the green tea group versus 31% in the control group, while following the same diet and sedentary activity pattern. This showed a metabolic shift from burning carbohydrates to burning fat, since the percentage of calories derived from carbohydrates was 42% in the green tea group versus 55% in the control. Another animal study showed that green tea polyphenols inhibit pancreatic lipase, thus reducing triglycerides and cholesterol absorption and preventing weight gain.⁶

Appetite Modulation

In animal models, EGCG was shown to cause a reduction in food intake.⁵

Blood Glucose Management

Green tea components were shown to influence various metabolic pathways related to the blood glucose control in animal models:

- EGCG inhibits intestinal glucose uptake performed by sodium dependent glucose transporter.⁷
- Green tea supplementation ameliorates insulin resistance and increases glucose transporter IV content in a fructose-fed rat model.⁸
- EGCG reduces hepatic glucose production.⁹
- EGCG suppresses inflammatory damage on pancreatic beta-cell, characteristic of Type I diabetes.¹⁰

Neuroprotection

Green tea exerts protective effects on the brain due to its powerful antioxidant activity, for example during ischemic brain reperfusion injury.¹¹ It also seems to be a great candidate for stalling neurodegeneration through additional newly discovered mechanisms.¹²

Cardiovascular Support

Green tea consumption was shown to protect LDL cholesterol from oxidation, cause a small decrease in LDL levels and reduce platelet aggregation.¹⁶ With regards to blood pressure, it should be used with caution: a human study showed no significant ambulatory average increases in BP for regular tea consumers of 5 cups per day (around 2000mg polyphenols), although there was a mild elevation by 5mmHg/1mmHg 60 minutes after consumption.¹⁸

Reduced Risk of Cancer Development and Metastasis

Through protection against mutagenic substances (such as: smoking, UV light, dietary carcinogens), enhanced detoxification, reduced cell proliferation (by inhibiting IGF-1 pathway and PGE2 formation) and angiogenesis while increasing apoptosis in cancer cells only. In animal models, it was shown to increase the effectiveness of chemotherapy. In animal and human epidemiological studies, the following types of cancers showed reduced incidence and severity in association with green tea consumption: lung, stomach, colon, pancreas, liver, breast, prostate, skin.^{13,14}

Skin Aging & Skin Cancer Protection

"These data suggest that GTP (green tea polyphenols) as a dietary supplement could be useful to attenuate solar UVB light-induced premature skin aging."²²

Reduction of Inflammation

Green tea polyphenols inhibit pathways related to the production of inflammatory mediators COX2 and LOX enzymes and exert anti-histamine action.^{16, 21}

Antibacterial and Antiviral Action¹³

EGCG was shown to be effective in conjunction with antibiotic treatment for H. Pylori and against other antibiotic resistant bacteria.²³

Testosterone Metabolism

Testosterone is converted by 5-AR (5-alpha reductase) to DHT (Dihydrotestosterone) in various cells in the body, such as epidermal and prostate cells. DHT is thought to contribute to the development of male pattern baldness, acne, hirsutism (excessive facial/body hair in females), as well as prostate enlargement and cancer.

Some popular pharmacological agents used for hair loss inhibit only 5-AR Type 2, expressed in Prostate cells, with no effect on epidermal cells, which express 5-AR type 1. Green tea polyphenols inhibit 5-AR type 1, which makes green tea a good complement to these hair loss formulas and a good candidate for reducing the occurrence and reoccurrence of male pattern baldness, acne and hirsutism.²¹

Supports Detoxification

Green tea polyphenols enhance the glucuronidation detoxification pathways.

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How to make fermented foods

By Dr. Mercola

Caroline Barringer is a Nutritional Therapy Practitioner (NTP), and an expert in the preparation of the foods prescribed in Dr. Natasha Campbell-McBride's Gut and Psychology Syndrome ([GAPS](#)) Nutritional Program.

I first met Caroline at the November 2011 Weston Price Wise Traditions event, where I had the opportunity to enjoy some amazing fermented vegetables that her company had prepared.

I immediately started incorporating them into my own diet, and after about six weeks, I was pleasantly surprised to discover that this minor change had dramatically decreased plaque formation on my teeth, which has been a chronic problem for me.

Caroline has been involved with nutrition for about 20 years, and is now one of Dr. McBride's chief training partners, helping people understand the food preparation process, which relies heavily on fermented and traditionally-prepared whole foods.

Caroline's journey began when her health suffered a blow.

"First and foremost, I'm a professional singer and voice-over artist. In my younger years, when I first moved to New York (I'm originally from Florida), I had a rigorous performance schedule, and this schedule really took a toll on my health," she says.

"I noticed severe energy issues and chronic fatigue, acne, and a lot of reflux, a lot of digestive issues. So, I was searching for food to be my medicine.

I was a vegetarian for a while, so I first started out with Ann Wigmore's Living Foods Lifestyle. And of course, she's mostly vegan, but she's into the whole enzyme-rich foods, the probiotic-rich foods. And that was really pivotal for me, even though I was still a vegetarian and I did not realize the importance of animal fats and animal products in my diet. It was the beginning of the journey to health for me."

The Phenomenal Health Benefits of Fermented Vegetables

Cultured or fermented foods have a very long history in virtually all native diets, and have always been highly prized for their health benefits.

The culturing process produces beneficial microbes that are extremely important for human health as they help balance your intestinal flora, thereby boosting overall immunity. Moreover, your gut literally serves as your second brain, and even produces more of the neurotransmitter serotonin—known to have a beneficial influence on your mood—than your brain does, so maintaining a healthy gut will benefit your mind as well as your body.

Fermented foods are also some of the best chelators and detox agents available, meaning they can help rid your body of a wide variety of toxins, including heavy metals. This is part of what makes Dr. McBride's GAPS Nutritional Protocol so effective. It effectively restores your own detoxification system, and the fermented/cultured foods are instrumental in this self-healing process. And you don't need to consume large amounts either.

Caroline recommends eating about a quarter to half a cup (2 to 4 oz) of fermented vegetables or other cultured food, such as raw yoghurt, with one to three meals per day. Bear in mind that since cultured foods are very efficient detoxifiers, you may experience detox symptoms, or a "healing crisis," if you introduce too many at once. Caroline recommends beginning with very small servings and working your way up to the quarter- to half cup serving size. This way your intestinal microbiota has the chance to adjust.

"If they introduce too much, too fast, they will experience some die-off symptoms that can be uncomfortable and confusing. This is where we lose people. The innate intelligence of their bodies tells them to eat more cultured foods because they're in such a state of dysbiosis. So, they go to town and eat a whole jar of veggies. Then they go into a healing crisis and they are afraid to try cultured foods again," Caroline warns.

"... Start slow, and that way you won't have a headache or you won't have that outbreak... you will start to see yourself eliminating more naturally, and the proper stool will form, the shape will change, and it will be all be beneficial to you. Let your innate intelligence guide you, and if you see something or feel something that's not so right, don't dismiss the cultured foods and say, "Oh, that was bad for me, it caused a reaction." That's not what your body's telling you. Your body's telling you, "Slow down."

There are Many Varieties of Cultured Foods

Ideally, you'll want to include a variety of cultured foods and beverages in your diet, as each food will inoculate your gut with a variety of different microorganisms. Fermented foods you can easily make at home include:

- Cultured vegetables (including pureed baby foods)
- Chutneys
- Condiments, such as salsa and mayonnaise
- Cultured dairy, such as yoghurt, kefir, and sour cream
- Fish, such as mackerel and Swedish gravlax

In this interview, Caroline discusses the process of fermenting your own vegetables in some detail, so for more information, please listen to the interview in its entirety, or read through the transcript. According to her, most people are very intimidated, if not downright frightened that the culturing process might lead to some horrific pathogenic infection... While understandable,

this fear is undeserved. Caroline addresses this and other concerns in her article "Taking the Mystery out of Culturing Your Own Superfoods."¹ Clearly, educating yourself about the process will help alleviate concerns about eating fermented foods, which are very much "alive."

*"If they could only grasp the important concept that it's **NOT** the microbe; rather, it is the terrain (immune system) we should be worried about!"* she says.

How to Culture Your Own Vegetables

While you can do wild fermentation, which is allowing whatever is on the vegetable or fruit that you're culturing to just naturally take hold and culture the food, this method is very time consuming. Inoculating the food using a so-called starter culture speeds up the fermentation process.

Although you *can* use a crock pot, Caroline recommends culturing your veggies *directly in the glass Mason jars*, which eliminates the need for a crock pot and eliminates a transfer step in the process. This also allows you to make smaller batches, and it eliminates the presence of wild yeasts which can occur when using a crock. These yeasts tend to give the food a cheesy sort of flavor, which many find unpalatable.

Here's a quick summary of Caroline's recipe for how to make your own fermented veggies:

1. Shred and cut your chosen veggies
2. Juice some celery. This is used as the brine, as it contains natural sodium and keeps the vegetables anaerobic. This eliminates the need for sea salt, which prevents growth of pathogenic bacteria
3. Pack the veggies and celery juice along with the inoculants (starter culture, such as kefir grains, whey, or commercial starter powder like our [Complete Probiotics](#), all of which can be used for vegetables) into a 32 ounce wide-mouthed canning jar. A kraut pounder tool can be helpful to pack the jar and eliminate any air pockets. We hope to have our new starter culture which is optimized with strains of bacteria that will make high doses of vitamin K2 sometime in early 2013 assuming our testing goes well.
4. Top with a cabbage leaf, tucking it down the sides. Make sure the veggies are completely covered with celery juice and that the juice is all the way to the top of the jar to eliminate trapped air
5. Seal the jar store in a warm, slightly moist place for 24 to 96 hours, depending on the food being cultured. Ideal temperature range is 68-75 degrees Fahrenheit; 85 degrees max. Remember, heat kills the microbes!
6. When done, store in the refrigerator to slow down the fermentation process

Here are a few of Caroline's suggestion for how to store the jars for optimal fermentation. (Remember, they don't require a heated environment and only need to be kept around 72 degrees):

"Simply put the jars into a [portable] cooler and place the cooler OFF the floor (the floor is usually too cold due to heat rising away from it). Wrap the jars inside the cooler in an old towel and place an additional jar of HOT water into the cooler to make the environment warm. You can replace the hot water jar when you "think" about it - no need to obsess.

You can also place the jars in a casserole dish or baking dish and wrap them in a towel and place them in your oven with the oven heat OFF of course, but switch the oven light on. The heat emitting from the appliance bulb will keep the veggies warm.

Another option is to place as many jars as possible into a dehydrator and set it to the lowest temperature setting, but most dehydrators only accommodate a couple of jars max. It's best to prepare many jars at one time due to the given fact that making veggies is a labor intensive process. I like the cooler or oven incubation processes best. They work well every time."

Last but not least, resist the temptation to eat out of the jar! This can introduce organisms from your mouth into the jar. Instead, always use a clean spoon to take out what you're going to eat, then, making sure the remaining veggies are covered with the brine solution, recap the jar.

One Dozen Tips and Tricks for Making Delicious Cultured Vegetables

Due to my own interest, Caroline has shared a lot of information with me. Here are a dozen more of her tips and tricks that she didn't share during the interview:

1. Cabbage should comprise at least 80 percent of your vegetable blend. Carrots, sweet potatoes, beets, turnips and other hard root veggies can also serve as a great base for your cultured veggies, but they're not as economical.
2. Five to six medium-sized heads of cabbage will yield about 10-14 quart-size (32 oz) jars of fermented veggies.
3. You can use red or green cabbage, but make sure they're hard and heavy, with densely packed leaves. The lighter, leafier varieties will tend to turn into mush that doesn't ferment well.
4. Add in other vegetables to suit your taste, such as: red, yellow or orange bell pepper, butter nut squash, dill, parsley, kale, collards and red or golden beets. Beware: use bell peppers sparingly as they have a very strong presence. One *small* pepper for 12 to 14 jars is plenty.
5. Always use ORGANIC vegetables!

6. Peel your vegetables as the skins can add a bitter flavor.
7. When adding aromatics, such as onion, garlic and ginger, remember that fermenting increases the flavor multiple-fold, so a little goes a long way. Don't overdo it! A few medium-size cloves is enough to infuse a dozen jars or more with a mild garlic flavor.
8. Onion tends to overpower, no matter how little is used, so Caroline doesn't use it in any of her blends.
9. When adding herbs, only use fresh organic herbs, in small amounts. Tasty additions include: basil, sage, rosemary, thyme and oregano.
10. Add sea vegetables or seaweed to increase the mineral, vitamin and fiber content. You can add pieces of whole dulse, or use flakes. Wakame and sea palm, which do not have any kind of fishy flavor, need to be presoaked and diced into desired size. Arame and hijaki do have a fishy flavor.
11. Use two packets of starter culture for a 12-14 jar batch during summer season. In the winter, you'll need three packets.
12. During summer, veggies are typically done in three to four days. In the winter, they may need up to seven days. Just open up the jar and have a taste. Once you're happy with the flavor and consistency, move the jars into the fridge.

Tools of the Trade

Having the right tools can make the process easier. You don't need much, but canning jars, and a food processor to slice and dice large amounts of vegetables are recommended.

Canning jars can be found at your local hardware store and at some grocery stores as well. Amazon.com and other online sources also carry them. The 32 oz jars work really well, but you can find both smaller and larger, depending on your needs. Do get the wide-mouthed version, as they are *much* easier to work with. It allows you to get your hand down into the jar, and it's very important to pack the jar firmly with vegetables to eliminate any air pockets.

Caroline explains:

"You want to squeeze all the oxygen out, and you want your cultured veggies or whatever you're culturing to be anaerobic, meaning oxygen-free. Underneath water is the best way to do that, or underneath the liquid in the jar. And that wide-mouthed allows you to keep pressing down... A kraut pounder [can be helpful]. It looks like a tiny baseball bat. You can go to krautpounder.com, I believe, and you can buy a little kraut pounder, and you just use that to press down to get all the oxygen out. That way, when you seal up this jar, you have this perfect, anaerobic environment within that vessel for it to culture."

Caroline recommends a couple of models of food processors, emphasizing quality and power for optimal performance:

- **Cuisinart Home Kitchen Models, Elite series:** This is for general home use and usually [available on Amazon.com](#). Very reliable, powerful and it has a large 14-cup capacity so you don't have to keep taking it apart to dump out the processed contents.
- **Waring Cuisinart Commercial Food Processor with feed chute: Heavy-duty and high quality, this food processor is** worth the investment (\$599 and up) if you plan to make veggies often and in larger batches. This one is NOT available on Amazon.com. You will need to purchase online from a [restaurant supply store](#).

Another tip includes using the shredding disc rather than the "S" shaped blade. Make sure the food processor model you buy comes with a shredding disc, as some don't. In worst case, purchase it separately. According to Caroline, *"the shredding blade makes a "slaw/traditional kraut-like" texture to the veggies. The "S" blade finely minces veggies into a more pulp-like, crushed consistency. This can be too soupy and during the culturing process, become more like a mushy salsa. Definitely SHRED your veggies for the best results - unless you like the crushed version."*

Additional Resources

In addition to the wealth of information shared in the interview above, I highly recommend getting the book [Gut and Psychology Syndrome](#), which provides all the necessary details for the GAPS protocol. We were finally able to convince Dr. Campbell-McBride to print it in the U.S., so I now offer it for sale in my store. It saves you a few dollars, compared to ordering it from the U.K..

www.Immunitrition.com is another helpful resource where you can learn more about cultured and fermented foods. If you're so inclined, you can also find information about how to become a Certified Healing Foods Specialist here.

Additionally, if for whatever reason you just don't have the time, effort, energy, ambition, motivation, or discipline to ferment your own foods, but you understand and appreciate the value of them, Caroline has a company that sells them. I used hers for a month before I started making my own. So, if you just want to put your toe in the water and see if you like them, you can order a jar or two and try them out.

You can find her products on www.CulturedVegetables.net or www.CulturedNutrition.com.

I feel very strongly that if we can catalyze a movement to get more people to implement this ancient dietary wisdom to their normal eating patterns, then we'll start seeing a radical change in health.

Is it Turmeric or Curcumin

Is It Turmeric or Curcumin

By Tammera J. Karr, PhD., BCIH, CNC

Link: <http://yourwholenutrition.com/blog/uncategorized/is-it-turmeric-or-curcumin/>



Turmeric (*Curcuma longa*) or Indian saffron has been used for centuries in India and Southeast Asia, where by chance the prevalence of Alzheimer's and cancers are a fraction of the westernized worlds. A perennial plant native to India cultivated in China, Bengal and Java for its rhizomes, and several other species of the curcuma genus grow wild in the forests of Southern Asia including India, Indonesia, Indochina, nearby Asian countries, and some Pacific Islands including Hawaii. All of these areas have traditional culinary and medicinal uses going back to pre-history. Turmeric needs warm tropical temperatures and plenty of rainfall to thrive, so that leaves out Oregon.

The herb Turmeric is a mild aromatic stimulant used in the manufacture of curry powders and mustards, in the same family as ginger, cardamom and zedoary. The curcumin in turmeric has recently been shown effective in the fight against breast cancer, osteoporosis, gluten sensitivity, Alzheimer's, skin health and arthritis.

Without question, the scientific literature supports that this widely used spice possesses potent anti-inflammatory and antioxidant properties. However, curcumin lacks the ability to be readily absorbed from dietary sources and does not produce adequate, sustained blood levels for optimal impact on its own. Add black pepper, or dried ginger to help activate turmeric or choose supplements that include it. Commonly in the world of health science, just because findings look good on paper, it doesn't mean it works on the cellular level where the health-promoting mission is accomplished, so I encourage you to use turmeric in cooking, salad dressings, soups, rice dishes or sauces, as this is one of the most traditional ways of utilizing this herb. In the book "the Blue Zone" a longitudinal study of factors common in long lived populations; the cultures with the greatest number of Centegenarians have a variety of ways turmeric compounds are made available in their diet, one is the predigesting and redistribution through goats and goat milk. I can hear your groans and gagging noises.

The Science

In a recent study it was discovered that curcumin's natural anti-inflammatory and antioxidant properties may reduce both oxidative damage and pathological changes in the brain that frequently leads to brain abnormalities. More specifically, curcumin has been shown to reduce the incidence of harmful plaques by slowing deposition of beta-amyloid precursor protein (APP)

within the brain, which is hypothesized to play a pivotal role in the progression of Alzheimer's disease.

Curcumin produces beneficial effects on bone structure. Bone health and strength is a significant concern to people in the U.S., as it is estimated that 34 million have low bone density and are at risk of further problems. We know that millions of Americans are being overdosed on calcium for the supposed protection of their bones. Current research in the area of Nutrigenomics supports the idea that our bones require a long list of nutrients to maintain their flexibility and strength. Sulphanes contained in turmeric are some of those vital nutrients.

The researchers concluded “curcumin can prevent further deterioration of the bone structure and produce beneficial changes in bone turnover. (if you are not taking a prescription bone medication that prevents this.) The change of inflammatory cytokines, including TNF-alpha and IL-6, may play an important role in the mechanisms of action of curcumin, but the detailed mechanism remains unknown.”

A recent study evaluated curcumin, on allergic airway inflammation and hyper-responsiveness. According to the American Academy of Allergy, Asthma and Immunology, 34.1 million Americans have been diagnosed with asthma during their lifetime, and the academy estimates that the number of Americans with asthma will increase by over 100 million by 2025. The study authors stated that in mice, “Curcumin attenuates the development of allergic airway inflammation and hyper-responsiveness, possibly through inhibition of NF-kappaB activation in the asthmatic lung tissue. Our results indicate that curcumin may attenuate development of asthma by inhibition of NF-kappaB activation.”

Common Uses

Abrasions/Cuts * Aches & Pains * Cancer Prevention * Candida/Yeast Infection * Cholesterol Control * Concentration/Memory/Focus * Culinary * Eye care – Vision * General Health Tonics * Gout * Heart Tonics/Cordials * Lupus * Osteoarthritis * Rheumatoid Arthritis * Stop Smoking

Properties

Anti-inflammatory* Analgesic* Antibacterial* Cardiac tonic Cordial* Hepatic* COX-2 Inhibitor* Antifungal* Aromatic*

Parts Used: rhizome

Constituents: volatile oils (terpene, curcumen), starch, albumen (30%), coloring due chiefly to curcumin, potassium, vitamin c

So add a little spice to your life and health to your brain, bones and lungs.

New study: mango prevents and halts growth of colon and breast cancer cells

Thursday, January 21, 2010 by: S. L. Baker, features writer

(NaturalNews) Take a bite of a juicy, sweet mango and you are experiencing a delicious taste enjoyed by countless people from ancient times until today. According to the Orlando-based National Mango Board (NMB), a mango industry-sponsored research, promotion and consumer information program, mangos are known to be rich in vitamins C and A, as well as fiber. However, because little has been documented about any specific health benefits of eating the fruit, NMB has commissioned a variety of scientific studies to investigate these issues.

So far, this [research](#) initiative has turned up an unexpected and groundbreaking discovery: ***in laboratory [experiments](#) in Texas A&M University's AgriLife Research department [mango fruit prevented or stopped \[cancer\]\(#\) growth in certain breast and colon cell lines.](#)***

Food scientists Dr. Susanne Talcott and her co-researcher husband, Dr. Steve Talcott, used the five varieties of mangos (Kent, Francine, Ataulfo, Tommy/Atkins and Haden) most common in the US and specifically tested polyphenol extracts from the fruit on colon, breast, lung, leukemia and prostate [cancer cells](#). Polyphenols are [natural](#) substances in plants that are antioxidants with the potential to protect the body from disease. The Talcotts zeroed in on evaluating polyphenolic compounds in mangos known as *gallotannins*, a class of natural bioactive compounds believed to help prevent or block the growth of cancer cells.

The results? The Talcotts' experiments showed that the mango extract demonstrated some cancer fighting ability when tested on lung, [leukemia](#) and prostate cancer cells. But when tested on the most common breast and colon cancers, mango compounds were found to have even stronger anticancer abilities. In fact, the mango extract caused the breast and [colon cancer](#) cells to undergo *apoptosis* -- programmed cell death.

"Additionally, we found that when we tested normal colon cells side by side with the colon cancer cells, the mango polyphenolics did not harm the normal cells," Dr. Susanne Talcott said in a statement to the press. "That is a general observation for any natural agent, that they target cancer cells and leave the healthy cells alone, in reasonable concentrations at least."

The researchers documented that the cancer cell cycle (the division process cells go through) was interrupted by mango extract. This is crucial information, Suzanne Talcott said in a press statement, because it could explain a possible mechanism for how the cancer cells are prevented or stopped by phytochemicals in mangos. "For cells that may be on the verge of mutating or being damaged, mango polyphenolics prevent this kind of damage," she explained.

The scientists have conducted additional research on the colon cancer cell lines because mangos contain small molecules that are readily absorbed in the colon as well as larger

molecules that are not absorbed and remain present longer in the colon. Those facts could potentially make eating mangos a potent way to help prevent colon cancer. In fact, the Talcotts are hoping to next conduct a small clinical trial to see if mangos can prevent colon cancer in people at high risk for a malignancy because they have increased inflammation in their intestines.

For more information

<http://agnews.tamu.edu/showstory.ph...>

<http://www.mango.org/en/nutrition.aspx>

More evidence brews about green tea's benefits: it may prevent oral cancer

Thursday, November 19, 2009 by: S. L. Baker, features writer

(NaturalNews) According to the American Cancer Society, approximately 35,720 new cases of oral and/or pharynx cancer will strike Americans this year. And, unfortunately, less than 50% of these people are expected to live for five years or more after diagnosis. However, scientists may have found a natural substance that can prevent these types of malignancies -- green tea.

