

## ***Are Soybeans Dangerous to Your Health?***

***Research Presented By Robert McHugh, Ph.D.***

***Dangerous Soybeans?*** Have you noticed they are putting soy in everything? Check your food labels. It is being used as a tasteless, odorless filler, taking on the flavor of other ingredients. So what, you say? ***Have you noticed trouble swallowing lately? Have you noticed an increase in food allergies lately?*** KYW radio in Philadelphia this week ran a story noting that food allergies are on the rise among school students, and many kids are now traveling to school with a medical kit to inject anti-allergenic drugs in themselves — at school — to deal with the food allergies. ***Are we so sure adding soy to everything we eat is such a great idea?*** You can't escape it. It is now in ice cream, mayonnaise, pretty near everything. It's cheap. Is it genetically altered? Is that a good thing? ***Did you know that soy increases your levels of estrogen, a female hormone?*** Here's a quote from the marvelous book, *Prescription for Nutritional Healing*, 3rd edition, by Phyllis (CNC) and James (M.D.) Balch, page 552: "If you are a menopausal or postmenopausal woman with osteoporosis, include plenty of soy products in your diet." (no problem doing that nowadays, just buy something and eat it). "Soy is rich in phytoestrogens, which may, to some extent, substitute for your body's own estrogen." That's great of you are menopausal, but what if you are not?

***So men, is your libido down? Could it be the soy that has invaded most of the food?*** Gee, if someone manufactures prescription medications that raise libido, they would have a vested interest in seeing the entire adult male population secretly ingesting estrogen, wouldn't they?

So women, if too much estrogen increases your risk of breast cancer, increases your need for hormone therapy, increases your need for the birth control pill, someone who manufactures and sells pharmaceuticals to combat those issues, would have a vested financial interest in persuading the food manufacturers to include tasteless, odorless soy fillers in the food supply, wouldn't they?

***You'll find soy in pretty much anything that comes in a can or a jar.*** It is in most dairy products. It is in most breads, many processed meats, in chocolate, in many of your vitamins, found throughout your health food store. Forgetting about the FDA for the moment (which is manned by many pharmaceutical firm employees, if you take Kevin Trudeau seriously in his book, *Natural Cures "They" Don't Want You to Know About*), the best consumer safety watchdog we have, the homeopathic industry, needs to pay more attention to the potential dangerous effects of soy. Is it possible that a myriad of different ailments are tied to soy ingestion? Soy has become the universal food ingredient, so we better fully understand what it does to the human body.

As a matter of disclosure, I do *not* have a short position against soybeans. I don't trade them, period.

Here is an email I received in response to this concern:

It lurks in your cupboards, your cereal, bread, pasta and chips. It's in your refrigerator, in your cheese, condiments, yogurt, sausages, ice cream. It's in those M&M's by the desk, probably in the latte you're drinking right now.

It's soy, and it's now in almost every single processed food we buy at supermarkets and health food stores. As America's favorite "health food," it promises to make us skinny and lower our cholesterol, prevent cancer and reduce menopausal symptoms, put us in a better mood, give us energy. It's the cheap and guilt-free source of protein for millions of vegetarians, the "heart smart" option for carnivores, the infant formula du jour for eco-minded moms. Soy has become one of the America's biggest industries.

And it may be making us sicker than we've ever been. Or so alleges Kaayla Daniel, author of "The Whole Soy Story: The Dark Side of America's Favorite Health Food," an anti-soy treatise released in 2005 by New Trends Publishing. ***"People are just starting to wake up to this, to just how serious this all is," says Daniel***, who earned her doctorate at the Union Institute and works as a certified nutritionist. "So far, if you look at the studies, you'll start to see that there are only possible benefits of this food, and proven dangers."

For Daniel, ***the problem exists in the soybean itself, a legume that by nature is chock full of antinutrients and toxins to ward off predators***. If eaten in small amounts (say, a few tablespoons every couple of days) these toxins pose no real harm. The trouble occurs when we consume more than 35 grams of soy a day -- a quantity Daniel argues is easily reachable in our modern diet so crammed with soy meats, soy extenders, soy protein and soy emulsifiers, substances so full of estrogens, metals, sugars and additives, so "toxic," that they are posing considerable risks to our collective physical and mental health.

It's an extreme accusation, one that fits easily in the sidebars of alternative medicine weeklies or alarmist blogs of health nuts. (You can just see them wagging an "I told you so" finger as they smugly eat homegrown wheat bulgur from a worn wooden bowl.) But lately it's not just Daniel and off-the-grid hippies spouting the rues of soy -- governments have piped in. ***The French Center for Cancer Research has stated that soy products in no amount should be eaten by children under 3 years of age or women with or at risk of breast cancer. The Israeli Health Ministry issued a public warning on soy, claiming that consumption of soy be limited in young children and avoided, if possible, in infants. The American Heart Association has backtracked on its endorsement of soy.***

Is this the beginning of the end of the "soy revolution?"

### ***History of the "Wonder Bean"***

The Chinese ***have prized the soybean for thousands of years as a fertilizer***, a

"green manure," but it wasn't until they learned to ferment it around 500 B.C. that they considered it suitable for human consumption. *Fermenting the bean* into foods like miso, tempeh and natto removed toxins and phytic acid (which can interfere with the absorption of minerals) and made soy more easily digestible -- all benefits that ordinary cooking could not accomplish. These "traditional" fermented soy foods, along with (unfermented) tofu, spread throughout Asia and still constitute about 90 percent of the soybeans consumed in Asia today.

Soy's first major U.S. advocate was John Harvey Kellogg, the cereal tycoon, who saw the bean as a path to health, and incorporated it into cereals and meat substitutes. Soon, Henry Ford, the auto tycoon, latched on, ***believing soy would be the industrial material of the future***, molded into everything from car bodies to window frames, steering wheels to refrigerators. By 1933, Ford had spent \$1.2 million on soy research, built a car trunk of soy and was sporting stylish (though itchy) soybean fiber suits. Though his enthusiasm for the bean made good fodder for the press and furthered his public image as a complete kook, it did little to ignite the public's interest.

It wasn't until after the 1940s that soy would truly define itself in the U.S. diet and economy. As soybean oil production ramped up after World War II, so did the mounds of soy "waste" left over from the oil extraction process. ***