Green tea is known to be rich in polyphenols, a type of phytonutrient shown to inhibit the development of cancer in many laboratory studies. The new [research](#), conducted by scientists at the University of Texas M. D. Anderson Cancer Center and just published in the journal *Cancer Prevention Research*, is the first to test [green tea](#) as a cancer preventing agent in people who are at especially high risk for [oral cancer](#) because they have *leukoplakia*. A pre-malignant condition, oral *leukoplakia* is an area of whitish abnormal tissue that develops in the mouth or throat.

For the study, 41 oral *leukoplakia* [patients](#) at M. D. Anderson Cancer Center were divided into groups that received either an inactive [placebo](#) or a green tea extract taken orally for three months at low, medium, or high doses. In a statement to the press, the research team noted that the green tea extract was well tolerated even in the patients given the high doses and it produced no significant toxicity.

A baseline biopsy was taken when the study started and repeated as the study was underway. When the scientists checked the progression of the pre-malignant oral lesions, they found that almost 60% of patients taking the highest doses of green tea extract displayed a positive clinical response, compared with only 18.2% of those who were given the placebo. There was improved histology (the appearance of abnormal tissues when examined microscopically) and also a beneficial trend in biomarkers which are believed to be indicators of future [cancer](#) development.

"Collecting oral tissue biopsies was essential in that it allowed us to learn that not only did the green tea extract appear to have benefit for some patients, but we pointed to anti-angiogenic effects as a potential mechanism of action," Anne Tsao, M.D., assistant professor in M. D. Anderson's Department of Thoracic, Head and Neck Medical Oncology, and the study's first author, said in a statement to the media. "While preliminary because our patient population was so small, this gives us direction for further study."

The research participants were followed for 27.5 months and at the time the study concluded, 15 had developed oral cancer. Overall, there was no difference in oral cancer development between those who took green tea and those who did not. So what was the benefit of taking the green tea extract? ***It took***

far longer for cancer to develop in the high [risk](#) patients who took green tea extract, strongly suggesting that the green tea was slowing the development of malignant cells. And that clearly raises the possibility that green tea extracts started earlier or used longer might have a stronger impact and prevent oral cancer.

"While still very early, and not definitive proof that green tea is an effective preventive agent, these results certainly encourage more study for patients at highest risk for oral cancer," Vassiliki Papadimitrakopoulou, M.D., professor in M. D. Anderson's Department of Thoracic, Head and Neck Medical Oncology, and the study's senior author, said in the press statement.

As [NaturalNews](#) has previously reported, recent research has also suggested green tea may protect against [blood](#) and liver cancers (http://www.naturalnews.com/027379_g...). Scientists are finding [evidence](#) green tea could prevent prostate cancer, too (http://www.naturalnews.com/026872_P...).

Pomegranates reduce the risk of breast cancer

Thursday, May 20, 2010 by: David Gutierrez, staff writer

(NaturalNews) Regular consumption of pomegranate may help prevent breast cancer, according to a study conducted by researchers from the City of Hope and published in the journal *Cancer Prevention Research*.

Researchers tested 10 different naturally occurring pomegranate compounds, all of them in the ellagitannin family of chemicals. They found that some of the ellagitannins significantly reduced the activity of the enzyme aromatase in the laboratory.

In the body, aromatase transforms the hormone androgen into the hormone [estrogen](#). Because 75 percent of breast [tumors](#) contain estrogen receptors and use the hormone to fuel their growth, [aromatase inhibitors](#) are a popular form of [treatment](#) for slowing the growth of breast tumors in post-menopausal women.

Pharmaceutical aromatase inhibitors include the AstraZeneca drug Arimidex, the Pfizer drug Aromasin and the Novartis drug Femara.

"We were surprised by our [findings](#)," researcher Shiu-an Chen said. "We previously found other fruits, such as [grapes](#), to be capable of the inhibition of aromatase. But phytochemicals in [pomegranates](#) and in grapes are different."

Of the 10 [chemicals](#) tested, urolithin B was the most effective at aromatase inhibition. Researchers offered two caveats to their findings, however. First of all, the [body](#) does not absorb ellagitannins into the blood very effectively from the digestive tract. Second of all, the researchers tested very high doses of the chemicals, much higher than those found in [pomegranate](#). This suggests that an actual pomegranate-based [cancer](#) treatment may still be far in the future.

"We do not recommend people start taking this as a replacement for the [aromatase inhibitors]," Chen said. "[Pomegranate compounds] are not as potent as the real drugs so we think that the interest probably is more on the prevention end rather than in a therapeutic purpose."

Pomegranate juice has been shown to be rich in a wide variety of antioxidants that are believed to reduce the [risk](#) of not only cancers, but also other chronic conditions such as Alzheimer's and cardiovascular disease.

Sources for this story include: www.reuters.com; www.webmd.com.

Pomegranates may prevent estrogen-driven breast cancer

Friday, January 15, 2010 by: S. L. Baker, features writer

For more information:

<http://www.aacr.org/home/public--me...>

<http://www.mayoclinic.com/health/br..>

(NaturalNews) Many breast cancers are estrogen-dependent. So a class of drugs called aromatase inhibitors (AI) that block the synthesis of estrogen are used by mainstream medical doctors to attempt to slow the growth of estrogen sensitive breast tumors. Unfortunately, as the Mayo Clinic web site points out, AI drugs -- which include anastrozole (Arimidex), letrozole (Femara) and exemestane (Aromasin) -- come loaded with side effects including hot flashes, severe joint pain, muscle aches, headache, fatigue, bone fractures and a potential [risk](#) of heart disease.

But now comes good news: there appears to be a [natural](#) alternative to AIs. Researchers say they've found a substance that could prevent the development of hormone-dependent [breast cancer](#) and halt the growth of estrogen-driven tumors -- [pomegranate](#) fruit.

Pomegranates contain [phytochemicals](#) known as *ellagitannins* that work much like [aromatase inhibitors](#), according to results of a study just published in the January issue of *Cancer Prevention Research*, a journal of the American Association for Cancer Research. And there's little reason to think any [cancer](#) treatment derived from [pomegranates](#) would have harmful side effects because the fruit has long been safely consumed as a food.

Shiuan Chen, Ph.D., director of the Division of Tumor Cell Biology and co-leader of the Breast Cancer Research Program at City of Hope in Duarte, California, worked with Lynn Adams, Ph.D., a [research](#) fellow at Beckman Research Institute of City of Hope, and other scientists to investigate whether phytochemicals in pomegranates can suppress aromatase and thereby inhibit cancer growth. They screened and analyzed 10 ellagitannin-derived compounds in pomegranates. The [results](#)? The research team discovered these natural phytochemicals have the potential to prevent estrogen-dependent breast [cancers](#). One particular substance found in pomegranates dubbed *Urolithin B* significantly inhibited the growth of cultured breast [cancer cells](#) in the lab.

"Phytochemicals suppress [estrogen](#) production and that prevents the proliferation of breast cancer cells and the growth of estrogen-responsive [tumors](#)," said Dr. Chen, the principal investigator, in a statement to the media.

Gary Stoner, Ph.D., professor in the Department of Internal Medicine at Ohio State University, commented in a statement to the media that additional studies are needed in animals and humans to

confirm the ability of *Urolithin B* to stop hormone-dependent breast cancer. Dr. Stoner, who was not part of the study research team, also recommended additional studies to test pomegranate juice for its effect on estrogen levels, menopausal symptoms and breast density (dense breast tissue is a risk for breast cancer) and to see if it is a cancer preventive agent.

Until then, Stoner said people "might consider consuming more pomegranates to protect against cancer development in the breast and perhaps in other tissues and organs."

Researchers discover papaya is effective against breast, pancreas and other cancers

Submitted by [vermont](#) on March 31, 2010 – 10:14 am [No Comment](#)
[6Share](#)



(NaturalNews) Originally native to southern Mexico and now cultivated in many tropical countries (including Brazil, India, Indonesia, South Africa, Vietnam and Sri Lanka), the papaya plant has been touted by traditional healers for centuries as a source of powerful medicine. Not only is papaya fruit delicious and loaded with vitamins and phytochemicals, but other parts of the plant have been used historically to treat health problems, too. Now University of Florida (UF) researcher Dr. Nam Dang and his colleagues in Japan have announced new evidence that the papaya fights cancer cells. In fact, they discovered that an extract made from dried papaya leaves produced a dramatic anti-cancer effect against a broad range of tumors grown in the laboratory — including cancers of the cervix, breast, liver, lung and pancreas.

The study, recently published in the *Journal of Ethnopharmacology*, not only showed that papaya has a direct anti-tumor effect on a variety of malignancies, but it also documented for the first time that papaya leaf extract increases the production of key signaling molecules called Th1-type cytokines. That's important because this regulation of the immune system raises the strong possibility that the use of papaya could help the body's own immune system to overcome cancers. In addition, it suggests papaya could be helpful in treating or preventing other health problems such as inflammation and autoimmune diseases.

The research team found that papaya's anti-cancer effects were strongest when cancer cells received larger doses of the papaya leaf extract — yet, unlike many mainstream cancer therapies, there were no toxic effects at all on normal cells. In a statement to the media, Dr. Dang pointed out that the ability of papaya extract to stop cancer without toxicity is consistent with reports from indigenous populations in Australia and in his native Vietnam.

“Based on what I have seen and heard in a clinical setting, nobody who takes this extract experiences demonstrable toxicity; it seems like you could take it for a long time — as long as it is effective,” stated Dr. Dang, who is a professor of medicine and the medical director of the UF Shands Cancer Center Clinical Trials Office.

In all, the UF scientists exposed 10 different types of cancer cell cultures to four strengths of papaya leaf extract. When they measured the effect of the extract after 24 hours, the papaya had slowed the growth of tumors in all the cultures.

What exactly does papaya do to halt malignancies? To find out, the researchers focused on a T-lymphoma cancer cell line. They discovered that at least one of the mechanisms that makes papaya extract a potent anti-cancer weapon is the natural compound's ability to cause malignant cells — but not normal ones — to die.

The researchers hope to follow up these experiments by eventually testing the papaya cancer treatment in animal and human studies. Up next for Dr. Dang and his colleagues: they've applied to patent a process to distill the papaya extract through the University of Tokyo and they are working to identify all the specific compounds in the papaya extract that are active against cancer cells. To this end, Dr. Dang has partnered with Hendrik Luesch, a UF Shands Cancer Center professor of medicinal chemistry who is an expert in the identification and use of natural products for medical purposes. Dr. Luesch recently discovered yet another natural cancer fighter — a coral reef compound that blocks cancer cell growth in cell lines.

For more information:

<http://www.ncbi.nlm.nih.gov/pubmed/...>

<http://www.healingfoodreference.com...>

http://www.naturalnews.com/026372_c...

http://www.naturalnews.com/028472_papaya_brst_cancer.html

Super Spice Secrets: Can This Miracle Spice Stop Cancer, Alzheimer's and Arthritis?

Posted By [Dr. Mercola](#) | February 17 2009 | 301,449 views

By Dr. Mercola

For more than 5,000 years, turmeric has been an important part of Eastern cultural traditions, including traditional Chinese medicine and Ayurveda. Valued for its medicinal properties and warm, peppery flavor, this yellow-orange spice has more recently earned a name for itself in Western medicine as well.

Turmeric comes from the root of the *Curcuma longa* plant, which is native to Indonesia and southern India, and is widely used as an ingredient in curry dishes and yellow mustard. As research into this powerful spice has increased, it has emerged as one of nature's most powerful potential healers.

Said Dr. David Frawley, founder and director of the American Institute for Vedic Studies in Santa Fe, New Mexico:

“If I had only one single herb to depend upon for all possible health and dietary needs, I would without much hesitation choose the Indian spice Turmeric. There is little it cannot do in the realm of healing and much that no other herb is able to accomplish.”

Turmeric has a broad spectrum of actions, mild but certain effects, and is beneficial for long term and daily usage. Though it is a common spice, few people, including herbalists know of its great value and are using it to the extent possible. It is an herb that one should get to know and live with.”

Turmeric's Beneficial Effects in a Nutshell

Strengthens and improves digestion

- Reduces gas and bloating
- Assists in the digestion of protein and with rice and bean dishes
- Improves your body's ability to digest fats
- Promotes proper metabolism, correcting both excesses and deficiencies
- Maintains and improves intestinal flora
- Improves elimination of wastes and toxins

Supports healthy liver function and detox

- Turmeric helps increase bile flow making it a liver cleanser that can rejuvenate your liver cells and recharge their capability to break down toxins
- Helps to prevent alcohol and other toxins from being converted into compounds that may be harmful to your liver
- Supports formation of healthy tissue

Purifies your blood

- Stimulates formation of new blood tissue
- Anti-inflammatory: Helps to reduce irritation to tissues characterized by pain, redness, swelling and heat

Contains curcuminoids that fight cancer, arthritis, and Alzheimer's

- Curcuminoids are potent phytonutrients (plant-based nutrients) that contain powerful antioxidant properties
- Counteract the damaging effects of free radicals in your body
- Relieve arthritis pain and stiffness, anti-inflammatory agent
- Anti-carcinogenic: "Curcumin has been shown to prevent a large of number of cancers in animal studies. Laboratory data indicate that curcumin can inhibit tumor initiation, promotion, invasion, angiogenesis and metastasis."[1]
- Supports treatment of Alzheimer's disease: "Because Alzheimer's disease is caused in part by amyloid-induced inflammation, curcumin has been shown to be effective against Alzheimer's. Clinical trials are in progress at UCLA with curcumin for Alzheimer's."[2]

Curcumin: Turmeric's Active Anti-Inflammatory "Ingredient"

Most notably turmeric is known for its potent anti-inflammatory properties, which come from curcumin -- the pigment that gives turmeric its yellow-orange color, and which is thought to be responsible for many of its medicinal effects. There are an estimated three to five grams of curcumin in 100 grams of turmeric.

Curcumin has been shown to influence more than 700 genes, and it can inhibit both the activity and the synthesis of cyclooxygenase-2 (COX2) and 5-lipoxygenase (5-LOX), as well as other enzymes that have been implicated in inflammation.[3]

Turmeric's Cancer-Fighting Properties

In India where turmeric is widely used, the prevalence of four common U.S. cancers -- colon, breast, prostate and lung -- is 10 times lower. In fact, prostate cancer, which is the most frequently diagnosed cancer in U.S. men, is rare in India and this is attributed, in part, to turmeric.

Numerous studies have looked into this potential cancer-fighting link, with promising results. For instance, curcumin has been found to:

- Inhibit the proliferation of tumor cells
- Inhibit the transformation of cells from normal to tumor
- Help your body destroy mutated cancer cells so they cannot spread throughout your body
- Decrease inflammation
- Enhance liver function
- Inhibit the synthesis of a protein thought to be instrumental in tumor formation
- Prevent the development of additional blood supply necessary for cancer cell growth

As for the results of research studies, a study in *Biochemical Pharmacology* found that curcumin can slow the spread of breast cancer cells to the lungs in mice.[4]

"Curcumin acts against transcription factors, which are like a master switch," said lead researcher, Bharat Aggarwal. *"Transcription factors regulate all the genes needed for tumors to form. When we turn them off, we shut down some genes that are involved in the growth and invasion of cancer cells."*

A second study in *Biochemical Pharmacology* also found that curcumin inhibits the activation of NF-kappaB, a regulatory molecule that signals genes to produce a slew of inflammatory molecules (including TNF, COX-2 and IL-6) that promote cancer cell growth.[5]

Turmeric's Essential Role for Your Liver

Your liver's primary role is to process and remove toxins carried in your bloodstream. When functioning at its peak, it can filter up to two liters of blood per minute and easily break apart toxic molecules to reduce their toxicity. Your liver is also a crucial part of vitamin, mineral, protein, fat, carbohydrate and hormonal metabolism.

However, poor diet, allergens, pollution and stress can cause your liver to become sluggish, and this can impair its vital functions. This is where turmeric can be a very useful part of your liver support system. Studies have shown that it:

- May increase important detoxification enzymes in your liver
- Induces the formation of a primary liver detoxification enzyme, glutathione S-transferase (GST) enzymes

Turmeric is also a natural cholagogue, a medicinal agent that promotes the discharge of bile from your system. Increased bile flow is important to help your liver detoxify and to help your body digest fats.

Turmeric for Your Heart, Brain and Overall Health

Turmeric inhibits free radical damage of fats, including cholesterol. When cholesterol is damaged in this way, or oxidized, it can then damage your blood vessels and lead to a heart attack or stroke. Therefore, research suggests that turmeric's ability to prevent the oxidation of cholesterol may be beneficial for your heart. It's also rich in vitamin B6, high intakes of which are associated with a reduced risk of heart disease.

Meanwhile, turmeric appears to be highly protective against neurodegenerative diseases. In fact, in India levels of neurological diseases such as Alzheimer's are very low, and studies have shown that curcumin can slow the progression of Alzheimer's in mice. The compound has also proven capable of blocking the progression of multiple sclerosis.

Further, Professor Moolky Nagabhushan from the Loyola University Medical Center, Chicago, IL, who has been studying turmeric for the last 20 years, believes that turmeric can protect against harmful environmental chemicals, and in so doing protect against childhood leukemia. The research showed that curcumin in turmeric can:[7]

- Inhibit the toxicity of polycyclic aromatic hydrocarbons (PAHs) (cancer-causing chemicals in the environment)
- Inhibit radiation-induced chromosome damage
- Prevent the formation of harmful heterocyclic amines and nitroso compounds, which may result in the body when eating certain processed foods, such as processed meat products
- Irreversibly inhibit the multiplication of leukemia cells in a cell culture

Turmeric's volatile oils also have external anti-bacterial action. As such, they may help prevent bacterial wound infections and accelerate wound healing. Johnson & Johnson even sells a curcumin-containing Band-Aid in India!

And the therapeutic potential of turmeric and curcumin do not end there. Evidence suggests the spice may also be beneficial for:

- Cystic fibrosis
- Type 2 diabetes
- Crohn's disease
- Psoriasis
- Rheumatoid arthritis

- Cataracts
- Gallstones
- Muscle regeneration
- Inflammatory bowel disease

Which Type of Turmeric is Best?

For use in cooking, choose a pure turmeric powder, rather than a curry powder. At least one study has found that curry powders tend to contain very little curcumin, compared to turmeric powder. Turmeric is also available in supplement form and for many this is a more convenient method to obtain these health benefits discussed above, especially if they are from a high-quality organic source and if one doesn't particularly enjoy the taste of curry.

On [my recent trip to India](#) I was able to find a company called Organic India that produces probably some of the best Indian herbs on the planet.

[1] [The University of Texas MD Anderson Cancer Center, Complementary/Integrative Medicine Education Resources, "Curcumin at M.D. Anderson" \(accessed January 22, 2009\)](#)

[2] [The University of Texas MD Anderson Cancer Center, Complementary/Integrative Medicine Education Resources, "Curcumin at M.D. Anderson" \(accessed January 22, 2009\)](#)

[3] [The University of Texas MD Anderson Cancer Center, Complementary/Integrative Medicine Education Resources, "Curcumin at M.D. Anderson" \(accessed January 22, 2009\)](#)

[4] [Biochemical Pharmacology, Volume 70, Issue 5, 1 September 2005, Pages 700-713](#)

[5] [The World's Healthiest Foods, Turmeric](#)

[6] [The World's Healthiest Foods, Turmeric](#)

[7] [The World's Healthiest Foods, Turmeric](#)

Source

[The World's Healthiest Foods: Turmeric](#)

Turmeric: Phytonutrient Protection for a Variety of Physiological Stresses

By Oliver Starr

Source: <http://www.cpmmedical.net/articles/turmeric-phytonutrient-protection-for-a-variety-of-physiological-stresses>

Many phytonutrient products are released to the public with not even one hundredth the research that has been conducted with turmeric. It is one of the longest used compounds in the Indian practice of Ayurvedic medicine, and for decades has been consistently demonstrated as efficacious for the treatment of a wide range of ailments (in a clinical setting). Most recently turmeric has been studied for its effects upon human diseases. Research has shown that turmeric extracts compare very favorably with a great number of pharmacologic agents for treatment in a number of areas including:

- Inflammation
- Cancer
- Cholesterol Reduction
- Antimutagenic Effects
- Powerful Antioxidant Activity
- Reduction in Serum Triglycerides

While it may seem surprising that a single substance can have so many diverse benefits, if we examine the components of turmeric we gain a better understanding of the way in which it affects the various processes associated with a number of disease states.

Curcuminoids In technical terms, the active constituents of turmeric also called *Curcuma longa* are known as curcuminoids. A yellow pigmented substance isolated from the rhizome (root) of *Curcuma longa*, it contains approximately 3% to 5% active curcuminoids. It is this group of compounds that are responsible for the biological action of turmeric. This active extract can be further subdivided into three distinct components: Curcumin, Demethoxy-curcumin and Bisdemethoxy curcumin. While each of these chemicals has independent antioxidant activity, research conducted by the Sabinsa Corporation has demonstrated that the most significant benefits are achieved with the intact, naturally occurring curcuminoid complex. Virtually all of the benefits derived from curcuminoids stem from their varied antioxidant activities. Curcumin extracts have been found to have the following antioxidant interactions:

- They scavenge or neutralize free radicals.
- They interact with the oxidative cascade and prevent its outcome.
- They quench singlet oxygen, thus making it less available for oxidative reactions.
- They are capable of inhibiting oxidative enzymes like cytochrome P-450.
- They chelate and thus disarm the oxidative properties of metals such as iron which can contribute to both oxidative damage and free radical formation.

Because curcuminoids act through both intervention and preventative means they are accordingly among the most potent of the known antioxidants. Although, a complete discussion of the benefits of turmeric extract (with standardized active curcuminoid content) is beyond the scope of this review, there are, nevertheless, several particular actions that deserve special mention.

Anti-inflammatory Action Perhaps turmeric's most well known and most obvious benefit is its anti-inflammatory action. In fact, turmeric has been found to equal, and in many cases exceed, the benefits associated with both cortisone and phenylbutazone treatment. This effect was found both in human and animal studies. Additionally, in clinical trials of persons suffering from rheumatoid arthritis, subjects treated with curcuminoids experienced a significant improvement. This effect was noted at a dosage of 1200 mg per day for five to six weeks.

Antioxidant Value No review of turmeric would be complete without making specific reference to its most significant benefit, that of an antioxidant. While you may be aware that numerous studies have confirmed turmeric's ability to quench both superoxide and peroxy radicals, what you may not know is that turmeric was found to be over 5 times more potent than alpha tocopherol (vitamin E) at quenching a wide range of free radicals. Since many researchers attribute much of the aging process to the incessant damage caused by free radicals and the subsequent decline in the body's ability to effectively regenerate damaged cells, turmeric certainly bears at least thorough consideration for inclusion into your daily supplement routine.

Antimutagenic Effects Curcumin extracts have also undergone considerable scrutiny for their antimutagenic effects. This is especially important in light of the fact that it is the progressive mutation of cells that ultimately results in the development of tumors. In laboratory studies, animals treated with turmeric who were challenged by known carcinogens excreted lower levels of mutagenic metabolites as well as carcinogens than comparably challenged control animals. This antimutagenic and anticancer effect has repercussions beyond mere prevention. Studies are currently underway that are comparing the efficacy of curcuminoid treatment and examining the potential of turmeric components as an adjunct to currently practiced cancer therapies.

Triglyceride Levels Last, but certainly not least, is turmeric's effect on serum triglyceride levels. In one study, healthy humans were given 500 mg of curcuminoids daily for seven days. Results showed a decrease of 33% in blood lipid peroxides as well as a 29% reduction in levels of serum cholesterol. The authors of the study stated that they felt these results were indicative of a potential role of curcuminoids as a heart disease preventative. With volumes of research being generated each year on curcuminoids, one thing is certain: we will uncover more and more compelling reasons why turmeric ought to be incorporated into our supplements and added to our supplement programs. With all the potential benefits that can be attributed to curcuminoid intake we at Complementary Prescriptions feel it is imperative that we offer our customers the highest quality curcuminoid extract available. Our standardized turmeric extract product contains a minimum of 95% curcuminoids including: 83.2% curcumin, 9.2% demethoxycurcumin, and 2.6% bisdemethoxy curcumin.

Vegetables That Prevent and Cure Cancer

Posted By [Dr. Mercola](#) | January 24 2004 | 9,752 views

A natural compound, diindolylmethane (DIM), found in vegetables like broccoli, cabbage, turnips and mustard greens can not only prevent cancer, but may be able to cure it as well.

Researchers began the study by considering compounds that protect a person from developing cancer. The research team looked at how the compounds block cancer cell growth and found that the compounds target PPAR gamma, a protein that is highly active in fat cells. Researchers concluded that a chemically modified version of natural DIM could target the PPAR gamma and stop the growth of cancer.

Researchers have found that not only could DIM prevent cancers but it could also treat them, leading to a patent for new use of derivatives of DIM to treat cancer. Researchers knew that DIM was shown to prevent cancer and developed several more analogs. Researchers found that the treatment stopped the tumor growth in mice. However, future studies need to be conducted in humans in order to see if it is beneficial.

DIM is commercially available as a natural supplement for cancer prevention and for treating estrogen-related health issues, however researchers say their chemically altered DIM is even more potent against tumors.

[Science Daily](#) January 6, 2004

Dr. Mercola's Comments:

Last year I posted [an article](#) that explained that broccoli, cabbage, turnips and mustard greens were useful for preventing cancer. It is also important to know that [organic vegetables are better for preventing cancer](#). They have [fewer nitrates](#), which can actually cause cancer.

If it is available to you, I highly recommend buying organic produce. Eating organic means you are eating food that has not been sprayed with synthetic herbicides and pesticides, and organic produce typically has more antioxidants and nutrients.

However, it is very important that one learns what [metabolic type](#) they are because certain vegetables are better for certain nutritional types. For instance, I am a protein metabolic type and broccoli pushes my biochemistry in an unhealthy direction, so knowing what type I am helps me to avoid certain vegetables. However, the DIM found in broccoli is also in other cruciferous vegetables such as cauliflower, which happens to be good for protein types.

For those who are in parts of the country where organically grown food is not available or is very difficult to obtain, do the best you can with the food that is available to you--non-organic vegetables are much healthier than no vegetables at all.

One of the major benefits of vegetables for your metabolic type is that they provide raw bioenergetic fields and normalization of one's pH. Those fields and pH capacities are only slightly modified if the vegetables are non-organic.

Also, if you are relatively healthy your liver will be able to easily detoxify the pesticide residues in non-organic vegetables. It is certainly better for it not to be there, but, again, the benefits far outweigh the risk. So, ideally organic vegetables are best, but if they are not available to you then non-organic vegetables will certainly be beneficial.

Related Articles:

[Why do You Need Organic Food?](#)

[Major Confusion Between Organic and Healthy](#)

[Organic Vegetables are Better for Fighting Cancer](#)

[Chemicals in Broccoli and Other Veggies Cut Lung Cancer Risk](#)

[Vegetables Lower Prostate Cancer Risk](#)

Broccoli for Prostate & Breast Cancer

Posted By [Dr. Mercola](#) | May 24 2003 | 6,827 views

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

Related Articles:

[Does Vitamin E Prevent Breast Cancer](#)

Cancer's Favorite Food - Found in Everything You Eat?

Posted By [Dr. Mercola](#) | August 27 2010 | 303,101 views

Pancreatic tumor cells use fructose to divide and proliferate, according to a study that challenges the notion that all sugars are the same.

Tumor cells fed both glucose and fructose used the two sugars in two different ways. This could explain why other studies have previously linked fructose intake with pancreatic cancer, one of the deadliest cancer types.

According to MSNBC:

"Americans take in large amounts of fructose, mainly in high fructose corn syrup, a mix of fructose and glucose that is used in soft drinks, bread and a range of other foods. Politicians, regulators, health experts and the industry have debated whether high fructose corn syrup and other ingredients have been helping make Americans fatter and less healthy."

Sources:

- » [MSNBC August 2, 2010](#)
- » [Cancer Research August 1, 2010; 70: 6368](#)
- » [Reuters August 2, 2010](#)

Dr. Mercola's Comments:

Are all sugars equal in terms of the health effects they produce?

Sooner or later, science *will* put this debate to rest once and for all. It's already been conclusively shown that fructose, most commonly consumed in the form of high fructose corn syrup (HFCS), is FAR more hazardous to your health than regular sugar, but the [corn industry still vehemently denies such claims](#).

Through successful PR campaigns, industry has managed to pull the wool over your eyes for some time now, but eventually even they will have to surrender to the scientific evidence...

Until then, propaganda machines like the Corn Refiners Association's site, [SweetSurprise.com](#), will continue telling you that "research confirms that high fructose corn syrup is safe and no different from other common sweeteners like table sugar and honey. All three sweeteners are nutritionally the same," and that "though the individual sugars are metabolized by different

pathways, this is of little consequence since the body sees the same mix of sugars from caloric sweeteners, regardless of source."

But are these metabolic differences of little consequence?

Far from it!

Fructose Speeds Up Cancer Growth

Research just published in the journal [Cancer Research](#) shows that the way the different sugars are metabolized (using different metabolic pathways) is of MAJOR consequence when it comes to feeding cancer and making it proliferate.

According to the authors:

*" Importantly, fructose and glucose metabolism are quite different... These findings show that cancer cells can readily **metabolize fructose to increase proliferation.**"*

In this case, the cancer cells used were [pancreatic cancer](#), which is typically regarded as the most deadly and universally rapid-killing form of cancer.

The study confirms the old adage that sugar feeds cancer because they found that tumor cells do thrive on sugar (glucose). However, the cells used *fructose* for cell division, speeding up the growth and spread of the cancer.

If this difference isn't of major consequence, then I don't know what is.

Whether you're simply interested in preventing cancer, or have cancer and want to live longer, you ignore these facts and listen to industry propaganda at your own risk.

How Does Sugar Feed Cancer?

Controlling your blood-glucose and insulin levels through diet, exercise and emotional stress relief can be one of the most crucial components to a cancer recovery program. These factors are also crucial in order to prevent cancer in the first place.

It may surprise you, but the theory that sugar feeds cancer was born nearly 80 years ago. Even more shocking, most conventional cancer programs **STILL** do not adequately address diet and the need to avoid sugars.

In 1931 the Nobel Prize was awarded to German researcher Dr. Otto Warburg, who first discovered that cancer cells have a fundamentally different energy metabolism compared to healthy cells.

Malignant tumors tend to use a process where glucose is used as a fuel by the cancer cells, creating lactic acid as a byproduct.^[i] The large amount of lactic acid produced by this fermentation of glucose from cancer cells is then transported to your liver. This conversion of glucose to lactic acid generates a lower, more acidic pH in cancerous tissues as well as overall physical fatigue from lactic acid buildup.^{[ii] [iii]}

This is a very inefficient pathway for energy metabolism, which extracts only about 5 percent of the available energy in your food supply. In simplistic terms, the cancer is "wasting" energy, which leads you to become both tired and undernourished, and as the vicious cycle continues, will lead to the body wasting so many cancer patients experience.

Additionally, carbohydrates from glucose and sucrose significantly decreases the capacity of neutrophils to do their job. Neutrophils are a type of white blood cell that help cells to envelop and destroy invaders, such as cancer.

In a nutshell, ALL forms of sugar are detrimental to health in general and promote cancer, but in slightly different ways, and to a different extent. Fructose, however, clearly seems to be one of the overall *most* harmful.

Connecting the Dots: Fructose—Uric Acid—Cancer and Chronic Disease Risk

One particularly interesting tidbit I noticed [in this latest study](#) is the mention of how fructose metabolism leads to increased uric acid production along with cancer cell proliferation.

In [my first interview with Dr. Johnson](#), he explained just how detrimental the impact of fructose is on your uric acid level. Interestingly, ONLY fructose, NOT glucose, drives up uric acid as part of its normal metabolic pathways

And, the connection between fructose, uric acid, hypertension, insulin resistance/diabetes and kidney disease is so clear that your uric acid level can actually be used as a marker for toxicity from fructose -- meaning that if your levels are high, you're at increased risk of all the health hazards associated with fructose consumption and you really need to reduce your fructose intake.

For more information about this topic, please [see this link](#).

Dr. Richard Johnson has written one of the best books on the market on the health dangers of fructose, called [The Sugar Fix](#), which explains how fructose causes [high blood pressure, heart disease, obesity, diabetes and kidney disease](#). As I've mentioned previously, he does promote the use of artificial sweeteners in this book, which I cannot recommend. His research on fructose, however, is unsurpassed in my opinion.

Now it's safe to say that cancer, at least pancreatic cancer, is also definitely on the list of diseases that are directly linked to excessive fructose consumption.

So are Fruits Good or Bad for You?

This recommendation has created much controversy among many who regularly consume fruit and believe this recommendation does not apply to them.

Many who eat large amounts of fruit have no symptoms, just as those with high blood pressure may not have any symptoms. However lack of symptoms is no assurance you are not exposing yourself to some danger.

Please remember that over three-quarters of the population has insulin resistance.

How do you know if you have insulin resistance? If you have any of the following conditions it is a safe bet you have it:

- Diabetes
- High blood pressure
- Overweight
- High Cholesterol
- Cancer

If you have insulin resistance it would be strongly recommended to limit your total grams of fructose from fruit to below 15 grams per day (see the table below). If you believe you are very healthy and are an exception to this recommendation, then you can easily confirm if this is true for you by measuring your uric acid level.

If your uric acid level is greater than 5.5 than you have a risk factor and should limit your fructose consumption. The higher over 5.5, the stronger the risk factor is.

Keep in mind that fruits also contain fructose, although an ameliorating factor is that whole fruits also contain vitamins and other antioxidants that reduce the hazardous effects of fructose.

Juices, on the other hand, are nearly as detrimental as soda, because a glass of juice is loaded with fructose, and a lot of the antioxidants are lost.

It is important to remember that fructose alone isn't evil as fruits are certainly beneficial. But when you consume high levels of fructose it will absolutely devastate your biochemistry and physiology. Remember the AVERAGE fructose dose is 70 grams per day which exceeds the recommend limit by 300 percent.

So please BE CAREFUL with your fruit consumption. You simply MUST understand that because HFCS is so darn cheap, it is added to virtually every processed food. So even if you consumed no soda or fruit, it is very easy to exceed 25 grams of hidden fructose in your diet if you are consuming anything processed.

If you are a raw food advocate, have a pristine diet, and exercise regularly, then you could be the exception that could exceed this limit and stay healthy. But in my experience that is certainly the exception and not the norm.

So please, carefully add up your fruits based on the table below to keep the total fructose from fruit below 15 grams per day.

Fruit	Serving Size	Grams of Fructose
Limes	1 medium	0
Lemons	1 medium	0.6
Cranberries	1 cup	0.7
Passion fruit	1 medium	0.9
Prune	1 medium	1.2
Apricot	1 medium	1.3
Guava	2 medium	2.2
Date (Deglet Noor style)	1 medium	2.6
Cantaloupe	1/8 of med. melon	2.8
Raspberries	1 cup	3.0
Clementine	1 medium	3.4
Kiwifruit	1 medium	3.4
Blackberries	1 cup	3.5
Star fruit	1 medium	3.6
Cherries, sweet	10	3.8
Strawberries	1 cup	3.8
Cherries, sour	1 cup	4.0
Pineapple	1 slice (3.5" x .75")	4.0
Grapefruit, pink or red	1/2 medium	4.3

Restricting Fructose Consumption is Crucial Part of a Comprehensive Cancer Treatment Plan

Reducing (or preferably eliminating) fructose and other added sugars, as well as limiting grain carbohydrates from your diet, is usually a primary priority on [my list of cancer reducing strategies](#), and for good reason.

This dietary strategy should also be part of your comprehensive cancer treatment plan.

By severely reducing your intake of fructose and carbs in your diet, you help stave off any potential cancer growth, and "starve" any tumors you currently have.

It also bolsters your overall immune function, because sugar decreases the function of your immune system almost immediately.

Unfortunately, few cancer patients undergoing conventional cancer care in the US are offered any scientifically guided nutrition therapy beyond being told to "just eat healthy foods." I believe many cancer patients would see major improvement in their outcome if they controlled the supply of cancer's preferred fuel, glucose, and stayed clear of fructose to significantly reduce tumor proliferation.

Starving Cancer – Another Up-and-Coming Strategy

Before I go into further cancer prevention strategies, I'd like to remind you of another recent cancer research development I recently wrote about, namely ['starving' cancer by eating foods that prevent angiogenesis](#).

Angiogenesis (too many blood vessels) is a hallmark of cancer as the tumor actually needs blood in order to grow (this is how it feeds on the glucose in your bloodstream). But angiogenesis appears to be preventable by consuming foods that are natural inhibitors of excessive blood vessel growth.

When you regularly consume these foods, you can effectively starve any microscopic cancerous growths, effectively preventing them from growing further and becoming dangerous.

According to Dr. Li, who is currently leading this research, resveratrol from red grapes, for example, have been shown to inhibit abnormal angiogenesis by 60 percent. Even more potent is the ellagic acid found in strawberries.

Other potent anti-angiogenetic foods include:

Green tea	Berries: strawberries, blackberries, raspberries, blueberries	Cherries
Citrus: oranges, grapefruit, lemons	Kale	Turmeric
Nutmeg	Artichokes	Parsley

Garlic	Tomato	Maitake mushroom
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Logically, different foods contain different potencies of anti-angiogenetic compounds. Some foods have even been found to be more potent than current anti-angiogenetic drugs! These include parsley and garlic.

But interestingly, when researchers evaluated a combination of two of the LEAST potent teas, for example, they discovered that this combination tea had greater potency than any given tea by itself.

"There's *synergy*," Li states, which should come as no surprise to those of you who are well-versed in holistic nutrition.

It is this synergy that makes fresh, whole foods so potently nutritious!

The sum is far greater than the individual parts, and this is why it's far more important to focus on eating a diet of whole, organic foods, rather than obsessing about individual nutrients.

Other Cancer Prevention Strategies

Aside from avoiding fructose and other added sugars (which means cutting out not only soda and sugary beverages, but also processed foods since most are loaded with HFCS), and incorporating more anti-angiogenetic fare into your diet, here are several additional strategies you can incorporate to virtually eliminate your cancer risk:

1. [Normalize your vitamin D levels](#) with safe amounts of sun exposure. This is one of the most effective, and least expensive, cancer prevention strategies available to most people. Ideally, you'll want to monitor your [vitamin D levels](#) to make sure your levels stay within a therapeutic range year-round.
2. Get appropriate amounts of animal-based [omega-3 fats](#).
3. [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. 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 particular favorite tool for this purpose, as you may know, is the [Emotional Freedom Technique](#).
5. Only 25 percent of people eat enough vegetables, so by all means [eat as many vegetables as you are comfortable with](#), preferably fresh and [organic](#).

Ideally, you'll also want to determine your nutritional type, as some veggies are better than others, depending on your type. In addition, if you are a carb

nutritional type, for example, you may need up to 300 percent more vegetables than a protein nutritional type.

6. [Maintain an ideal body weight](#).
7. Get enough [high-quality sleep](#).
8. Reduce your exposure to [environmental toxins](#) like pesticides, household chemical cleaners, [synthetic air fresheners](#) and air pollution.
9. Boil, poach or steam your foods, rather than [frying or charbroiling them](#).

References

- [\[i\]](#) Warburg O. On the origin of cancer cells. Science 1956 Feb;123:309-14.
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Surprising Health Hazards Associated with All-Fruit Diet

February 11, 2013

Link: http://articles.mercola.com/sites/articles/archive/2013/02/11/all-fruit-diet.aspx?e_cid=20130211_DNL_art_1&utm_source=dnl&utm_medium=email&utm_campaign=20130211

By Dr. Mercola

Fruits are loaded with healthy antioxidants, vitamins and minerals, which is why eating them in moderation is fine for healthy people. However, many benefit by restricting their fruit intake.

Fructose, a simple sugar found in fruit, is preferentially metabolized to fat in your liver, and eating large amounts has been linked to negative metabolic and endocrine effects. So eating very large amounts – or worse, *nothing but fruit* – can logically increase your risk of a number of health conditions, from insulin and leptin resistance to cancer.

For example, research has shown that [pancreatic tumor cells use fructose](#), specifically, to divide and proliferate, thus speeding up the growth and spread of the cancer.

As a general health rule, I recommend limiting your total fructose consumption to about 25 grams per day on average, and that includes fructose from fruit. However, if you have insulin resistance, heart disease, cancer or high blood pressure, you may want to cut it down to 15 grams or less.

Kutcher Lands in Hospital After Adopting All-Fruit Diet

Actor Ashton Kutcher recently disclosed health issues brought on by following an all-fruit diet,¹ adopted in preparation to play the character of Steve Jobs in the upcoming film “*Jobs*,” due out April 19.

Jobs had adopted an all-fruit diet in his younger days, and even the brand he co-founded – Apple – was a nod to his dietary obsession. Kutcher recently told *USA Today*:²

"First of all, the fruitarian diet can lead to like severe issues. I went to the hospital like two days before we started shooting the movie. I was like doubled over in pain. My pancreas levels were completely out of whack. It was really terrifying ... considering everything."

The “everything” is likely a reference to pancreatic cancer – the disease that killed [Steve Jobs](#) on October 5, 2011, at the age of 56. Even though Jobs consumed a fruitarian diet years before he contracted his pancreatic cancer, there could be some relationship.

Why Large Amounts of Fruit May Not Be Healthy

While people are becoming increasingly aware of the connection between excessive fructose consumption and obesity and chronic disease, many forget that *fruit* is a source of fructose as well. Many tend to believe that as long as fruit is natural and raw they can have unlimited quantities without experiencing any adverse metabolic effects.

Eliminating processed foods and soda – which are loaded with high fructose corn syrup – and replacing it with an all-fruit diet is likely not going to improve your health.

It's important to consider ALL sources of fructose, and to try to limit your total consumption if you want to optimize your health. Granted, fruits contain beneficial dietary fibers, antioxidants, vitamins and minerals, which is why they're an important part of a healthy diet – as long as they're eaten *in moderation*. I believe most people would benefit by replacing the fruit with 50-70 percent of their calories from healthy fat. You also need moderate amounts of high quality protein.

An all-fruit diet is essentially an all-fructose diet, and this is bound to spell disaster for your health, at least long-term. Studies have shown that fructose can induce:

Impaired glucose tolerance, insulin resistance, and diabetes	Elevated triglycerides	Abdominal obesity
Leptin resistance	Inflammation and oxidative stress	Endothelial dysfunction
Microvascular disease	Hyperuricemia	Renal (kidney) damage
Fatty liver disease	High blood pressure	Metabolic syndrome

The Fructose Pancreatic Cancer Connection

Pancreatic cancer is one of the faster spreading cancers; only about four percent of patients can expect to survive five years after their diagnosis. Each year, about 44,000 new cases are diagnosed in the U.S., and 37,000 people die of the disease. Cancer of the pancreas has a terrible prognosis--half of all patients with locally advanced pancreatic cancer die within 10 months of the diagnosis; half of those in whom it has metastasized die within six months.

Your pancreas contains two types of glands: exocrine glands that produce enzymes that break down fats and proteins, and endocrine glands that make hormones like insulin that regulate sugar in your blood.

Steve Jobs died of tumors originating in the endocrine glands, which are among the rarer forms of pancreatic cancer. His cancer was detected during an abdominal scan in October 2003, as *Fortune* magazine reported in a 2008 cover story.⁴ He reportedly spent nine months on "alternative therapies," including what *Fortune* called "a special diet," although there was no mention of what type of diet this might have been. In 2004, after the cancer had spread, Jobs opted for surgery. Unfortunately, it did not cure him.

Five years later, he underwent an experimental procedure called peptide receptor radionuclide therapy (PRRT), which involves delivering radiation to tumor cells by attaching one of two radioactive isotopes to a drug that mimics somatostatin, the hormone that regulates the entire endocrine system and the secretion of other hormones. This treatment also failed. After having a liver transplant, Jobs succumbed to the cancer in 2011.

Interestingly enough, research published in 2010⁵ suggests fructose may have a particularly significant impact on pancreatic cancer.

Insulin production is one of your pancreas' main functions, used by your body to process blood sugar, and, in the laboratory, insulin promotes the growth of pancreatic cancer cells. However, there's more to it than that. The research in question showed that the way the different sugars are metabolized (using different metabolic pathways) is of MAJOR consequence when it comes to feeding pancreatic cancer cells and making them proliferate. According to the authors:

"Importantly, fructose and glucose metabolism are quite different... These findings show that cancer cells can readily metabolize fructose to increase proliferation."

The study confirms the old adage that sugar feeds cancer – a finding that Dr. Warburg received a Nobel Prize for over 90 years ago. Tumor cells do thrive on glucose and do not possess the metabolic machinery to burn fat. However, the cells used *fructose* for *cell division*, speeding up the growth and spread of the cancer. If this difference isn't of major consequence, then I don't know what is. Whether you're simply interested in preventing cancer, or have cancer and want to live longer, you ignore these facts at your own risk.

There's reasonable cause to suspect that if your body maintains high levels of insulin, you increase the pancreatic cancer's ability to survive and grow. In fact, researchers now believe that up to a third of all types of cancers may be caused by diet and lifestyle. So if you want to prevent cancer, or want to treat cancer, it is imperative that you keep your insulin levels as low as possible.

Should You Eliminate Fruit from Your Diet?

Short answer, *no*, it wouldn't be wise to eliminate fruit entirely. Fruit is definitely a source of fructose, and one that can harm your health if you eat it in vast quantities, but eating small amounts of whole fruits is fine if you are healthy.

In vegetables and fruits, the fructose is mixed in with fiber, vitamins, minerals, enzymes, and beneficial phytonutrients, all of which help moderate the negative metabolic effects. However, if you suffer with any fructose-related health issues, such as insulin resistance, metabolic syndrome, heart disease, obesity or cancer, you would be wise to limit your total fructose consumption to 15 grams of fructose per day. This includes fructose from ALL sources, *including* whole fruit.

If you are not insulin resistant, you may increase this to 25 grams of total fructose per day on average.

If you received your fructose only from vegetables and fruits (where it originates) as most people did a century ago, you'd consume about 15 grams per day. Today the average is 73 grams per day which is nearly 500 percent higher a dose and our bodies simply can't tolerate that type of biochemical abuse. So please, carefully add your fruits based on the following table to keep your total fructose below 15-25 grams per day, depending on your current health status.

Fruit	Serving Size	Grams of Fructose
Limes	1 medium	0
Lemons	1 medium	0.6
Cranberries	1 cup	0.7
Passion fruit	1 medium	0.9
Prune	1 medium	1.2
Guava	2 medium	2.2

Date (Deglet Noor style)	1 medium	2.6
Cantaloupe	1/8 of med. melon	2.8
Raspberries	1 cup	3.0
Clementine	1 medium	3.4
Kiwifruit	1 medium	3.4
Blackberries	1 cup	3.5
Star fruit	1 medium	3.6
Cherries, sweet	10	3.8
Strawberries	1 cup	3.8
Cherries, sour	1 cup	4.0
Pineapple	1 slice (3.5" x .75")	4.0
Grapefruit, pink or red	1/2 medium	4.3
Fruit	Serving Size	Grams of Fructose
Boysenberries	1 cup	4.6
Tangerine/mandarin orange	1 medium	4.8
Nectarine	1 medium	5.4
Peach	1 medium	5.9

Orange (navel)	1 medium	6.1
Papaya	1/2 medium	6.3
Honeydew	1/8 of med. melon	6.7
Banana	1 medium	7.1
Blueberries	1 cup	7.4
Date (Medjool)	1 medium	7.7
Apple (composite)	1 medium	9.5
Persimmon	1 medium	10.6
Watermelon	1/16 med. melon	11.3
Pear	1 medium	11.8
Raisins	1/4 cup	12.3
Grapes, seedless (green or red)	1 cup	12.4
Mango	1/2 medium	16.2
Apricots, dried	1 cup	16.4
Figs, dried	1 cup	23.0

How to Determine Your Individual Susceptibility to Fructose Damage

As already stated, those who need to be careful about their fruit intake are people with high insulin levels. You can measure your fasting insulin level to find out for sure, but if you have any of the following problems it is highly likely you have insulin resistance syndrome:

- Overweight
- High Cholesterol
- High Blood Pressure
- Diabetes
- Yeast Infections

Besides that, you can also use your uric acid levels as a marker for your susceptibility to fructose damage, as some people may be able to process fructose more efficiently than others. The higher your uric acid, the more sensitive you are to the effects of fructose. The safest range of uric acid appears to be between 3 and 5.5 milligrams per deciliter (mg/dl), and there appears to be a steady relationship between uric acid levels and blood pressure and cardiovascular risk, even down to the range of 3 to 4 mg/dl.

According to [Dr. Richard Johnson](#), the ideal uric acid level is probably around 4 mg/dl for men and 3.5 mg/dl for women.

If you are one of those who believes that fruit is healthy no matter how much you eat, I would strongly encourage you to have your uric acid level checked to find out how sensitive you are to fructose. Eat the amount of fruit you feel is right for you for a few weeks and then check your uric acid level and see if your levels are healthy. If they are elevated you might try reducing the fruit to recommended levels and rechecking your uric acid level. Many who are overweight likely have uric acid levels well above 5.5. Some may even be closer to 10 or above. Measuring your uric acid levels is a very practical way to determine just how strict you need to be when it comes to your fructose – and fruit -- consumption.

Is there Such a Thing as an Ideal Diet for Everyone?

Nutritional requirements can vary wildly from one person to the next, which is why I've been a longtime proponent of eating in accordance with your [nutritional type](#). For example, if you're a protein type, fruits are generally not beneficial for you with the exception of coconut, which has a higher fat content that is beneficial for protein types. On the other hand, carbohydrate types tend to fare well with fruit and can safely consume moderate amounts. This is an important distinction, and everyone should try to eat primarily the specific fruits that are best for their unique biochemistry.

However, many find nutritional typing to be too complex. So to simplify matters, while still allowing for a fully personalized program, I recently updated and revised my [Nutritional Plan](#). It consists of three levels, from beginners to advanced, and covers the basic requirements of a healthy diet.

Keep in mind that emerging evidence suggests your diet should be at least half [healthy fat](#), and possibly as high as 70 percent. My personal diet is about 60-70 percent healthy fat, and both Paul Jaminet, PhD., author of *Perfect Health Diet*, and Dr. Ron Rosedale, M.D., an expert on treating diabetes through diet, agree that the ideal diet includes somewhere between 50-70 percent fat. It's important to understand that your body *requires* saturated fats from animal and vegetable sources (such as meat, dairy, certain oils, and tropical plants like coconut) for optimal functioning.

When you take this into account, it's easy to see that an all-fruit diet could wreak absolute havoc with your health.

Keep in mind that frequent hunger may be a *major clue* that you're not eating correctly. Not only is it an indication that you're consuming the *wrong types* of food, but it's also a sign that you're likely consuming them in *lopsided ratios* for your individual biochemistry. Fat is far more satiating than carbs, so if you have cut down on carbs and feel ravenous, remember this is a sign that you haven't replaced them with sufficient amounts of fat. You do want to make sure you're adding the correct types of fat though, such as:

Olives and Olive oil	Coconuts and coconut oil	Butter made from raw grass-fed organic milk
Raw nuts, such as, almonds or pecans	Organic pastured egg yolks	Avocados
Grass-fed meats	Palm oil	Unheated organic nut oils

If You Seek Optimal Health, Pay Careful Attention to Your Insulin Levels

Three lifestyle issues keep popping up on the radar when you look at what's contributing to pancreatic cancer: sugar intake, lack of exercise, and vitamin D deficiency. Obesity and physical inactivity makes your body less sensitive to the glucose-lowering effects of insulin. Diminished sensitivity to insulin leads to higher blood levels of insulin, which in turn can increase your risk of pancreatic cancer.

It's a no-brainer that an all-fruit diet can seriously jeopardize your insulin sensitivity, thereby raising your risk of any number of health problems, including pancreatic problems. It's simply FAR too much fructose for most people. I personally developed diabetes when I tried the "Eat Right for Your Blood Type" diet, which included eating large amounts of fruit for breakfast. So please, be careful of any diet that seems to extreme, and remember the human body **NEEDS** healthful fats and high quality protein for proper functioning.

Remember to listen to your body over the long term to guide you as to the best food selections. If your energy level decreases, you have a difficult time maintaining your ideal weight or are hungry all the time, there is a good chance that you have yet to find the optimal fuel for your body. As for fruits, use caution if you have any kind of insulin related health issues, as discussed above, and limit your total fructose consumption to 15-25 grams of fructose per day, depending on your health status.

This Popular Drink May Be Almost as Hazardous to Your Health as Soda

Posted By [Dr. Mercola](#) | June 19 2010 | 319,787 views

Dr. Richard Johnson is the chief of the division of kidney disease and hypertension at the University of Colorado, and author of [The Sugar Fix](#), one of the best books on the market on the dangers of fructose.

As one of the physicians on the cutting edge of sugar metabolism research today, his focus is on how the overabundance of sugar in the American diet -- particularly fructose -- is causing obesity, hypertension, diabetes, and a number of other health problems.

Sources:

» [Video Transcript](#)

Dr. Mercola's Comments:

The answer to the question in the headline is fruit juice. But before I explain why fruit juice may be as hazardous to your health as soda, let me first give you some background information.

Fructose has become one of my newest health passions for a number of reasons. It is really not well understood how pervasive a negative influence this sugar has on people's health, but even more importantly, it is something that we can easily change, by influencing the food industry to replace it with something healthier.

One of the leading researchers in this field is Richard Johnson, MD, who is the chief of the division of kidney disease and hypertension at the University of Colorado. I've previously interviewed Dr. Johnson about his research into the health dangers of fructose, specifically how fructose causes high blood pressure, obesity, and diabetes.

Here, we continue this discussion, and Dr. Johnson also shares new details of the research he's been involved with since the last interview.

An interesting aside is that at the end of this interview, I was very pleasantly surprised to learn that I had written some of the articles on fructose that he reviewed when he first decided to research this topic.

It really gave me great joy to know that all the hard work and effort I have put in over the years really is making a difference, not only getting people healthy, but also motivating high integrity scientists to do the right thing.

It is worth noting that Dr. Johnson actually endorses Splenda in his book, [The Sugar Fix](#), which was written prior to us getting to know each other, but I recently sent him my book [Sweet Deception](#), which outlines the many dangers of artificial sweeteners. He's a true physician and was eager to review the material and update his knowledge on the subject.

There aren't many doctors out there with this type of integrity. I really like Dr. Johnson and believe he's an authentically well-intentioned good guy.

It is not often that a health researcher can open up my eyes to a completely novel and new risk factor for health, as he did with uric acid and fructose, and I will always be grateful to him for that and for his willingness to enlighten us in these interviews.

Uric Acid as a Marker for Fructose Toxicity

One of the surprising facts discussed in our first interview was how detrimental the impact of fructose is on your uric acid levels. It appears as though that process is essential to the damage that fructose causes, and it's actually an excellent marker for toxicity from fructose.

According to the latest research in this area, the safest range of uric acid is between 3 and 5.5 milligrams per deciliter, and there appears to be a steady relationship between uric acid levels and blood pressure and cardiovascular risk, even down to the range of 3 to 4 mg/dl.

Dr. Johnson suggests that the ideal uric acid level is probably around 4 mg/dl for men and 3.5 mg/dl for women.

This is actually the only major biochemical marker that I need to optimize at this point in my life, which most likely suggests that I am particularly sensitive to fructose intake and that it's best for me to keep my levels as low as possible.

This is most likely due to genetics and would explain why most of my paternal relatives have, or have died from, diabetes. That side of the family is most likely particularly sensitive to fructose.

So I would **STRONGLY** encourage everyone to have their uric acid level checked to find out how sensitive you are to fructose. (I'll discuss this strategy further, in just a moment.)

As you know, two-thirds of the US population is overweight, and most of these people likely have uric acid levels well above 5.5. Some may even be closer to 10 or above.

Dr. Johnson has developed a program to help people optimize their uric acid levels, and the key step in this program is *complete elimination of fructose*.

Results of the Latest Clinical Trial

"We've just finished a clinical trial where we gave a low fructose diet to overweight and obese adults from Mexico City." Dr. Johnson says.

“We tried two different low fructose diets, but first, before we go into that, we think that the effects of fructose are independent of its energy intake. So, table sugar (sucrose) -- which contains fructose and glucose -- although there is a caloric component, we think that the effects of fructose are not specifically related to the calories but rather to its mechanism, of which uric acid is a driving part.

... [Uric acid levels] being too high seems to really increase the risk for diabetes and high blood pressure, kidney disease and obesity. And in fact, there are more and more papers coming out showing that connection.”

One of the questions that Dr. Johnson sought to answer in his latest trial was whether or not you need to reduce ALL fructose in your diet, or just reduce the fructose primarily in *added sugars* like high fructose corn syrup and table sugar.

After comparing the two low fructose diets -- one that was strictly low fructose, and the other that had low fructose but allowed natural fruits -- they discovered that both diets had remarkable effects in reducing metabolic syndrome.

Both diets improved triglycerides, insulin resistance and blood pressure.

A Novel Idea -- Using Uric Acid as a Marker of Susceptibility to Fructose Damage

Going back to the issue of genetic variability, it seems that some people may be able to process fructose more efficiently, and the key to assess this susceptibility to fructose damage lies in evaluating your uric acid levels.

Dr. Johnson agrees that using uric acid levels as a marker to identify your susceptibility could be a reasonable approach.

So, for example, if you're passionate about fruit and typically eat large amounts of fruit, but have a uric acid level above 5 (or better yet, 4 if you're a man, and 3.5 if you're a woman), then you may want to consider lowering your fruit consumption until you're able to optimize your uric acid levels.

“We have some evidence from our laboratory that uric acid actually regulates the sensitivity to fructose,” Johnson says. *“So the higher your uric acid, the more sensitive you are to the effects of fructose.*

... So I agree with you. If you measure your serum uric acid and it's very significantly high, you probably will get into more trouble with fruit juices and large amounts of fruit than other individuals would.

That seems to be the take home message from our current research.”

Revisiting Fruit Consumption

So it appears as though whole fruits, even though they contain fructose, may not be nearly as problematic as fructose from added sugars. One of the reasons for this is believed to be because whole fruits contain high amounts of natural antioxidants, as well as other synergistic compounds that may help counter the detrimental effects of fructose.

“When I originally wrote my book, I was concerned that if you eat large amounts even of natural fruits you could get into trouble,” Johnson says, “and I have had cases where people were eating very large amounts of natural fruits.

When I cut it out or reduced it, they’ve had dramatic weight loss.

So I’ve had a number of people like this who are eating almost a pure fruit diet, and I don’t think that that’s particularly good, but I think that the normal individual eating two to four natural fruits a day probably is going to be fine.”

The key here though is **WHOLE** fruits, but I still remain convinced that many people, especially those that have insulin resistance, such as those with:

- Diabetes
- High blood pressure
- High cholesterol
- Overweight

should be particularly careful about limiting their fructose from fruit to 15 grams per day or less.

How to Know if Fruit May Be a Problem for You

However the NEW appreciation is that if you have your uric acid level checked and have a level of 4 for men, or 3.5 for women, you probably are at a very low risk for fructose toxicity and can be more liberal with these limits.

The higher your uric acid though, the more you need to limit or even avoid fructose until your uric acid level normalizes.

Fruit	Serving Size	Grams of Fructose
Limes	1 medium	0
Lemons	1 medium	0.6
Cranberries	1 cup	0.7

Fruit	Serving Size	Grams of Fructose
Boysenberries	1 cup	4.6
Tangerine/mandarin orange	1 medium	4.8
Nectarine	1 medium	5.4

Passion fruit	1 medium	0.9
Prune	1 medium	1.2
Apricot	1 medium	1.3
Guava	2 medium	2.2
Date (Deglet Noor style)	1 medium	2.6
Cantaloupe	1/8 of med. melon	2.8
Raspberries	1 cup	3.0
Clementine	1 medium	3.4
Kiwifruit	1 medium	3.4
Blackberries	1 cup	3.5
Star fruit	1 medium	3.6
Cherries, sweet	10	3.8
Strawberries	1 cup	3.8
Cherries, sour	1 cup	4.0
Pineapple	1 slice (3.5" x .75")	4.0
Grapefruit, pink or red	1/2 medium	4.3

Peach	1 medium	5.9
Orange (navel)	1 medium	6.1
Papaya	1/2 medium	6.3
Honeydew	1/8 of med. melon	6.7
Banana	1 medium	7.1
Blueberries	1 cup	7.4
Date (Medjool)	1 medium	7.7
Apple (composite)	1 medium	9.5
Persimmon	1 medium	10.6
Watermelon	1/16 med. melon	11.3
Pear	1 medium	11.8
Raisins	1/4 cup	12.3
Grapes, seedless (green or red)	1 cup	12.4
Mango	1/2 medium	16.2
Apricots, dried	1 cup	16.4
Figs, dried	1 cup	23.0

What About Fruit Juices?

Fruit *juice* typically contains very high concentrations of fructose, which will cause your insulin to spike and may counter the benefits of the antioxidants. Previous studies have already clearly demonstrated that drinking large amounts of [juice dramatically increases your risk of obesity](#). Children are at particular risk here, since so many children are given juice whenever they're thirsty instead of plain water.

For example, research has revealed that 3- and 4-year-olds who carry extra weight and drink just one to two sweet drinks a day double their risk of becoming seriously overweight just one year later.

When buying commercial fruit juice, you need to check the label, as the majority of fruit juices contain high fructose corn syrup and artificial flavors in addition to concentrated fruit juice.

But even freshly squeezed fruit juice can contain about eight full teaspoons of fructose per eight-ounce glass!

Naturally, some fruits are less problematic than others, as the amount of fructose and antioxidants vary from fruit to fruit.

“For example, pear juice and apple juice are very, very low in vitamin C but very, very high in fructose,” Johnson says, “and so those particular kinds of juices maybe worse than orange juice or grapefruit juice which have high amounts of vitamin C.

Now, apples contain other compounds like quercetin, which is an antioxidant that may block some of fructose’s effects. So, you know, the verdict is still out in terms of which juice is better and which juice is worse.

But in general, with apple juice and pear juice, I would be more concerned about those types of juices because they are very, very high in fructose and relatively low in antioxidants.”

For all these reasons, it is wise for most to limit their intake of fruit juice, especially if your uric acid is above the ideals recommended.

If you suffer from any of the four health problems I just listed above, you would be best off avoiding fruit juices altogether until you’ve normalized your uric acid and insulin levels.

Is Glucose a Safer Alternative Sweetener?

Although you cannot buy “glucose” commercially, it’s available under the name of “dextrose.”

It’s relatively inexpensive, priced at about a dollar a pound. It’s not as sweet as table sugar or fructose, but it also doesn’t seem to cause the same health problems – at least for those who are not diabetic or insulin resistant.

Dr. Johnson explains:

“It is absolutely true that if you take a laboratory animal and you feed it glucose or dextrose or starch, it will not get into trouble. It will stay skinny. It will stay healthy. Rice diets are high in starch and historically have been associated with being lean.

In contrast, if you give sugar or fructose to an animal, they’ll rapidly develop features of metabolic syndrome, obesity, and so forth. And you can pair-feed animals, so one animal gets exactly the same number of calories as the other one, but it’s only the sucrose- or sugar- or fructose-fed animals that develop the features of metabolic syndrome. This makes one believe that starches safe, and this is in fact what I wrote in the book.

Now, as we've done more studies, (obviously if you're a diabetic, glucose is not good because in diabetes you cannot handle glucose metabolism)... one of the things that we're just discovering in the laboratory -- actually it's been known but we're trying to figure out how important it is -- people who are diabetic, and people who are severely insulin resistant... can make fructose from the glucose through a pathway called "the polyol pathway."

We are now studying it and we do think that there is an endogenous fructose pathway.

We don't know how important it is yet, but we do know that you can make fructose from glucose, especially if you're diabetic or if you're severely insulin resistant.

Since a lot of people who are very, very overweight and are trying to lose weight, some of them can be insulin resistant. This does throw a new twist into the story... We're trying to figure out the impact of this.

But certainly if you're not insulin resistant, dextrose or starch will be ok."

According to Dr. Johnson's data, which he claims is "unequivocal," starch and dextrose (glucose) do NOT cause obesity or diabetes, whereas fructose does.

Interestingly, animal studies have discovered that if an animal eats lots of fructose, over time they become diabetic. Part of this process, however, is that once they become insulin resistant, they activate the polyol pathway and begin to make fructose from *other* sources of food as well!

This is quite remarkable, and a strong testament to the need to severely limit your fructose intake.

It's also offers an explanation for how and why the obesity epidemic has flourished the way it has since the introduction of HFCS into most of our processed foods.

"It's a little bit more complicated than we had originally thought," Johnson says, "but the bottom line is: If you're trying to avoid gaining weight; if you're trying to avoid becoming obese or diabetic, the best thing you can do is to cut back on foods that raise uric acid, particularly sugar, fructose and high fructose corn syrup (HFCS).

That's by far the best approach. Starch in general appears to be safe unless you're severely insulin resistant, in which case perhaps isn't quite as safe as we had originally thought."

Defining Insulin Resistance

Ideally you'll want to have a fasting insulin level below 2. In addition, Dr. Johnson recommends using a simple glucose test to check your fasting glucose.

"The fasting glucose, under 100, suggests that you're not insulin resistant," he says. "If your fasting glucose is between 100 and 125 mg/dl, you probably are insulin resistant to a mild extent, or you have impaired glucose tolerance.

You have what we would call mild insulin resistance and slightly elevated glucose levels for what you would expect.”

I agree with Dr. Johnson that this is typically true, however it’s still possible to have low fasting glucose yet have significantly elevated insulin levels.

Dr. Johnson explains: *“Yes, if you have hyperinsulinemia, in general what happens is that as you become insulin resistant, your insulin levels go up to help keep your blood sugar down. So if you have a particularly robust insulin response, you could keep your glucose in the normal range for some time.”*

So, in this case, you’re essentially pre-diabetic and need to take steps to improve your insulin sensitivity, and the most potent way is to reduce or eliminate fructose.

A Word on Agave

I got a lot of push-back after I published my report on agave, which many health conscious people believe is a safe, all-natural, healthy sweetener. However, agave can contain anywhere between 55 to 90 percent fructose!

Some companies were very upset with our article and refuted the information so much so that we actually purchased three of the most popular “natural” agave products and had them independently tested, at our expense, at a commercial laboratory.

The results came back last week and they support what I said, that they were high in fructose. The range was 59 to 67 percent fructose. I am in the process of writing an entire report on it that should be published in the next few weeks.

Fructose content is also high in honey, which contains about 70 percent on average.

In addition, many, if not most of the commercial supplies of agave are processed in a way that’s not too dissimilar to the processing of high fructose corn syrup.

“We have not done any specific research with agave or with honey,” Johnson says. “But I do believe that those two compounds, because they’re so high in fructose, probably will engage the same pathways that we see when we give fructose or sugar to animals.

So I would not recommend those as sweeteners to use daily.”

Learn More...

I strongly recommend you listen to this interview in its entirety, or read through the transcript. In it, Dr. Johnson also discusses the potential benefits, as well as the risks, of using the drug allopurinol (traditionally used to lower uric acid levels in patients with severe gout) to treat heart disease, diabetes and even obesity.

We also discuss the lifestyle adjustments that can work together synergistically to optimize your health benefits, and delve into two additional studies that Dr. Johnson recently submitted to *Science*, and *Nature*. Hopefully they will be accepted for publication by both of these prestigious scientific journals.

I have written about the dangers of sugar for a long time, and of course, variables like exercise and calorie intake play a role in obesity, but I am fully convinced that if we can educate the public about the primary role fructose holds in creating obesity, we can actually reverse and eventually help to eliminate the obesity epidemic.

So please, keep learning, and keep sharing this information with your family and friends. I also highly recommend reading Dr. Johnson's book, [The Sugar Fix](#), as it offers a real solution to several devastating health problems. Although, as I stated earlier, he supports the option of using artificial sweeteners which I do not recommend.

The trend will not magically reverse itself – it will require each and every one of you to become educated, savvy consumers, and it will require that you bring back home cooking; using fresh, whole, organic foods.

Wheat contains several allergenic fractions, the main two being gluten and starch. Gluten is probably the most potent allergen and causes the most damage. You may be unfamiliar with gluten until you have to avoid it. Gluten sensitivity may cause a lifetime problem with absorption, creating symptoms like bloating, cramping, and diarrhea. In gastrointestinal allergy to gluten, offending foods may eventually be re-introduced into the diet without adverse effects. Gluten allergy may also focus symptoms to other parts of the body besides the gastrointestinal tract.

One problem connected with allergy to wheat and/or gluten intolerance is the possibility that glutenlike proteins may be created within the body in conjunction with other proteins in the diet. For instance, the protein of malted barley and buckwheat may bring about a reaction in the gluten sensitive and/or gluten intolerant even though there is no gluten in that food. Buckwheat is not even a grain but does contain gluten-like protein. It may be tolerated, but test to be sure.

Another potential problem is the possibility of becoming sensitive to other cereal grains when they are substituted for wheat, for example. This happens because members of the grass family share similar proteins and the person strongly sensitive to one may cross react to the others when he consumes them in anywhere near the quantity he consumed the allergenic food.

Those sensitive to or intolerant of gluten will need to avoid the following:

graham flour	hydrolyzed vegetable protein	rye
gluten flour	monosodium glutamate	buckwheat
enriched flour	barley (malt syrup)	Triticale
wheat flour or durum wheat	oats	

Gluten is not in wheat germ or wheat bran.

If only allergic to wheat gluten, may use wheat starch. Test this at home.

The non-gluten substitutes include:

potato and sweet potato	lima bean flour	millet
soy, tofu	tapioca	legumes
rice, rice cakes, rice crackers	arrowroot	spaghetti squash
corn, corn pastas, wheat-free cornbread, corn tortillas		quinoa
		teff

Wheat-Free and Gluten-Free Information

For gluten-free diets, substitute the following flours for 1 cup of wheat flour:

1 cup corn flour
 3/4 cup coarse corn meal
 1 scant cup of fine corn meal
 5/8 cup potato flour (or starch)
 7/8 cup rice flour
 5/8 cup rice flour + 1/3 cup potato flour
 1 cup soy flour + 3/4 cup potato flour
 NEVER USE SOY FLOUR ALONE

Following is an all-purpose gluten-free flour mix. (Do not use for bread, gingerbread, donuts, fritters or shortbread.)

3/4 cup potato flour
 3/4 cup corn flour
 1/2 cup soya flour
 1 cup rice flour
 6 T. arrowroot flour
 6 T. tapioca flour

For 1 cup wheat flour, substitute these flours:

- $\frac{1}{2}$ cup barley flour
- $1\frac{1}{2}$ cup rye flour
- 1 cup rye meal
- $1\frac{1}{3}$ cups ground rolled oats.
- $\frac{1}{2}$ cup rye flour + $\frac{1}{2}$ cup potato flour
- $\frac{2}{3}$ cup rye flour + $\frac{1}{3}$ cup potato flour
- $\frac{5}{8}$ cup rice flour + $\frac{1}{3}$ cup rye flour

NOTE: All flour combinations require 5-6 siftings and long, slower baking.

1. Look for recipes which use a small amount of wheat flour in combination with another type of flour. It is easier to make substitutions.
2. To avoid graininess in rice flour and cornmeal, mix with the liquid in recipe, bring to a boil and cool before mixing with other ingredients.
3. For 1 tablespoon of wheat flour to thicken, substitute one of the following: $\frac{1}{2}$ TBSP cornstarch, $\frac{1}{2}$ TBSP potato starch flour, $\frac{1}{2}$ TBSP rice starch, $\frac{1}{2}$ TBSP arrowroot starch, 2 tsps. quick-cooking tapioca.
4. Bread made of flour other than wheat flour won't crumble if cut crosswise rather than the usual up and down.
5. Ground rice or millet meals make a good porridge with honey or maple syrup.
6. To replace bread stuffing in fowl: Cook 1 cup of raw rice and prepare as you would the torn bread with salt, pepper, finely chopped celery leaves, savory, sage or poultry seasoning, and chopped onion. Brown rice takes twice as long to cook, so cook different rices separately and then mix together. Fill the smaller (neck) cavity of your turkey with stuffing made from "special" bread and fill other cavity with another recipe.
7. Binder for meatloaf and meat patties can be made of rice flour, or an egg, or instant mashed potatoes.
8. Use gelatin as a binder in breads. It works well in rice flour recipes. Soften the gelatin in half the water that the recipe calls for, then heat it just enough to dissolve the gelatin. Then add the gelatin mixture to the rest of the liquid and finish the recipe. Agar agar is a seaweed "gelatin" which can be used if you are allergic to beef gelatin.
9. Special care is needed when using flours with a low or non-gluten content. Wheat starch, rye, oat, barley, potato, rice, soy, and corn flours all need extra leavening because of the absence of elasticity contributed by gluten, or they will not rise properly. Use $2\frac{1}{2}$ tsps. of baking powder for each cup of course flour. Heating liquids slightly may also help rising.
10. For bread recipes, double amounts called for and freeze small loaves. The loaves dry out in about two days, so cut your loaves into pieces which will only last a few meals and take these from the freezer as needed.
11. Cakes made with substitute flours other than wheat tend to be dry. The moisture can be preserved by icing the cake or by storing it tightly covered.
12. Substitute for macaroni, spaghetti, or noodles: Chinese bean threads, rice products found in health food stores and also spaghetti squash. Try buckwheat noodles for tolerance on gluten-free diet.
13. Xanthan gum has recently been used as a good substitute for gluten, when using gluten-free flours in yeast bread recipes. Without gluten, it is difficult to get the expected texture. Xanthan gum was chosen because of its ability to hold a good's particles together. It is currently used in salad dressings, gravies, sauces, and even ice cream. Xanthan gum provides its best results when used with eggs, and a mixture of $\frac{1}{2}$ white and $\frac{1}{2}$ brown rice flour. Soy flour is not recommended because of a bitter aftertaste. Xanthan gum powder is available on special order at some health food stores.

(Continued from page 3 - MSG)

Even so, the researchers found 1.8% of the test population reacting to MSG. Since the time of that study, the FDA has claimed that approximately 2.0% of the population react to MSG with mild and transitory reactions.

TRACKING MSG DANGERS

The ingredient "monosodium glutamate" was invented in Japan in 1908.⁴ The inventor, Kikunae Ikeda, identified the flavor enhancing substance of seaweed, recognizing that Asians had used seaweed for flavoring for thousands of years. Shortly thereafter, he and a partner formed Ajinomoto, currently a six billion dollar firm, that is the world's largest producer of MSG. Use of the product was minimal in our country until after World War II, when it was introduced to the United States food industry as a flavoring agent that our military discovered made Japanese army rations more palatable than our own. Many may remember when pure monosodium glutamate became available in our stores in a product called "Accent."

In 1968, a Chinese physician who immigrated to our country, Dr. Robert Ho Man Kwok, wrote a letter to the editor of *The New England Journal of Medicine*⁵ to ask for help in determining why he and friends suffered numbness, weakness, and palpitations when they dined in certain Chinese restaurants. He reported that the condition occurred 15 to 20 minutes following the meal and lasted about two hours. The letter was published under the heading "Chinese Restaurant Syndrome." Published responses that followed indicated that Dr. Kwok's problem was a reaction to monosodium glutamate and - as industry protested - the debate over the safety of MSG began.

About the same time, John W. Olney, M.D., a neuroscientist at Washington University, St. Louis, Missouri who recently had been appointed to the National Academy of Science, noted that mice being fed MSG for a study of retinal deterioration had become grotesquely obese.⁶ Believing that the obesity was related to the function of the hypothalamus in the brain, he sacrificed MSG-fed mice and found that MSG caused hypothalamus lesions and neuroendocrine disorders, and that the very young were at particular risk. Neuroscientists now generally agree that glutamic acid is neurotoxic, killing brain neurons by exciting them to death.

Dr. Olney's findings did raise concern, especially since he had pointed out that the very young were most susceptible to damage because the protective blood brain barrier remains under development in the young. Because of Dr. Olney's work, considerable pressure was put on the food industry to remove MSG from baby food. In an apparent effort to diffuse the pressure, they agreed. To this date, however, the FDA has taken no official action to disallow MSG in baby food.

Although baby food sold today appears to be MSG-free, there are junior food products with MSG, and, of course, infants eat table food, much of which contains MSG. Also, baby formula contains ingredients with MSG; formulas for allergic infants contain much larger amounts than regular formula.

INDUSTRY RESEARCH

In 1969, just as the dangers of MSG were being discovered, the glutamate industry formed a nonprofit organization, the International Glutamate Technical Committee (IGTC), and in

Table 1: Hidden Sources of MSG

Source: Dr. John Gambee, MD

These ingredients ALWAYS contain MSG:

Glutamate	Glutamic acid	Monosodium glutamate
Textured protein	Hydrolyzed protein	Monopotassium glutamate
Calcium caseinate	Sodium caseinate	Gelatin
Yeast extract	Yeast food	Autolyzed yeast

These ingredients OFTEN contain MSG or create MSG during processing:

Flavors & Flavorings	Seasonings	Natural flavors and flavorings
Natural pork flavoring	Natural beef flavoring	Natural chicken flavoring
Soy sauce	Soy protein isolate	Soy protein
Bouillon	Stock	Broth
Malt extract	Malt flavoring	Barley malt
Whey protein	Carrageenan	Maltodextrin
Pectin	Enzymes	Protease
Corn starch	Citric acid	Powdered milk
anything Protein fortified	anything Enzyme modified	anything Ultra-pasteurized

Some unexpected sources of MSG:

Salad dressings	Frozen meals	Packaged and restaurant soups
Cheese	Reduced fat milk	Chewing gum
Ice cream	Cookies	Vitamin enriched foods
Beverages	Candy	Cigarettes
Medications	I.V. Materials	Supplements, particularly minerals

1977 formed a subsidiary, The Glutamate Association (TGA), to defend the safety of its product, the ingredient "monosodium glutamate."

To this day, IGTC serves as a research organization for the MSG industry, interacting with scientists and others, and providing research grants for studies on the subject of MSG. Until several years ago, TGA served as the MSG industry's connection to consumers, acting somewhat like a public relations firm. Today, the International Food Information Council (IFIC) most often acts for TGA, distributing questionable information on the subject of MSG to the media and clogging the Internet with similar misleading information. IFIC holds itself out as an independent organization concerned with food related health issues. In fact, IFIC is funded primarily, if not totally, by the food industry whose products it claims to be safe.⁷ Through a foundation, IFIC provides grants to agencies such as the American Dietetic Association and the American College of Family Practice Foundation.

If one were to review the literature to determine if controlled studies have ever been done on humans to prove or disprove that they are sensitive to MSG, one would find that, with possible rare exception, all such studies have been conducted under sponsorship of IGTC or one of their agents or supporters. One would also find that both test and placebo materials have typically been provided by IGTC. In one case, where the researcher used soup in the study, the researchers obtained the soup from Ajinomoto in Japan rather than rely on a source in this country.⁸ In these controlled studies, some subjects always react to MSG, but large numbers of subjects also react to a placebo. These studies conclude that since the subjects react

to both MSG and placebos, it "proves" that it is not the MSG that people are reacting to. As faulty as this logic is, it is these studies that the FDA relies on in concluding that MSG is safe.

PLACEBO PROBLEMS

For years, I could not figure out why large numbers of subjects in MSG industry-sponsored studies were reacting to placebos which, by definition, should be made up of inert, non-reactive material. Finally, in 1993, we found the answer. The placebos contained aspartame! The proof was contained in a letter signed by the chairman of the IGTC.⁹ It was found in a file of the FDA. The use of aspartame dated back to 1978, three years before aspartame was approved by the FDA for human consumption.

Aspartame is far from inert and non-reactive. It contains approximately 40% aspartic acid, 50% phenylalanine, and 10% of a methyl ester. Neuroscientists have determined from studies on experimental animals that both aspartic acid and glutamic acid load on the same receptors in the brain, cause identical brain lesions and neuroendocrine disorders and have an additive affect. Indeed, MSG-sensitive people suffer similar adverse reactions from aspartame, providing that they ingest amounts that exceed their tolerance levels, and vice versa. At this writing, the FDA has on file approximately 7,000 unsolicited reports of adverse reactions to aspartame.

The proof of the inappropriate placebos was turned over to the FDA. After several years of prodding, the FDA turned for vindication to a special Expert Panel of the Federation of American Societies for Experimental Biology (FASEB), then study-

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Table 2: Collected Reports of Adverse Reactions to MSG

Cardiac	Neurological	Gastrointestinal
Arrythmia	Depression	Diarrhea
Extreme rise or drop in blood pressure	Dizziness	Nausea/vomiting
Rapid heartbeat (tachycardia)	Light-headedness	Stomach cramps
Angina	Loss of balance	Irritable bowel
	Disorientation	Bloating
	Mental confusion	
Circulatory	Anxiety	Respiratory
Swelling	Panic attacks	Asthma
	Hyperactivity	Shortness of breath
Muscular	Behavioral problems in children	Chest pain or tightness
Flu-like aches	Lethargy	Runny nose
Joint pain	Sleepiness	Sneezing
Stiffness	Insomnia	
	Migraine headache	Skin
Visual	Numbness or paralysis	Hives or rash
Blurred vision	Seizures	Mouth lesions
Difficulty focusing	Sciatica	Tingling
	Slurred speech	Flushing
Urological	Shaking	Extreme dryness of the mouth
Swelling of prostate	Trembling	
Nocturia		

GLUTEN ELIMINATION DIET

Next to dairy, gluten containing grains are the most common cause of food related reactions. Many people apparently have an inherited genetic disorder, where they lack the enzyme necessary to digest gluten and as a consequence, a neurotoxic intermediary metabolite may build up that will affect their nervous and immune system. One of the subfractions of gluten is ounce for ounce, just as addicting as morphine, and has the potential to cause severe withdrawal symptoms (this gives a whole new meaning to the term "comfort food").

The best way to find out if you have problems with gluten, is to assiduously avoid it for 10 to 14 days before reintroducing it back into your diet (in the old days of food challenge, it was felt that you should then eat it for two consecutive meals to see if you experienced a flare-up). It isn't uncommon to find the first one to three days after eliminating it that you feel worse from withdrawal and detoxification before starting to feel better.

GLUTEN CONTAINING FOODS TO AVOID:

wheat, rye, oats, barley, spelt, triticale in any form, such as starch, bran, semolina, graham and MSG (see following info on MSG)

NON-GLUTEN STARCHES THAT CAN BE EATEN:

corn, rice, potato, millet, buckwheat, amaranth, quinoa, teff, tapioca, sweet potato, squash, arrowroot, legume flours

Table 1: Hidden Sources of MSG**These ingredients ALWAYS contain MSG:**

Glutamate	Glutamic acid	Monosodium glutamate
Textured protein	Hydrolyzed protein	Monopotassium glutamate
Calcium caseinate	Sodium caseinate	Gelatin
Yeast extract	Yeast food	Autolyzed yeast

These ingredients OFTEN contain MSG or create MSG during processing:

Flavors & Flavorings	Seasonings	Natural flavors and flavorings
Natural pork flavoring	Natural beef flavoring	Natural chicken flavoring
Soy sauce	Soy protein isolate	Soy protein
Bouillon	Stock	Broth
Malt extract	Malt flavoring	Barley malt
Whey protein	Carrageenan	Maltodextrin
Pectin	Enzymes	Protease
Corn starch	Citric acid	Powdered milk
anything Protein fortified	anything Enzyme modified	anything Ultra-pasteurized

Some unexpected sources of MSG:

Salad dressings	Frozen meals	Packaged and restaurant soups
Cheese	Reduced fat milk	Chewing gum
Ice cream	Cookies	Vitamin enriched foods
Beverages	Candy	Cigarettes
Medications	I.V. Materials	Supplements, particularly minerals

Gluten Sensitivity = Celiac Disease

Tammera J. Karr, MSHN, CNC, CNW, CNH ©2009

Link: <http://yourwholenutrition.com/blog/allergies/gluten-sensitivity-celiac-disease/>

What is gluten sensitivity – also known as celiac disease, and why are there so many people suddenly talking about it?

What is gluten sensitivity – also known as celiac disease, and why are there so many people suddenly talking about it? Gluten is contained in the endosperm of the wheat grain. Wheat is made up of the endosperm, bran and germ. Like an egg yolk, the endosperm is the part of the wheat berry that feeds the germ that sprouts into grass. Gluten is a protein; it is this protein that so many folks have problems with.

The offending proteins found in wheat have toxic effects on the brain and body. Similar proteins are found in barley, spelt, triticale, kamut, wheat, and rye. Oats lack these proteins; however they are commonly stored, shipped and handled with wheat, lending to cross contamination making non-certified gluten-free oats equally problematic. Gluten sensitivity or celiac disease is a life long illness. Celiac disease is regarded by most physicians as an uncommon disease in the United States. However, 1 in 5 Americans of Northern European descent can have gluten sensitivity. Gluten sensitivity is linked to a genetic pre-disposition. Individuals may show no signs of Gluten sensitivity (celiac disease) until later in life, when symptoms appear, apparently triggered by surgery, viral infection, pregnancy, childbirth, or a stressful event. Infants and children with gluten sensitivity (celiac disease) may fail to grow and develop properly. European countries regard gluten sensitivity as a common illness, particularly in Ireland, Northern Europe, and Italy.

There is an increased rate of malignancies (cancer) associated with celiac disease. Increased rates return to normal levels after 5 years on a gluten-free diet. Recent data has demonstrated, the earlier the diagnosis and the earlier a patient can commence a gluten-free diet, the fewer other autoimmune-type diseases the patient will acquire; such as thyroid illness, diabetes, osteoporosis and more.

Here is a list of the most common health challenges associated with gluten sensitivity:

- Abdominal pain, bloating and gas
- Bone / joint pain
- Chronic fatigue and weakness
- Concentration / learning difficulties

- Dental enamel defects
- Depression
- Diarrhea, sometimes constipation, often both.
- Easy bruising of the skin
- Fibromyalgia
- Iron deficiency with or without anemia
- Lactose intolerance
- Lupus
- Mouth ulcers
- Nausea and vomiting
- Osteoporosis
- [Rheumatoid arthritis](#)
- [Sarcoidosis](#)
- Skin rashes
- [Sjögren's syndrome](#)
- Thyroid Illnesses
- Type 1 & 2 Diabetes
- Vitamin and mineral deficiencies
- [Vasculitis](#)
- Vitamin D deficiency
- Weight loss / Gain

A recent study found that some people with celiac disease had neuropathic symptoms before the gastrointestinal symptoms appeared. The results of this study, and the fact that 10% of people with celiac disease suffer from an associated neurological condition (usually peripheral neuropathy or ataxia – a condition characterized by jerky, uncoordinated movements and gait), indicates that patients with neuropathy of an unknown cause should be tested for celiac disease.

How can something like wheat be the cause of so many illnesses? Over the last 50 years through genetic modification and hybridization, wheat now contains a higher content of gluten and large amounts of herbicides and pesticides are used on these crops. This means the DNA of wheat has been changed and no longer interacts with human DNA like it is supposed to. Additionally the chemicals contained in the grain are all known to disrupt hormones and precipitate cancer.

The average supermarket in the United States can easily contain 100,000 food items. It is safe to say that 50% or more of these foods contain added gluten in the form of food additives, coatings and base ingredients. Gluten is the most prevalent form of protein used to augment foods. In other words – it's everywhere. It is not easy getting gluten out of the diet, and it needs to be a lifelong change; it can be done and a whole new world of wonderful foods opens up to the person who has to go wheat free. The rewards of feeling better and reduced health risk far

Gluten Testing through Cyrex Labs

Link: <https://www.cyrexlabs.com/CyrexTestsArrays/tabid/136/Default.aspx>

Source: Tamera Karr, PhD Holistic Nutrition for the Whole You

<http://yourwholenutrition.com/about.html>

These are tests for Gluten Testing and Food Allergies.

To know more please visit:

<https://www.cyrexlabs.com/CyrexTestsArrays/tabid/136/Default.aspx>

- Mucosal Gluten Reactivity Screen
- Secretory IgA
- Gliadin IgA + IgM Combined
- Transglutaminase IgA + IgM Combined

Author: [Alice Elliott Brown](#) — Published: [Apr 03, 2011](#)

Link: <http://blogcritics.org/tastes/article/can-gmo-food-be-organic/>

Can GMO Food Be Organic?

GMO Food: Genetically-modified organisms. This refers to the act of scientifically modifying the genetic structure of an organism. The resultant organism will have specifically defined characteristics. This is frequently done with seeds for crops. In the U.S., most of our soybeans, corn, cotton, and canola are genetically modified. Recently, the U.S. allowed GMO alfalfa to be planted without restriction. The genetically modified seeds can be patented. After all, the research to make them costs money. The argument for seed patents is that the investor must receive a return, or there will be no more investment money for research.

Until recently, I assumed GMO food could not be called "organic." The U.S. and Canada both prohibit 100% certified organic food from containing GMO ingredients. However, contamination of the crops may cause organic feed to contain some percentage of GMO ingredients. At the Straus Family Creamery in California, for example, [Farmer Straus spent nearly \\$10,000 tracing back the ingredients in his organic supplies](#), to remove the GMO traces. Basically, the problem is that GMO crops spew pollen into the air, as all crops do. This pollen cross-breeds with organic feed, which pollutes and corrupts the organic farms.

It is a normal practice for organic farmers to save their seed for the next year. With GMO crops growing nearby, however, the organic crops become infected with the GMO seed. When the farmer saves his seed, he is then infringing on Monsanto Corporation's patent. [Monsanto issued policies about patent infringement](#) and their methods of enforcing patent law on these seeds. In these policies, Monsanto takes the position that their patented seed is desirable, and therefore the farmers who normally save their own seed are taking something away from the company.

Organic farmers point out that they are no longer organic when their seed is contaminated by genetically-engineered cross-pollination. They are the victim, not the perpetrator. The Monsanto Corporation protests that it has sued only 145 farmers for patent violation. Meanwhile, the Organic Consumers Organization has organized a Millions Against Monsanto campaign to pressure Congress to force foods to be labeled as GMO. This would allow consumers to decide whether they will risk their health with GMO foods. The FDA does not determine whether or not GMO is safe. It only determines whether evidence has been provided to declare it unsafe. No evidence, no reason not to eat it.

Of course, whether GMO food is safe will not be determined until after people have eaten it for 20 or more years. By that time, non-GMO seeds may no longer be available on the planet, as the wind and the birds cross-pollinate our fields. Although dramatic increases in the incidence of allergies and immune system diseases have occurred over the last 20 years, science have not been able to identify why this has happened.

Labeling & Bans

NO

The U.S. and Canada do not require labeling of GMO food.

YES

Over 60 countries have labeling, restrictions or bans on GMO food.



What do they Know that we Don't?

Currently, the only way to know you are not purchasing food contaminated with GMOs is to not buy anything that contains a likely GMO food, and to buy only processed foods with the "Non-GMO Project Verified seal".

What can we do if we want the right to choose? First, take the time to learn more. Your rights depend upon it.

Genetically modified food, also called *Frankenfood* by critics, is found in most processed food in the US. If you eat food made from corn, canola, soybeans, cottonseed oil, or sugar from beets,

you are most likely ingesting GMOs. Livestock animals, including dairy cows, are fed predominantly corn, canola, soy, and alfalfa, which is also genetically engineered.

Currently, a GM Atlantic salmon is up for approval for American tables, as well. Not one of these plant or animal products is required to be labeled in the U.S., even though the public has repeatedly demanded choice. Currently, the only way to know you are not purchasing food contaminated with GMOs is to not buy anything that contains a likely GMO food, and/or to buy only processed foods that have the “Non-GMO Project Verified seal”.

What can we do if we want the right to choose? First, take the time to learn more. Your rights depend upon it.

GMO Myths & Truths

Genetically modified crops are promoted on the basis of a range of far-reaching claims from the biotech industry and its supporters. A new, evidence-based report by U.K. scientists shows these claims are unsubstantiated. Here is a snapshot of their findings.

MYTH #1: Genetic engineering is just an extension of natural breeding.

TRUTH: Genetic engineering is very different from natural breeding and poses special risks. Natural breeding occurs between like life forms—a cat with a cat, not a cat with a dog or a tomato with a fish. GM transfers DNA between unrelated organisms in ways that do not occur naturally.

MYTH #2: GM foods are strictly regulated for safety.

TRUTH: GM food regulation in most countries varies from non-existent (the U.S.) to weak. In the U.S. the FDA overruled its own scientists to form a GM policy, in the 1990s. The policy required no safety testing or labeling.

MYTH #3: GM foods are safe to eat.

TRUTH: GM foods can be toxic or allergenic. Peer-reviewed studies have found serious, harmful effects on the health of livestock and lab animals fed GMOs.

MYTH #4: GM Bt insecticidal crops harm only insects and are harmless to animals and people.

TRUTH: GM Bt insecticidal crops pose hazards to people and animals that ingest them. Findings include toxic effects on the small intestine, liver, kidney, spleen, and pancreas, and disturbances in the digestive and immune systems.

MYTH #5: GM animal feed poses no risks to animal or human health.

TRUTH: GM feed affects the health of animals and may affect the humans who eat their products. Bt toxin protein has been found in the blood of pregnant women and the blood supply to their fetuses.

MYTH #6: GM crops increase yield potential.

TRUTH: GM crops do not increase yield potential—and in many cases decrease it. Dr. Doug Gurian-Sherman: "Traditional breeding ...can be solely credited with the intrinsic yield increases in the U.S. and other parts of the world that characterized the agriculture of the 20th century:"

MYTH #7: GM crops decrease pesticide use.

TRUTH: GM crops increase pesticide use. In the first 13 years since their introduction, in 1996, GM crops increased pesticide use by 383 million pounds.

MYTH #8: No-till farming with GM crops is "environmentally friendly".

TRUTH: Claims of environmental benefits are unsound. GM herbicide-tolerant crops, such as Roundup Ready soy, have increased the use of toxic chemicals and led to glyphosate-resistant superweeds. These superweeds and other pests now require even more chemical controls.

GMO Myths & Truths

MYTH #9: Roundup (Monsanto's glyphosate) is a benign, biodegradable herbicide.

TRUTH: Roundup is not biodegradable, and was forced by law to remove that claim from its packaging. Roundup persists in the environment and has toxic effects on wildlife. Roundup (Glyphosate) is toxic, and was detected in 60%-100% of air and rain samples in the U.S. Midwest during crop growing season.

MYTH #10: GM crops can "coexist" with non-GM.

TRUTH: "Coexistence" rapidly results in widespread contamination of non-GM and organic crops. Germany passed a law making GM crop growers liable for economic damages to non-GM farmers resulting from GM contamination. The law has virtually halted the planting of GM crops in that country.

MYTH #11: GM will deliver climate-ready crops.

TRUTH: Conventional breeding outstrips GM in delivering climate-ready crops. Tolerance to extreme weather and resistance to accompanying pests and diseases are complex traits that GM cannot deliver.

MYTH #12: GM reduces energy use.

TRUTH: GM crops are energy-hungry. They depend on large amounts of herbicides which require large amounts of fossil fuels to manufacture. The U.S. food system spends 10 kilocalories of fossil energy for every 1 kilocalorie produced. Two-thirds of that energy goes to produce synthetic fertilizers and on-farm mechanization.

MYTH #13: GM crops are needed to feed the world's growing population.

TRUTH: GM crops are irrelevant to feeding the world. GM neither delivers higher yields nor produces more with fewer inputs than non-GM crops. Hunger is a problem of distribution, poverty, and loss of crop diversity – which GM crop growth in developing nations has been shown to worsen..

MYTH #14: GM crops are vital to achieving food security.

TRUTH: Agro-ecological farming is the key to food security, according to 400 scientists and experts from 80 countries, a position endorsed by 62 governments worldwide. Their report, the *International Assessment of Agricultural Knowledge, Science and Technology*, did not endorse GM crops or livestock.

Summarized from "GMO Myths and Truths: An evidence-based examination of the claims made for the safety and efficacy of genetically modified crops," by Michael Antoniou, PhD; Claire Robinson, MPhil; and John Fagan, PhD; June 2012, published by Earth Open Source, a London based not-for-profit dedicated to assuring the sustainability, security, and safety of the global food system. Download the free 123-page report at www.earthopensource.org .

Info from the Non-GMO Project website:

<http://www.nongmoproject.org/learn-more/>

What are GMOs?

GMOs, or “genetically modified organisms,” are plants or animals created through the gene splicing techniques of biotechnology (also called genetic engineering, or GE). This experimental technology merges DNA from different species, creating unstable combinations of plant, animal, bacterial and viral genes that cannot occur in nature or in traditional crossbreeding.

Virtually all commercial GMOs are engineered to withstand direct application of herbicide and/or to produce an insecticide. Despite biotech industry promises, none of the GMO traits currently on the market offer increased yield, drought tolerance, enhanced nutrition, or any other consumer benefit.

Meanwhile, a growing body of evidence connects GMOs with health problems, environmental damage and violation of farmers’ and consumers’ rights.

Are GMOs safe?

Most developed nations do not consider GMOs to be safe. In nearly 50 countries around the world, including Australia, Japan, and all of the countries in the European Union, there are significant restrictions or outright bans on the production and sale of GMOs. In the U.S., the government has approved GMOs based on studies conducted by the same corporations that created them and profit from their sale. Increasingly, Americans are taking matters into their own hands and choosing to opt out of the GMO experiment.

Are GMOs labeled?

Unfortunately, even though polls consistently show that a significant majority of Americans want to know if the food they’re purchasing contains GMOs, the powerful biotech lobby has succeeded in keeping this information from the public. In the absence of mandatory labeling, the Non-GMO Project was created to give consumers the informed choice they deserve.

Where does the Non-GMO Project come in?

The Non-GMO Project is a non-profit organization with a mission of protecting the non-GMO food supply and giving consumers an informed choice. We offer North America’s ONLY third party verification for products produced according to rigorous best practices for GMO avoidance (for more info, [click here](#)). Our strategy is to empower consumers to make change through the marketplace. If people stop buying GMOs, companies will stop using them and farmers will stop growing them.

Do Americans want non-GMO foods and supplements?

Polls consistently show that a significant majority of North Americans would like to be able to tell if the food they’re purchasing contains GMOs (a 2008 CBS News Poll found that 87% of consumers wanted GMOs labeled). And, according to a recent CBS/New York Times poll, 53% of consumers said they would not buy food that has been genetically modified. The Non-GMO

Project's seal for verified products will, for the first time, give the public an opportunity to make an informed choice when it comes to GMOs.

How common are GMOs?

In the U.S., GMOs are in as much as 80% of conventional processed food. [Click here for a current list of GMO risk crops.](#)

Why does the Non-GMO Project verify products that have a low risk of containing GMOs?

Some ingredients that seem low-risk may have less-visible high-risk ingredients. Take, for example, dried fruit. Raisins and similar fruit are sometimes packed with a small quantity of oil to keep them moist. This oil, when used, is sometimes high-GMO-risk. As such, it is critical that we do take the time to look carefully at ingredient spec sheets during the verification process, to ensure that risks like this are effectively mitigated, even in apparently low-risk products.

Contamination incidents have occurred with seemingly "low-risk" products (rice, starling corn, flax). Non-GMO Project Verification supports manufacturers in being able to quickly and proactively respond to unexpected contamination issues.

Verifying only high-risk products puts a heavy burden on consumers to know what products are at risk of containing GMOs. Many people, even in the world of Natural Foods, don't know what a GMO is, let alone which crops and processed ingredients are high-risk. As such, labeling only products that contain high-risk ingredients could give an unfair competitive advantage to products that contain ingredients containing corn, soy, etc. Taking the cereal aisle for our example, if we verified only high-risk products, a shopper might see the seal on a box of verified corn flakes, but not on the wheat-based cereal box next to them, produced with the same high standards by the same company. This could leave them thinking the corn flakes were non-GMO, but that they should avoid the wheat product, even though there's no GMO wheat on the market. Given the lack of understanding of the issue, this presents some serious issues.

Through verifying low-risk products, the Non-GMO Project's work builds consumer interest and industry investment in Non-GMO, even for crops that aren't genetically engineered yet. Biotech is constantly working to patent and commercialize new organisms (salmon, apples, etc.), and the more companies that have committed to Non-GMO production, the more resistance these new developments will see prior to release.

What are the impacts of GMOs on the environment?

Over 80% of all GMOs grown worldwide are engineered for herbicide tolerance. As a result, use of toxic herbicides like Roundup has increased 15 times since GMOs were introduced. GMO crops are also responsible for the emergence of "super weeds" and "super bugs:" which can only be killed with ever more toxic poisons like 2,4-D (a major ingredient in Agent Orange). GMOs are a direct extension of chemical agriculture, and are developed and sold by the world's biggest chemical companies. The long-term impacts of GMOs are unknown, and once released into the environment these novel organisms cannot be recalled.

How do GMOs affect farmers?

Because GMOs are novel life forms, biotechnology companies have been able to obtain patents with which to restrict their use. As a result, the companies that make GMOs now have the power to sue farmers whose fields are contaminated with GMOs, even when it is the result of inevitable drift from neighboring fields. GMOs therefore pose a serious threat to farmer sovereignty and to the national food security of any country where they are grown, including the United States.

How can I avoid GMOs?

Choose food and products that are Non-GMO Project Verified! [Click here to see a complete list.](#)



Learn more about GMOs:

To learn how to make Non-GMO food choices:

The Non-GMO Project: www.nongmoproject.org/

The Non-GMO Shopping Guide: www.nongmoshoppingguide.com/

To Learn More In-Depth Information About GMOs:

Watch the informative documentary, "Genetic Roulette": <http://geneticroullettemovie.com/>

Visit the Institute for Responsible Technology: <http://responsibletechnology.org/>

Visit Earth Open Source and download their paper "GMO Myths & Truths: <http://earthopensource.org/>

Read the GM Watch research paper "GM Crops – Just the Science": <http://www.gmwatch.eu/gm-crops-research-documenting-the-limitations-risks-and-alternatives>

Watch the award-winning documentary "The Future of Food": <http://www.thefutureoffood.com/>

Watch "One Mom's Story": <http://justlabelit.org/right-to-know/why-labels-matter-to-moms/>

To learn more about the economic and social damage caused by GMOs:

Impacts of Genetically Engineered Crops on Pesticide Use in the United States: The First Thirteen Years: http://www.organic-center.org/reportfiles/13Years20091126_FullReport.pdf

The GMO Emperor has No Clothes: http://www.navdanya.org/attachments/Latest_Publications1.pdf

The Union of Concerned Scientists 2009 GMO research paper "Failure to Yield":

http://www.ucsusa.org/food_and_agriculture/science_and_impacts/science/failure-to-yield.html

Watch the award-winning documentary, "Bitter Seeds":

<http://teddybearfilms.com/2011/10/01/bitter-seeds-2/>

To contact food companies for more information about their products, and to ask them to become a part of the Non-GMO Project:

Food Manufacturer List: <http://nutritionwonderland.com/2009/02/organic-corporate-hierarchy/>

This flyer is brought to you by Oregonians for Farm & Food Rights.

To learn more, visit: www.FarmAndFoodRights.org

When Organic Isn't Really Organic

By [Jyoti Thottam](#) Wednesday, Mar. 14, 2007 TIME MAGAZINE

Link: <http://www.time.com/time/health/article/0,8599,1599110,00.html>

[Learn More](#)



At the Straus Family Creamery. Straus Family Creamery

When you buy a gallon of organic milk, you expect to get tasty milk from happy cows who haven't been subjected to antibiotics, hormones or pesticides. But you might also unknowingly be getting genetically modified cattle feed.

Albert Straus, owner of the Straus Family Creamery in the small northern California town of Marshall, decided to test the feed that he gives his 1,600 cows last year and was alarmed to find that nearly 6% of the organic corn feed he received from suppliers was "contaminated" by genetically modified (GM) organisms. Organic food is, by definition, supposed to be free of genetically modified material, and organic crops are required to be isolated from other crops. But as GM crops become more prevalent, there is little that an organic farmer can do to prevent a speck of GM pollen or a stray GM seed from being blown by the wind onto his land or farm equipment and, eventually, into his products. In 2006, GM crops accounted for 61% of all the corn planted in the U.S. and 89% of all the soybeans. "I feared that there weren't enough safeguards," Straus says.

So Straus and five other natural food producers, including industry leader Whole Foods, announced last week that they would seek a new certification for their products, "non-GMO verified," in the hopes that it will become a voluntary industry standard for GM-free goods. A non-profit group called the Non-GMO Project runs the program, and the testing is conducted by an outside lab called Genetic ID. In a few weeks, Straus expects to become the first food manufacturer in the country to carry the label in addition to his "organic" one. With Whole Foods in the ring, the rest of the industry will soon be under competitive pressure to follow.

Earning the non-GMO label, at least initially, requires nearly as much effort as getting certified organic. To root out the genetically modified corn, Straus spent several months and about \$10,000 testing, re-testing and tracing back his products: from his own dairy's milk, to other dairies that supply some of his milk, to the brokers who sell them feed, to their mills that grind the corn, to farmers who grow it. To put the GM-free label on his ice cream, Straus will have to trace the chickens that provided the egg yolks, the grain used in the alcohol that carries his vanilla extract and the soy lecithin used as an emulsifier for his chocolate chips.

So why bother? The organic and natural foods industry sees a huge opportunity in telling consumers even more about what's in their food. Few consumers would think about the pesticides and hormones in conventional foods without the organic alternative to remind them. Similarly, genetically modified crops have become so prevalent in the U.S. that chances are you've been buying and eating them for years. You just wouldn't know it from the label: the U.S. Department of Agriculture, unlike agencies in Europe and Japan, do not require GM foods to be labeled. While scientists have not identified any specific health risks from eating GM foods, anti-GM activists say there is not enough research yet into their long-term risks or impact on biodiversity. By telling consumers loud and clear which products are GM-free, organic-food producers will give them one more reason to choose organic. Says Jeffrey Smith, a longtime activist against genetically modified food: "The people served by the organic industry are very sensitive to GMO." And, the industry hopes, willing to pay to avoid it.

Read more: <http://www.time.com/time/health/article/0,8599,1599110,00.html#ixzz26CScfTgQ>

Girls now begin puberty aged 9

Submitted by [Drew Kaplan](#) on July 4, 2010 – 11:48 am

Source: <http://www.timesonline.co.uk/tol/news/uk/health/article7148975.ece>

GROWING numbers of girls are reaching puberty before the age of 10, raising fears of increased sexual activity among a new generation of children.

Scientists believe the phenomenon could be linked to obesity or exposure to chemicals in the food chain, and is putting girls at greater long-term risk of breast cancer.

A study has revealed that breast development in a sample of 1,000 girls started at an average age of 9 years and 10 months — an entire year earlier than when a similar cohort was examined in 1991. The research was carried out in Denmark in 2006, the latest year for which figures were available, but experts believe the trend applies to Britain and other parts of Europe. Data from America also point to the earlier onset of puberty. Scientists warn that such young girls are ill-equipped to cope with sexual development when they are still at primary school.

“We were very surprised that there had been such a change in a period of just 15 years,” said Anders Juul, head of the Department of Growth and Reproduction at the University hospital in Copenhagen, a world leader in the study of hormones and growth.

“If girls mature early, they run into teenage problems at an early age and they’re more prone to diseases later on. We should be worried about this regardless of what we think the underlying reasons might be. It’s a clear sign that something is affecting our children, whether it’s junk food, environmental chemicals or lack of physical activity.”

Hitting puberty early can mean longer exposure to oestrogen, which is a factor in breast cancer. There is also a greater risk of heart disease.

A number of artificially produced chemicals have been blamed for interfering with sexual development, notably bisphenol A, a plastic found in the lining of tin cans and babies’ feeding bottles.

Juul’s research team is now testing blood and urine samples from girls in the study to see if a direct link can be drawn between early sexual maturation and bisphenol A.

Another factor in puberty could be diet. Children are eating more than previous generations and growing bigger — and in many cases becoming obese.

There has been a steady lowering in the onset of puberty. In the 19th century, it was at about 15 for girls and 17 for boys.

The international standard for normal puberty in white girls was set in the 1960s at 12½ for the age when periods begin and at about 14 for boys when their voices break and their growth surges.

A more recent consensus in Britain has proved elusive. “Although we don’t have clear data here, there is evidence the same thing [as in Denmark] is happening for reasons that we don’t understand,” said Richard Sharpe, head of the Medical Research Council’s human reproductive sciences unit in Edinburgh.

“We don’t know if this is the result of better nutrition or environmental factors, but it does create social problems for girls who are already living in a sexualised society.”

Sharpe said boys had also been affected by the phenomenon. Choir schools have reported an increasing number of boys dropping out because their voices had broken at the age of 12 or 13.

Richard Stanhope, an expert in hormonal disorders in children who recently retired from Great Ormond Street hospital, said specialists in his field believed they were seeing more children going through early puberty.

“All the things we experience as teenagers are difficult enough to cope with, but when it happens at 10 or 11 it is much worse,” he said.

“These children are also at a much higher risk of being sexually abused because it is hard for some adults to understand and behave appropriately towards them.”

Girls who reach puberty early often find themselves teased at school. “I had to wear a bra at 9,” said one girl, who did not want to be named. “I used to pretend to be ill to get out of changing for PE.

“The worst part was men coming on to me as though I was an adult when actually I was 11.”

A study published in the journal *Public Health Nutrition* last Friday showed a link between high meat consumption and earlier puberty in girls.

Researchers at Brighton University found that 49% of girls who ate meat 12 times a week at the age of 7 had reached puberty by the age of 12 ½, compared with 35% of those who ate meat four times a week or less.

Hormones in Meat

Source: <http://www.organicconsumers.org/>

Drugs In Our Meat – Shouldn't We Know?

Ever heard of the drugs oestradiol-17, zeranol, trenbolone acetate and melengestrol acetate? Probably not. That's because meat producers aren't required to tell you that these synthetic growth hormones - linked to increased risk of breast and prostate cancers in humans - are routinely injected or implanted into animals raised for meat in the U.S.

The European Commission has banned the use of these drugs in animals raised for human consumption in Europe, and forbids the import of meat containing these hormones from the US. But here in this country? The FDA not only allows these and other antibiotics and hormones to be routinely injected, implanted, or laced into farm or feedlot animals raised for meat, dairy or eggs, but it also doesn't require meat producers to tell you which drugs they use, or in what quantities.

While GMO labeling has taken center stage this past year in the fight for truth-and-transparency in labeling, there's another labeling battle looming: the labeling of meat, eggs and dairy products coming out of factory farms. These products routinely contain residues of dangerous antibiotics and hormones. The OCA plans to make the labeling of these products a priority in 2013.

Meanwhile, this week, the Government Accountability Project (GAP) announced it is suing the FDA - that agency that's supposed to be looking out for public health - because it won't release detailed information about which antibiotics are being used in what quantities in the animals raised for meat on our grocery shelves. We do know this: 80% of all antibiotics sold in the US are sold for use in animals raised for meat. Why? To make the animals grow faster and survive the hellish conditions in factory farms, or CAFOs (Confined Animal Feeding Operations). This means two things. Humans are indirectly consuming these antibiotics and hormones. And, as public health experts have warned repeatedly, the rampant and reckless use of antibiotics on factory farms is making antibiotics less and less effective as cures for diseases that affect humans.

Source: <http://www.organicconsumers.org/>

Hormones in U.S. Beef Linked to Increased Cancer Risk

Submitted by [Drew Kaplan](#) on May 26, 2010

Beef produced in the United States is heavily contaminated with natural or synthetic sex hormones, which are associated with an increased risk of reproductive and childhood cancers, warns Dr. Samuel S. Epstein, Chairman of the Cancer Prevention Coalition.

“Increased levels of sex hormones are linked to the escalating incidence of reproductive cancers in the United States since 1975 – 60% for prostate, 59% for testis, and 10% for breast,” Dr. Epstein says. When beef cattle enter feedlots, pellets of these hormones are implanted under the ear skin, a process that is repeated at the midpoint of their 100-day pre-slaughter fattening period, Dr. Epstein explains. These hormones increase carcass weight, adding over \$80 in extra profit per animal.

Also, Dr. Epstein says, “Not surprisingly, but contrary to longstanding claims by the U.S. Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA), residues of these hormones in meat are up to 20-fold higher than normal.”

“Still higher residues result from the not uncommon illegal practice of implantation directly into muscle. Furthermore, contrary to misleading assurances, meat is still not monitored for hormone residues,” Dr. Epstein emphasizes.

Nevertheless, he points out, the FDA and USDA maintain that hormone residues in meat are within “normal levels,” while waiving any requirements for residue testing.

Following a single ear implant in steers of Synovex-S, a combination of estrogen and progesterone, residues of these hormones in meat were found to be up to 20-fold higher than normal.

The amount of estradiol in two hamburgers eaten in one day by an 8-year-old boy could increase his total hormone levels by as much as 10%, particularly as young children have very low natural hormone levels.

Not surprisingly, Dr. Epstein says, the incidence of childhood cancer has increased by 38% since 1975.

These concerns are not new. As evidenced in a series of General Accountability Office investigations and Congressional hearings, FDA residue-tolerance programs and USDA inspections are in near total disarray, aggravated by brazen denials and cover-ups.

A January 1986 report, “Human Food Safety and the Regulation of Animal Drugs,” unanimously approved by the House Committee on Government Operations, concluded that “the FDA has consistently disregarded its responsibility – has repeatedly put what is perceived as interests of veterinarians and the livestock industry ahead of its legal obligation to protect consumers, thus jeopardizing the health and safety of consumers of meat, milk and poultry.”

On January 1, 1989, the European Community placed a ban on meat imports from animals treated with growth inducing hormones. This had a direct impact on the U.S. beef industry, which uses hormones in more than half of the cattle sent to market each year.

Twenty-years later, on May 6, 2009, the European Union and the United States settled their long-running dispute over hormone-treated beef. Under terms of the four-year deal the EU will be permitted to maintain its ban on hormone-fed beef. In return, the EU has agreed to increase the amount of hormone-free beef that can be imported from the U.S. without duty.

It is well recognized that American women have about a five-fold greater risk of breast cancer than women in countries that do not permit the sale of hormonal beef.

However, as recently confirmed by studies of cancer rates in Los Angeles County, the most highly populated, ethnically diverse county in the U.S., the low risk in Japanese women in Japan increases sharply in Japanese immigrants to the United States after one to two generations.

This, and a wide range of other studies in migrant populations, is evidence that avoidable causes of breast cancer include adoption of Western dietary habits, particularly the consumption of hormone- laced beef.

Samuel S. Epstein, M.D. is professor emeritus of Environmental and Occupational Medicine at the University of Illinois at Chicago School of Public Health; Chairman of the Cancer Prevention Coalition; and a former President of the Rachel Carson Trust. His awards include the 1989 Right Livelihood Award and the 2005 Albert Schweitzer Golden Grand Medal for International Contributions to Cancer Prevention. Dr. Epstein has authored 250 scientific articles and 15 books on cancer prevention, including the groundbreaking *The Politics of Cancer* (1979), and most recently *Toxic Beauty* (2009, Benbella Books: www.benbellabooks.com) about carcinogens in cosmetics and personal care products.

Meat: Choose Organic

Tuesday, July 20, 2010 by: Maddie Ellison, citizen journalist

(NaturalNews) Not so long ago you could only buy organic products at health food stores, but more and more they are popping up in large retail grocery stores. Organic meats like chicken, turkey and beef are now sitting next to their non organic counterparts. But what are organic meats and are they any healthier?

In order for anything to be considered organic it has to meet the standards set by the USDA (United States Department of Agriculture). For an animal, that means they must be fed 100 percent organic feed. They also have to be free-range. That means they must be given access to the outdoors and can't be confined to buildings. No animal by-products can be given to the animals and they can't be given antibiotics or growth hormones. For an animal to be raised for its organic beef, chicken or turkey, its mother must have been fed organic feed for at least the last third of gestation.

Organic livestock farming is much different from factory farming. In factory farming many animals are kept in a limited amount of space. They never see the light of day or roam anymore than a few feet. A large amount of animals confined to a small area results in a large amount of animal waste. Excessive amounts of water and chemicals must be used to keep the area clean. This leads to chemicals seeping into the soil and water table. It can also mean that the animals are less likely to be healthy due to their surroundings. This leads them to be treated with antibiotics and other medicines.

So if your beef, chicken or turkey was treated fairly and fed well, does that mean it's healthier for you? George Seimon, Founder of Organic Valley Family of Farms, explains it this way, "Animals are accumulators, and they become whatever we feed them. Organic farming starts at the bottom of the food chain by raising healthy soil, which grows healthy plants, which grow healthy animals, which make healthy humans."

Organic beef contains a higher content of Conjugated Linoleic Acids which have been reported to reduce LDL cholesterol and prevent cancers. Also, because of the way the cows are fed, organic beef has a lower chance of having E.coli. Organic meats also contain no nitrates, nitrites or preservatives - all of which have shown to have negative effects on human health.

Choosing organic animal products not only will reduce the amount of contaminants we consume, but will also benefit our environment. Organic farming safeguards our ground water since no chemical fertilizers are used. Organic farming is good for you and our planet.

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About the author

Maddie is a health and fitness enthusiast who likes to research and write about all health and green living topics. She writes about [herbal remedies](#) for Sassafras Station, a health and fitness website

Processed meat raises risk of diabetes, heart disease and cancer

NaturalNews) A new study published in the journal *Circulation* reveals that eating processed meat products significantly raises the risk of **heart disease** and **diabetes**. Previous research has linked processed meats to **cancer** as well.

The new paper involved a meta-analysis of 20 different studies covering more than one million people from 10 different countries. The study found that eating just **2 ounces** of processed meat each day resulted in the following:

- A **42 percent increase** in the risk of heart disease.
- A **19 percent increase** in the risk of diabetes.

Interestingly, the analysis simultaneously found that eating non-processed meats was not linked to these increases in disease risk. The study authors concluded that it was **the processed salt and chemical additives** in the processed meat that caused increase risk of disease.

Why sodium nitrite is poison

What the study authors did not come right out and say is that **sodium nitrite is a poison**, yet it's added to virtually all processed meats as a "color fixer." It makes dead gray meat look fleshy red, in other words, and it's added to bacon, sausage, hot dogs, pepperoni and most other processed meats. It's listed right on the label under the "ingredients" section.

I've been warning readers about sodium nitrite for seven years, and in that time, evidence has shown the chemical to cause:

- A 67% increase in pancreatic cancer (http://www.naturalnews.com/007024_G...)
- A 74% higher risk of leukemia (http://www.naturalnews.com/News_000...)
- A 40% higher risk of diabetes (http://www.naturalnews.com/027636_p...)

The USDA actually tried to ban sodium nitrite from the food supply back in the 1970's, but it was overruled by the meat industry which knew that the chemical made meat look visually more appealing and therefore increased sales of processed meat products. Despite causing cancer, sodium nitrite has remained legal in the food supply to this day.

See the Counterthink Cartoon: "Hickory Harms" at <http://www.naturalnews.com/022286.html>

How many children are dying from processed meat?

Mainstream children eat a huge quantity of processed meat products, including hot dogs, sandwich meat, bacon, sausage and beef jerky. All those products are made with **sodium nitrite**.

How many children are dying of cancer each year from this toxic chemical in the food supply? The USDA doesn't want to know and the FDA doesn't seem to care. Sodium nitrite sells more meat, and food regulators apparently have no interest in the actual safety of the food supply. As long as food products are *dead*, the FDA considers them "safe" even if they're contaminated with cancer-causing chemicals like sodium nitrite.

I find it deplorable that the FDA is trying to outlaw **raw milk** but is fine to let American children continue dying from eating cancer-causing processed meats laced with **sodium nitrite**. It sort of tells you where the real priorities are in Washington, doesn't it?

Ignorant consumers eat processed meat

While people are dying of cancer, heart disease and diabetes from the chemical additives intentionally put into processed meat products, those consumers who are aware of the truth about sodium nitrite are **avoiding all processed meats** made with sodium nitrite (look for it on the label).

Only those consumers who are ignorant of the true health risks are still buying (and eating) bacon, sausage, beef jerky and other processed meat products. Basically, we're talking about the processed food crowd, which includes low-income families, teenagers, low-IQ individuals who are unable to grasp basic health concepts and mainstream physicians who have yet to accept any link between foods and health.

Sources for this story include:

BBC

<http://news.bbc.co.uk/2/hi/health/8...>

ABC News

<http://abcnews.go.com/WN/WorldNews/...>

#240, September 2, 2010

Health, Justice and Sustainability News from the [Organic Consumers Association](#) Edited by Alexis Baden-Mayer and Ronnie Cummins

Eight Reasons Why We Need Organic

1. Personal Health

Eating organic prevents exposure to agricultural pesticides known to disrupt neurological development in infants and children, increase the risk of prostate cancer, and double the incidence of childhood lymphoma.

The President's 2010 Cancer Panel Report urges consumers to choose "food grown without pesticides or chemical fertilizers" and to limit "exposure to antibiotics, growth hormones, and toxic run-off from livestock feed lots" "by eating free-range meat raised without these medications."

2. Nutrition

An organic diet increases exposure to health-promoting CLAs, flavinoids, antioxidants.

3. Water Quality

Organic cropping systems can prevent nitrogen losses to groundwater and the atmosphere and keep drinking water from being contaminated with nitrates, which can cause blue baby syndrome and other negative health impacts.

4. No Genetic Engineering

Genetically engineered Bt corn harms aquatic insects and disrupts stream ecosystems.

Genetically modified plants have already established themselves in the wild. One study found 86 percent of plants collected outside of agriculture fields in North Dakota tested positive for genetically engineered herbicide tolerance, including combinations of transgenes that are unique to the feral varieties.

5. Soil Quality

Organics are shown to increase soil organic matter, enhance microbial activity and reduce soil acidity, all of which are linked to greater yields.

6. Biodiversity

Organic farming increases biodiversity at every level of the food chain, from bacteria to mammals.

7. Climate Change

The UN-WTO's International Trade Center found, "organic agriculture has much to offer in mitigation of climate change through its emphasis on closed nutrient cycles and is a particularly resilient and productive system for adaptation strategies."

8. Feeding the World

Research summarizing 293 published comparisons found a 30% increase in world-wide yields using organic methods. (*Source: "What is Organic Food and Why Should I Care?" by Jim Riddle and Bud Markhart for the University of Minnesota*)

A new food manifesto

It's time to take back control of what and how we eat.

Here's why. BY CAROLYN STEEL

FROM 100-MILE DIETS TO VERTICAL farming, from green markets to organics, from obesity to genetically modified organisms, food is always in the news. The issues are political, social, emotional, psychological, ecological and economic. Take the current popularity of urban farming, for example. A renewed interest in what and how we eat combined with the aftershocks of the Great Recession have inspired city dwellers to cultivate whatever little plots of land they might have. The last time people were this keen on growing their own vegetables was during World War II. So what's going on?

The short answer is: another war. The new food movement is an act of popular

control positively and collectively as a tool to shape a better world.

For millennia, food has borne multiple meanings. Food is love, health and a gift from the gods. Food is friendship, identity, belonging and community. Food is desire, sharing and pleasure. Food is sex and sacrifice, reward and punishment. Food is the body of Christ. Food is fattening. The things food has been, or has represented, are as broad as life itself. Why, then, has food for so many become just a meaningless, tasteless commodity?

Before industrialization, food was the dominant priority of cities. No settlement was built without considering its sources of sustenance. Perishable food, such as fruit

Industrialization created the illusion that cities are independent, immaculate and unstoppable. Now, the illusion is wearing off. We urgently need a new dwelling model, one that recognizes the dominant role cities play in the global ecology.

Food is vital as we rethink our way of life. Many of the dilemmas we face—how to reconcile city and country, man and nature, prosperity and sustainability—can be addressed through food. Food is the common denominator: the one thing without which we can't survive. What better basis, then, around which to order our lives? Together, we can harness food as a social and physical tool, both to interpret the world and to shape it.

Food isn't just something we need to shovel down our gullets each day to survive. It's far more potent: the means, more than any other, by which we humans shape our planet and ourselves

resistance against a system hardly less harmful to life and limb than military conflict. Food isn't just something we need to shovel down our gullets each day to survive. It's far more potent: the means, more than any other, by which we humans shape our planet and ourselves. Recognition of food's true power demands we treat it in a completely different way. Rather than thinking of it as cheap fuel, we need to embrace food as a cultural force. We need to understand food in the way our ancestors did, before fossil fuel blurred our sense of its importance.

We need a new food manifesto—one that enables us to start thinking not just *about* food but *through* it. We need to understand how profoundly food affects every aspect of our lives, depending on the way it's produced, transported, bought and sold, cooked, eaten and wasted. Food is much too important to be left in the hands of megacorporations. We must take back control of food, and start wielding that

and vegetables, were grown as locally as possible, often on the fringes of the city itself. Meat and fish were consumed seasonally, with the excess preserved through salting, drying or pickling. Nothing was wasted. Leftover scraps were fed to pigs and chickens; human and animal waste was collected and spread as fertilizer.

With the arrival of the railway, all that changed. Once it became possible to transport fresh food quickly across large distances, cities were emancipated from geography, able to grow to any size and shape in any place. Cities began to sprawl, and as they did so, food systems became industrialized to supply them.

Our very concept of a city—inherited from a distant, predominantly rural past—assumes that the means of supporting urban populations can be endlessly extracted from the natural world. But can it? With at least 3 billion people living in cities, and a further 3 billion expected to join them by 2050, the assumption looks shaky.

MY WORD FOR THIS APPROACH is "sitopia," from the Greek terms *sitos* ("food") and *topos* ("place"). We already live in a sitopia of sorts, since the cities, landscapes and ecosystems we inhabit have been profoundly shaped by food. The problem is, our blindness to food's influence has created a bad sitopia; one so bad, in fact, that it threatens to destroy itself—and us—if we don't change it. So we must create a good sitopia, one that restores balance to our lives, to society and to our relationship with the natural world.

How might that work? First, we need to understand that sitopia is not utopia. We're not trying to create an ideal world, but a way of thinking that allows us to create many different places, connections and relationships, using food as our tool.

Much of the mess we're in is due to lack of respect for food. To create a good sitopia, then, we must restore to food its true value. This isn't just a question of how much we pay for food, although that matters, but of what we understand it to represent. Ask a starving man what food means to him, and he'll give you a frank answer. Food remains the most important shared element in all our lives.

The moment we restore food's proper value, we begin to see where it belongs—not at the periphery of society, but at its heart. For example, "cheap food"—the



Home Food, Bologna, Italy

There's nothing quite like a home-cooked meal. But what if you could combine the intimacy of a local dinner party with the fine cuisine of a night on the town? Home Food, which operates in Bologna, Italy, makes it happen. For a yearly fee equivalent to \$47, members can choose from a variety of private dinner parties, during which they're treated to traditional regional cooking in an Italian home. Home Food's "cesarine"—Italian people who love cooking, share a knowledge of local culinary traditions and enjoy entertaining guests—prepare all the meals. | DAN SCHANK

FIND OUT MORE: HOMEFOOD.IT

Earthworks Urban Farm, Detroit, Michigan

In 1997, Brother Rick Samyn decided to add a garden to the Capuchin Soup Kitchen, which has fed the needy on Detroit's east side since 1928. That tiny plot has become a 1.5-acre (two-thirds of a hectare) farm, including a 1,300-square-foot (120-square-meter) greenhouse, canning facilities and an apiary with more than 40 beehives. Earthworks Urban Farm is a vital part of Detroit's urban agricultural community and works to provide fresh, eco-friendly produce. Most of the food goes to the soup kitchen, but Earthworks also stocks farmers markets throughout the city and even hosts monthly Food Justice potlucks at which social issues are discussed. They also offer educational initiatives, like the Growing Healthy Kids Program, where little ones can learn the basics of gardening, nutrition and environmental awareness. | D.S.

FIND OUT MORE: CSKDETROIT.ORG/EWG/OUTREACH.CFM

PHOTOGRAPH: MARTA BUSO

apparent triumph of modern agribusiness—is an oxymoron, an illusion created by externalizing food's true costs. Once you factor in all the fossil fuel consumption, rainforest destruction, soil erosion, pollution, water depletion, carbon emissions, loss of biodiversity, rural depopulation,

animal suffering and obesity that result from cheap food, it doesn't look quite so cheap. In fact, we pay a very high price.

When such externalities are taken into account, the debate about how to feed the world shifts. The pursuit of ever more "efficient" food systems is revealed as

profoundly uneconomic. The false choices of industrial versus organic, high tech versus traditional, also disappear, replaced by an open debate about the farming practices and food systems that best match our aspirations for the future of the planet. Such thinking represents a reversal of the current



Quail Springs, Maricopa, California

Sixty miles northwest of smoggy Los Angeles, everyday folks learn about livestock, beekeeping and plant propagation through the education programs at Quail Springs Permaculture Farm, a non-profit organization occupying 450 acres in southern California's Cuyama Valley. Quail Springs defines permaculture as "the conscious design and maintenance of agriculturally productive ecosystems [that] have the diversity, stability and resilience of natural ecosystems." Accordingly, this former cattle ranch was given a green makeover, using adobe, bamboo, straw bale and other sustainable materials. It's also equipped with a gray water irrigation system to ensure that water is reused whenever possible. Quail Springs offers seminars, tours and tutorials to the surrounding communities, encouraging people to work with their surroundings rather than against them. | D.S.

FIND OUT MORE: QUAILSPRINGS.ORG

trend, which treats food as a necessary yet somehow separate problem. In the ongoing food debate, the most vital question of all—What is a good life?—is rarely asked.

Of course, that question has no single answer; instead, it generates a spectrum of further questions. Being open to asking these questions, and realizing that there will be many different answers, is key to creating sitopia. Even if we can't say for sure what a good life might be, we can describe

Cows, goats and chickens wander freely, and even the temples are brimming with sweets, left as gifts for the gods.

Perhaps most impressive of all is the tiffin box culture of Mumbai. Thousands of Mumbai housewives cook hot lunches for their husbands. The lunches are packed into stacked metal containers (tiffin boxes) and collected by some 5,000 couriers, or *dabbawalas*, who use bicycles and trains to deliver up to 200,000 meals a day all

some of its attributes. Most of us, for instance, would agree a good life is one in which people are generally happy, healthy, industrious, generous and loving; societies are tolerant, peaceable and sustainable; physical surroundings are diverse, bountiful and beautiful.

We know such a place can't exist; that would be utopia. But that's where sitopia comes in. Sitopia is contingent, partial, practical. It can be big or small, shared or personal. It can take many shapes and forms. It can be created by anybody, right here, right now. It can exist anywhere. Indeed, it already does.

To see sitopia in action, go to a place where food is highly valued—such as India. Food is everywhere in India. The countryside is densely populated with more than half a million small farms. Close networks of villages trade with one another at busy food markets. In the cities, people cook and eat on the sidewalks; vendors sell snacks from carts and stands; and traders carry baskets of vegetables on their heads.

over the city. The service is one of the most reliable in the world; a recent survey found that just one in every 6 million deliveries goes astray.

In India, food is powerfully embedded in the broader culture. But some aspects of Indian food are more difficult to swallow. Poor infrastructure means that food worth an estimated \$10 billion is lost each year, while nearly half of young children are underweight.

Yet how much better are things in the U.S.? More Americans live on food stamps than do people anywhere else in the world, while 50 percent of all food—worth \$136 billion—is thrown away each year. In India, meals remain at the heart of family life; 19 percent of American meals are eaten in cars. Agriculture employs half of the Indian population; in America, that figure is less than 1 percent. In India, one in 20 is obese; in America, one in three.

Such comparisons merely demonstrate the effects of two contrasting food cultures in two very different nations, one developed, the other developing. But that's precisely the point. When you consider the social benefits and drawbacks of food systems worldwide, you're forced to conclude that the former belong mostly to traditional food cultures and the latter chiefly to industrial ones. A country like India could certainly benefit from some modern technological and infrastructural improvements, but not at the expense of its traditional food culture. Food in India is still about sociability, connectivity, identity, seasonality, family, craftsmanship, love. The developed world could do with a dash of those ingredients, too.

High-tech industrial farming isn't the only way to feed the world. Comparative studies of alternative approaches, such as organic or permaculture, tend to focus on short-term metrics, like crop yields. But the number of tons of grain produced per acre per year is much easier to measure than happiness, the feeling of the wind on your skin or the satisfaction of following in your grandfather's and father's footsteps. The tacit assumption that nobody in his or her right mind could possibly choose farming



The Beehaus, Sheffield, U.K.

For more than a decade, the global bee population has been shrinking at an alarming rate. Natural England, a federal conservation agency in the U.K., is trying to change that. With the help of Omlet, an Oxfordshire company that creates agricultural products for urban settings, Natural England has produced the Beehaus, a compact, efficient apiary unit that makes a sustainable addition to a rooftop or garden. The plastic Beehaus is no bigger than a backyard composting unit, but allows an entire colony to live and grow within it. It's twice the size of a traditional hive, which helps cut down on swarming. Better still, the unit produces about 50 jars of honey per year, so you'll have something sweet for teatime. | D.S.

THE BEEHAUS IS AVAILABLE FOR \$765 AT OMLET.US.

over a desk job is clearly false, too, as hundreds of highly educated farmers in America and Europe can testify.

The fact that 1.3 million rural migrants worldwide abandon their farms every week to seek new lives in the city is often seen as a sign of progress. What few admit is that it's the transformation of the countryside to feed cities that's making traditional ways of rural life untenable in the first place. A life of crushing poverty as a peasant isn't a good life. But neither is a life of crushing poverty spent in a factory. Rather than thinking in such dead-end polarities, we need to make rural life more tenable. Mobile phones, for instance, are transforming

life for Masai cattle ranchers in Kenya, who use them to get the latest information on market prices.

In our rush to produce ever more "efficient" food systems in the West, we've neglected the advantages of slower, smaller-scale systems. On the voyage of life, food is our rudder, the one invariable—and pleasurable—necessity that binds us all. If we want to lead a good life, food must be at its heart.

So the essential task of sitopia is to put food first. This isn't a clarion call to gourmandism. On the contrary, it's a call to recognize the many ways in which food expresses our commonality. Examples of

how to reconcile food and place abound. All we need to do is join in.

The quickest and easiest way to become a sitopian is to change the way you eat. Perhaps you're already a self-sufficient vegan who cooks everything from scratch and composts all your leftovers. In spite of your good intentions, such an approach would not necessarily create a society in which most of us would want to live. Growing your own food might bring a sense of personal achievement, but if we all did it, we'd have to abandon cities altogether, so we'd lose all our sociability. Coming together to exchange food and other goods was, after all, what created cities in the first place. >>>

Guerrilla Gardeners, Los Angeles, California

They're as young as 10 and as old as 80. Instead of guns, they carry shovels. They descend on urban spaces and, within hours, leave beautiful green oases behind. They're the Los Angeles Guerrilla Gardeners, and though they plant without approval, most folks don't seem to mind. In a struggling economy, these playful radicals improve the urban landscape in ways that city budgets too often cannot. | D.S.

FIND OUT MORE: LAGUERRILLAGARDENING.ORG



Local Code, Berkeley, California

Empty lots, trash heaps, abandoned industrial sites—these are inevitable parts of the urban experience. But what if they could be repurposed to enrich our lives? Nicholas de Monchaux, an assistant professor of architecture and urban design at the University of California, Berkeley, thinks we can do it. With the help of his students, he created Local Code, an urban design proposal that uses digital mapping technology to analyze the benefits of unused public land. De Monchaux and his team re-imagine neglected neighborhood peripheries as playgrounds, gardens and public parks, considering aspects of the urban environment like air and soil quality, groundwater remediation potential, community demographics and the likelihood of crime. We already recycle bottles and cans; why not parking lots? | D.S.

WATCH A SHORT VIDEO ABOUT THE PROPOSAL: NICHOLAS.DEMONCHAUX.COM

Then there's the question of diet. Although veganism is often portrayed as the least ecologically demanding alternative, it precludes the vital role played by animals in the human food chain. Pigs and chickens are our timeless companions for a reason. Omnivores like us, they can share our living quarters, consume our leftovers and be eaten in their turn, completing the most resource-efficient food cycle known to man. Recent studies have also shown that large herds of roaming herbivores, such as American bison, contribute critically to soil fertility, thus improving water retention, biodiversity and carbon sequestration.

AS WITH ALL THINGS SITOPIAN, the key word is balance. The daily plate of food recommended by nutritionists—roughly one-third fruit and vegetables, one-third carbohydrates and one-third protein, dairy and fat—neatly corresponds, when traditionally produced, to the sorts of vibrant, varied rural landscapes to which most of us are naturally disposed. We know we are what we eat. It follows that the world we inhabit is also shaped by what we eat—and we, in turn, are shaped by that world.

Campaigns such as “Eat the View,” set up by the British Countryside Agency in 2002, tell us that we can create the landscapes we desire through our food choices. Small- and medium-scale farming created much of the distinctive countryside we love; if we want to preserve both, we must eat accordingly.

America and Britain may just be the world's worst food dystopias; however, they're also beacons of the sitopian renaissance. Food apostles such as poet and environmentalist Wendell Berry and author and journalist Michael Pollan in the U.S., as well as food policy expert Tim Lang, inventor of food miles, and TV chef Jamie Oliver in Britain, testify to the power of the emerging food movement. Add to this the nascent discipline of food planning—which puts food back at the core of regional and urban design—and you have a powerful mix of people and organizations ready to think and act through food.



Growing Home, Chicago, Illinois

At Chicago's Growing Home, tasty organic produce isn't the only thing cultivated. The urban farm nurtures ways for local people facing employment barriers to re-enter the work force. Homeless people as well as folks with prison records or substance abuse problems spend seven months learning to plant, cultivate and harvest natural fruit and vegetables. During this time, participants also learn about nutrition and personal money management. At sites like the Wood Street Urban Farm in a struggling neighborhood on Chicago's South Side, these newly trained farmers make nutritious, affordable, USDA-certified organic food available. All proceeds are re-invested in training and upkeep. | D.S.

FIND OUT MORE: GROWINGHOMEINC.ORG

But the nation most actively taking up the sitopian challenge is the Netherlands, where much of my current work is based. The first nation on Earth to urbanize, and one of the most land-starved, the Netherlands knows a thing or two about intensive farming. In the 1800s, the Dutch pioneered many of the techniques that made the English agricultural revolution (thus modern farming) possible. The Netherlands is second only to the U.S. in agricultural exports by value. Yet, the drive for efficiency has taken a toll on the Dutch landscape. People are keen to find a Plan B.

I'm currently working with the city of Groningen to create a "regional food

vision," a sitopian strategy that people in northern Holland can use to rethink themselves through food. The work involves creating new networks, partnerships and synergies among individuals and organizations, adding new dimensions to existing plans and policies. Together with colleagues from Wageningen University's Rural Sociology Unit and Business School, I'm also developing a "sitopia matrix," a tool to help planners and policymakers address complex issues through food.

Understanding food's influence, and using it positively and collectively to guide our actions, is the key to sitopia. This can take many forms, including cooking

more for our kids, eating less industrially produced meat, buying from local markets, joining Community Supported Agriculture (CSA) projects, composting our food waste, refusing to buy unsustainably sourced fish or joining movements such as Slow Food and Transition Towns.

Whatever form you choose, remember that what you're doing isn't just about food. It's about deciding, together, what sort of world we want to live in—and using food to get us closer to it. ■

CAROLYN STEEL is an architect and the author of *Hungry City: How Food Shapes Our Lives*.

If You Drink Coffee Make Sure it is Organic

Posted By [Dr. Mercola](#) | January 30 2010

Many Mesoamerican farmers here are starting to give up on organic coffee. The premium price that it used to fetch is disappearing.

From Mexico to Costa Rica, at least 10 percent of growers have returned to chemical fertilizers and pesticides in the past three years, at a significant cost to the environment.

Although organic still pays a premium of as much as 25 percent over conventional coffee, it's not enough to cover the added cost of production and make up for the smaller yields.

Under specialty "green" labels at places like Wal-Mart and McDonald's, organic beans and brews have become cheaper and more widely available recently.

Sources:

» [Christian Science Monitor December 29, 2009](#)

Dr. Mercola's Comments:

Americans drink 400 million cups of coffee every day, which adds up to over \$4-billion worth of imported coffee each year.

Now I am not a fan of coffee -- personally I never acquired a taste for it, and it is far from a health food -- but it is a sad state of affairs that Latin American farmers are abandoning their organic coffee crops faster than rats leaving a sinking ship.

These farmers were promised they would benefit financially from ditching their toxic pesticides in favor of organic crops, but in order to profit they need to be certified. And farmers cannot become certified organic until their soil is free of pesticides and chemical fertilizers for three years.

This means the farmers have to absorb the extra costs of organic farming for three years before they'll start to see the returns, and many just could not do it.

Meanwhile, while there is some demand for organic coffee, the market is still very small. Starbucks, for example, reported that only 3 percent of its coffee purchases in 2009 were organic.

Now, as more organic coffee growers abandon their crops, it's not only limiting the quantities available but also driving up prices. This, in turn, is keeping the organic coffee market from really merging into the mainstream ...

And this is a very bad trend not only for the environment, but also for your health.

Most Coffee is Heavily Sprayed With Pesticides

Most people are not aware that regular coffee consumption can be a significant source of pesticides. According to the CS Monitor, conventional farmers apply up to 250 pounds of chemical fertilizers per acre!

Pesticides contribute to a wide range of health problems, including prostate and other types of cancers, Parkinson's disease, and miscarriages in pregnant women.

So when you sip on your non-organic morning brew, you are also sipping on pesticide residues. Further, the U.S. has limited input and control over the type and quantity of pesticides used in the countries from which we import.

Since the vast majority of coffee, both organic and non-organic, consumed in the U.S. is grown outside this country, a return to non-organic farming of coffee beans in Latin America means a return to heavy use of pesticides.

Now is a Good Time to Kick Your Habit

If you're going to drink coffee, going organic is the "healthiest" way to do it. Of course, coffee is really not *healthy* at all.

Caffeine is a drug.

It's a legal and widely available drug, but a drug nonetheless, and very powerful. My position is that coffee is not nearly as bad for your health as soda or high fructose corn syrup, but nevertheless it is something you or your family would best be served by avoiding -- or strictly limiting your consumption.

Caffeine actually alters the way your brain works, and can cause temporary changes in your behavior and mood. If you are especially sensitive to the drug, as is the case with many protein [nutritional types](#), the effects are even more pronounced.

Just a few of the symptoms of caffeine use include:

- A rise in blood pressure and stress hormone levels

- Heart palpitations
- Feeling jittery, nervous, anxious and even panicky
- Insomnia

More Coffee Adverse Effects

Coffee increases your risk for rheumatoid arthritis, leukemia, stomach cancer, and [stroke](#). It can further wreak havoc on your health by:

- Raising your [cholesterol](#)
- Sending your insulin levels out of control
- Damaging your blood vessels
- Increasing your risk of heart disease
- Damaging your body's [metabolism](#)
- Increasing your risk of osteoporosis

Coffee also interferes with your body's ability to use folate and vitamins B12 and B6. These nutrients are important in order to keep your homocysteine level in the healthy range. Elevated homocysteine levels are associated with a wide range of devastating health conditions.

Coffee also stimulates your adrenals -- the hormones that activate your fight or flight response. If your adrenal hormones are stimulated too often, which is bound to happen if you are a daily coffee drinker, your adrenal glands may eventually burn out.

When your adrenals no longer function effectively, your body will go in search of a replacement hormone -- which happens to be progesterone.

Progesterone has its own full-time job to do, part of which is to keep your body's estrogen in balance. As your progesterone is used up compensating for your exhausted adrenals, you run the risk of becoming estrogen dominant.

Estrogen dominance can lead to osteoporosis.

Coffee also raises the acidity level of your blood, causing calcium to be pulled from your bones and teeth for use as a buffering agent. The combination of estrogen dominance and high blood acidity puts you at an even greater risk for osteoporosis. In fact, research has established an undeniable link between coffee consumption and hip fractures.

If You're Planning a Family, Coffee Should Not be on the Menu

If you're pregnant or planning to be, you should avoid coffee altogether.

Over 300 mg of caffeine a day, which is the equivalent of two to three eight ounce cups of coffee, can increase your risk of:

- Miscarriage
- Delivering a low birth weight baby
- Having a child with certain birth defects like cleft palate

Four or more cups of coffee a day may increase your baby's risk of SIDS.

When you're pregnant, any caffeine you ingest passes easily through the placenta to your unborn child.

It is also transferred through breast milk, and stays in your body – and the body of your unborn child or infant – longer than average. Your unborn baby has no ability to detoxify this drug.

If You Must Drink Coffee ...

If you simply MUST drink coffee here are a few tips to help reduce the chances of harmful effects:

1. **Use organic coffee** – Again, coffee is a heavily sprayed crop, so drinking organic coffee might reduce or eliminate the exposure to toxic herbicides, pesticides, and fertilizers. The only drawback is that the countries where coffee is produced probably have less control and monitoring for compliance to organic practices. You will also be helping to protect the health of the people working in the coffee fields, as you will be helping to reduce their toxic exposure as well.

If you want to go a step further, look for fair-trade certified coffee, which means the coffee farmers have been paid fairly and treated well.

2. **"Swiss Water Process" decaf** -- If you are going to drink decaffeinated coffee, be sure that it is one that uses a non-chemical based method of decaffeination. The "Swiss Water Process" is a patented method and is the best choice. Most of the major brands are chemically decaffeinated, even if it says "Naturally Decaffeinated" right on the container. If you are unsure of the methods, contact the manufacturer.
3. **Avoid sugar and/or milk** -- These are actually much worse for you than the coffee itself. Don't compound the detrimental health effects by adding milk or sugar to your coffee.
4. **Unbleached filters** -- If you use a "drip" coffee maker, be sure to use non-bleached filters. The bright white ones, which most people use, are chlorine bleached and some of this chlorine will be extracted from the filter during the brewing process.

What Makes a Healthy Coffee Alternative?

As my regular readers know, my first recommendation for a healthy beverage is always pure water. It is by far the best choice you can make.

But if you're looking to kick your coffee habit to improve your health, a cup of high-quality tea can be a great alternative as a warm, soothing morning beverage.

When I drink *green* tea, I personally prefer Matcha tea, as the color is a vibrant bright green and it is far less processed and of much higher quality than most green teas.

Also, rather than being steeped and strained like typical tea, matcha tea is made of tea leaves ground into a powder, and the powder gets added right into the water. Because you are actually consuming the whole leaf, matcha tea is said to be one of the healthiest green teas out there.

My other favorite is [Tulsi tea](#), which is a powerful adaptogenic herb that provides important therapeutic benefits. The combination of antioxidants and phytochemicals found in tulsi can promote your overall health in a variety of ways, including:

- Support for your immune system
- Improving digestion
- Increasing your resistance to stress
- Promoting healthy metabolism
- Maintaining healthy blood sugar and cholesterol levels
- Providing you with skeletal and joints support

Whatever you do, avoid substituting fruit juice or soda for coffee, as they are much worse for you. The sugar, especially fructose, is a far more serious metabolic poison than coffee.

If you use coffee as a crutch to get a quick burst of energy, remember that cultivating a healthy lifestyle will supply all the power you need to get through your day.

And, again, if you do choose to drink coffee, at least switch over to an organic variety for the sake of your health and the environment.

What Has Better Protein than Meat, Fish, or Eggs?

Posted By [Dr. Mercola](#) | October 23 2010 | 190,473 views

Ori Hofmekler, author of *The Warrior Diet*, is an expert on how to build muscle and improve your health with foods.

In this interview, Ori shares his insights about whey protein – known as the gold standard of proteins. But as you will find out, not all whey products are created equal...

Sources:

» [Video Transcript](#)

Dr. Mercola's Comments:

Ori Hofmekler is a wealth of knowledge when it comes to fitness and how to use food to burn fat, build muscle, and optimize your health.

He has found whey protein to be a particularly beneficial food for all of these purposes.

Whey protein, a by-product of milk and cheese, was promoted for its health benefits as early as 420 B.C. At that time, Hippocrates, also known as "the Father of Medicine," recommended whey to his patients. These days, evidence continues to mount in favor of whey, often referred to as the gold standard of protein.

Ori is an authority in this area and I've learned a lot from him personally.

We cover a load of information in this interview, so I urge you to listen to it in its entirety, or read through the transcript for additional information, over and above what I've summarized below.

Health Benefits of Whey Protein

Whey protein has been linked to a variety of health benefits, including:

- Helping your insulin work more effectively, which helps maintain your blood sugar level after a meal -- This is important as research suggests lowering your blood sugar levels after meals may be more beneficial for your health than lowering fasting blood sugars.
- Promoting healthy insulin secretion, which is imperative for optimal health. This is one of the foremost reasons for avoiding sugars and grains, as overconsumption of grains and sugary foods has a negative impact on both, and is a prime factor in developing type 2 diabetes.

- Helping to promote your optimal intake of proteins, fats, carbohydrates, vitamins, and minerals needed for your overall wellness
- Supporting your immune system, as it contains immunoglobulins
- Helping you preserve lean body tissue (particularly during exercise) as it delivers bioavailable amino acids and cysteine
- Maintaining blood pressure levels that are already within the normal range

Whey Isolate

There are a number of whey products on the market, but unfortunately many of them will not give you the health benefits associated with high-quality whey.

Most commercial whey products are derived from pasteurized dairy and are processed with heat and acid. Many are also artificially sweetened. All of these factors render them completely useless from a health perspective.

Whey isolate is one such inferior product, because when you remove the fat, you actually remove important components of its immunological properties, such as phospholipids, [phosphatidylserine](#) and [cortisol](#).

Additionally, all of the IgG immunoglobulins, which are an excellent source of glutamine and cysteine, are also bound to the fat globule. Fat provides not just calories. In fact, most food rich in healthful fat, including nuts, seeds, chia and almonds are carriers of antioxidants, such as vitamin E and phytosterols.

Dairy also contains lipoic acid, which is a carrier of enzymes and immunoglobulin.

Therefore, if you take the fat out you're left with a clearly inferior whey protein.

"I'm totally against whey isolate," Ori says. "I think it's just the wrong whey."

Pasteurized versus Raw Milk Whey

When selecting a whey product, I strongly recommend making sure it's made from raw, grass-fed milk, in order to obtain the majority of its immune-enhancing benefits.

Unfortunately, most of the whey protein sold on the market is made from pasteurized milk, including whey protein concentrate and New Zealand whey. The New Zealand whey does come from grass-fed cows. However by New Zealand law the whey must be made from pasteurized milk, which negates many of the inherent health benefits of whey, even though it's grass-fed.

There are, however, a few good sources of high-quality whey protein, made from the raw (unpasteurized) milk of grass-fed cows.

"When you look at this whey," Ori says, "you can immediately tell the difference in the smell, the taste. It tastes creamy and good by itself. It's water soluble. It gives you only the mineral component."

Fortunately, manufacturers in the US *are* allowed to process whey from raw milk.

"In my opinion... in America, you can find some of the best whey in the world. You just need to know where to look for it and how to process it," Ori says.

Guidelines for Buying High-Quality Whey

As explained by Ori, these are the factors you need to look for in order to ensure you're buying a high-quality product:

- Organic (no hormones)
- Grass-fed
- Made from unpasteurized (raw) milk
- Cold processed, since heat destroys whey's fragile molecular structure
- Minimally processed
- Rich, creamy, full flavor
- Water soluble
- Sweetened naturally, not artificially
- Highly digestible—look for medium chain fatty acids (MCTs), not long chain fatty acids

Some of the best whey protein you can get today is derived from raw milk cheese manufacturing. They have very high quality controls and produce great-tasting whey, with optimal nutritional content.

One of the most important components of the whey is glycomacropeptides (GMP). GMP has amazing immuno components that are critically important for your gut flora. However, only whey produced from raw milk cheese contains GMP. Other varieties do not.

For more in-depth information about the actual processing procedure that high-quality whey must undergo, please listen to the entire interview above.

Your Second-Best Option...

High quality whey is typically more expensive than lower quality whey products and I believe it's well worth the investment. However, if you can't afford high quality whey, what's your second-best option?

The answer is simple: raw dairy products, such as raw milk or raw milk cheese.

To find a source near you, check out www.RealMilk.com. They are a great resource for raw dairy.

An additional benefit of raw milk cheese is that the fermentation process also produces [vitamin K2, which is a very important nutrient for optimal health](#) that is difficult to obtain on a normal diet, unless you eat traditionally-fermented foods.

Raw milk and raw milk cheese is also a good source of calcium, which we discuss in further detail in this interview.

Whey Protein versus Yoghurt – One Builds Muscle, The Other Doesn't

Research clearly shows that sour milk, such as kefir or yoghurt, has amazing cardiovascular benefits, such as reducing your blood pressure and triglyceride levels.

Whey and raw milk cheese also both contain compounds called casomorphins that have beneficial effects on blood pressure and blood sugar.

The real difference between them, however, becomes apparent when you want to build muscle. The benefits of sour milk products are primarily evident in your cardiovascular system, not your body's ability to build muscle.

So if you want to build muscle, do not use yoghurt. It contains protein, but the fermentation process strips away many of the additional immuno components that make whey stand out as a primary fuel to increase your muscle mass.

Ori recommends yoghurt for detoxifying your body and reestablishing a healthful balance of beneficial gut bacteria (probiotics). This is also important for building muscle, but yoghurt is not an ideal *source of protein* to build muscle or boosting your immune system...

Increasing Your Muscle Mass

Whey protein, however, is a great source of protein for building muscle.

Ideally, you'll want to use a combination of sour milk products and whey, as each has its own set of benefits.

Ori explains the supportive mechanisms of these two products.

"... [A]s protein is digested in your stomach, a large percentage of amino acids actually are not fully utilized and do not reach your low intestine. That's when probiotics come into action. They can help you utilize the remaining amino acid.

More than that, if your gut flora is healthy, we now have proof that they can actually synthesize essential amino acids, including lysine, which is missing in food stuff.

That's one of the downside of vegans -- they don't have enough lysine.

They [probiotics] can also synthesize leucine, which you need for muscle building. Good quality protein and good gut flora, and good timing of meals, is important."

Please remember that a major challenge many go through is a process called sarcopenia, which is age related muscle loss. This recent [New York Times article](#) addresses this topic and clearly suggests most of us should be doing some type of strength training.

You just need to know that lifting weights will NOT necessarily result in gaining muscle mass. If you are involved in heavy catabolic exercises like aerobics or running, you will not have the hormonal influences to build muscle.

Additionally, you need to supply your muscles with fuel at the appropriate time so they will have the building blocks to build new muscle tissue. Ideally you would want to consume the whey about one hour before and one hour after your workout.

I personally add two organic pasture-raised eggs to my whey shake along with some raw milk rather than water. I am currently in a muscle gaining phase and have gained about 10 pounds of muscle in the past six months, and lost about 13 pounds of fat, using the Peak Fitness program and whey protein/raw milk/raw egg combination.

Another important benefit of the whey is that if you consume it during the day, you facilitate detoxing while at the same time giving your muscles exactly what they need to rebuild. For more information about this, please see this previous article that discusses [how whey can naturally optimize your glutathione production](#), which is an important component for optimal health and muscles.

You will also burn more fat because you're less likely to consume excess calories. (Protein, as you may recall from previous articles, is [the most filling type of food](#), which will help eliminate high-carb/high-calorie snacking.)

What About Naturally Occurring MSG?

[Monosodium glutamate \(MSG\) is a commonly used flavor enhancer](#) with potent neurotoxic properties. MSG should therefore be avoided as much as possible.

That said, however, it's important to realize that MSG can also occur naturally in certain foods, including yoghurt, and these types of MSG-containing foods do not cause the same kind of harm that synthetic, added MSG does.

Ori explains:

"You want to stay away from MSG. However, your body is very well equipped to protect itself from MSG... [W]e have naturally occurring MSG in many healthy foods; tomato, potato, yoghurt.

Are you going stop eating sour milk and yoghurt with all their benefits just because it produces some MSG in the processing, the fermentation of milk?

No. We cannot be too obsessive, because your body can easily protect itself from MSG when on a healthy diet...

One of the compounds your body produces is called betaine. Betaine is produced from choline. Milk and whey is loaded with choline; with all the nutrients that help you protect yourself from MSG. It's not that it doesn't produce MSG, it provides you -- through the sunflower lecithin -- with all the nutrients your body needs to protect itself from glutamate excitotoxicity."

Whey Protein – A Great Way to Start Each Day!

For all the reasons mentioned here, and then some, high-quality whey protein is my preferred breakfast. I drink a delicious whey protein shake after my morning exercise routine, which includes [high intensity Peak 8 exercises](#), as whey is ideal for facilitating muscle building and fat burning.

For my personal recipe using [great-tasting Miracle Whey](#), please [see this previous article](#).

Share this Chart with everyone

Apples	Protects your heart	prevents constipation	Blocks diarrhea	Improves lung capacity	Cushions joints
Apricots	Combats cancer	Controls blood pressure	Saves your eyesight	Shields against Alzheimer's	Slows aging process
Artichokes	Aids digestion	Lowers cholesterol	Protects your heart	Stabilizes blood sugar	Guards against liver disease
Avocados	Battles diabetes	Lowers cholesterol	Helps stops strokes	Controls blood pressure	Smooths skin
Bananas	Protects your heart	Quiets a cough	Strengthens bones	Controls blood pressure	Blocks diarrhea
Beans	Prevents constipation	Helps hemorrhoids	Lowers cholesterol	Combats cancer	Stabilizes blood sugar
Beets	Controls blood pressure	Combats cancer	Strengthens bones	Protects your heart	Aids weight loss
Blueberries	Combats cancer	Protects your heart	Stabilizes blood sugar	Boosts memory	Prevents constipation
Broccoli	Strengthens bones	Saves eyesight	Combats cancer	Protects your heart	Controls blood pressure
Cabbage	Combats cancer	Prevents constipation	Promotes weight loss	Protects your heart	Helps hemorrhoids
Cantaloupe	Saves eyesight	Controls blood pressure	Lowers cholesterol	Combats cancer	Supports immune system
Carrots	Saves eyesight	Protects your heart	Prevents constipation	Combats cancer	Promotes weight loss
Cauliflower	Protects against Prostate Cancer	Combats Breast Cancer	Strengthens bones	Banishes bruises	Guards against heart disease
Cherries	Protects your heart	Combats Cancer	Ends insomnia	Slows aging process	Shields against Alzheimer's
Chestnuts	Promotes weight loss	Protects your heart	Lowers cholesterol	Combats Cancer	Controls blood pressure
Chili peppers	Aids digestion	Soothes sore throat	Clears sinuses	Combats Cancer	Boosts immune system
Figs	Promotes weight loss	Helps stops strokes	Lowers cholesterol	Combats Cancer	Controls blood pressure
Fish	Protects your heart	Boosts memory	Protects your heart	Combats Cancer	Supports immune system
Flax	Aids digestion	Battles diabetes	Protects your heart	Improves mental health	Boosts immune system
Garlic	Lowers cholesterol	Controls blood pressure	Combats cancer	kills bacteria	Fights fungus
Grapefruit	Protects against heart attacks	Promotes Weight loss	Helps stops strokes	Combats Prostate Cancer	Lowers cholesterol
Grapes	saves eyesight	Conquers kidney stones	Combats cancer	Enhances blood flow	Protects your heart
Green tea	Combats cancer	Protects your heart	Helps stops strokes	Promotes Weight loss	Kills bacteria
Honey	Heals wounds	Aids digestion	Guards against ulcers	Increases energy	Fights allergies
Lemons	Combats cancer	Protects your heart	Controls blood pressure	Smooths skin	Stops scurvy
Limes	Combats cancer	Protects your heart	Controls blood pressure	Smooths skin	Stops scurvy
Mangoes	Combats cancer	Boosts memory	Regulates thyroid	aids digestion	Shields against Alzheimer's
Mushrooms	Controls blood pressure	Lowers cholesterol	Kills bacteria	Combats cancer	Strengthens bones

Oats	Lowers cholesterol	Combats cancer	Battles diabetes	prevents constipation	Smoothes skin
Olive oil	Protects your heart	Promotes Weight loss	Combats cancer	Battles diabetes	Smoothes skin
Onions	Reduce risk of heart attack	Combats cancer	Kills bacteria	Lowers cholesterol	Fights fungus
Oranges	Supports immune systems	Combats cancer	Protects your heart	Straightens respiration	
Peaches	prevents constipation	Combats cancer	Helps stops strokes	aids digestion	Helps hemorrhoids
Peanuts	Protects against heart disease	Promotes Weight loss	Combats Prostate Cancer	Lowers cholesterol	Aggravates Diverticulitis
Pineapple	Strengthens bones	Relieves colds	Aids digestion	Dissolves warts	Blocks diarrhea
Prunes	Slows aging process	prevents constipation	boosts memory	Lowers cholesterol	Protects against heart disease
Rice	Protects your heart	Battles diabetes	Conquers kidney stones	Combats cancer	Helps stops strokes
Strawberries	Combats cancer	Protects your heart	boosts memory	Calms stress	
Sweet potatoes	Saves your eyesight	Lifts mood	Combats cancer	Strengthens bones	
Tomatoes	Protects prostate	Combats cancer	Lowers cholesterol	Protects your heart	
Walnuts	Lowers cholesterol	Combats cancer	boosts memory	Lifts mood	Protects against heart disease
Water	Promotes Weight loss	Combats cancer	Conquers kidney stones	Smoothes skin	
Watermelon	Protects prostate	Promotes Weight loss	Lowers cholesterol	Helps stops strokes	Controls blood pressure
Wheat germ	Combats Colon Cancer	prevents constipation	Lowers cholesterol	Helps stops strokes	improves digestion
Wheat bran	Combats Colon Cancer	prevents constipation	Lowers cholesterol	Helps stops strokes	improves digestion
Yogurt	Guards against ulcers	Strengthens bones	Lowers cholesterol	Supports immune systems	Aids digestion

Anti-Estrogenic Diet - Resources

Books: See our Book Store

1. ***What You Must Know About Vitamins, Minerals, Herbs and More*** by Pamela Wartian Smith M.D
2. The pH Miracle: Balance Your Diet, Reclaim Your Health, by Robert Young, PhD, and Shelly Redford-Young
3. The Acid Alkaline Diet for Optimum Health: Restore Your Health By Changing pH Balance In Your Diet, by Christopher Vasey, naturopathic physician.

Websites:

Sea Weed Sources: One teaspoon of powdered seaweed equals about 12 mg of iodine.

1. Maine Coast SeaVegetable, Inc at www.SeaVeg.com
2. Rising Tide Sea Vegetables Northern California, www.LoveSeaWeed.com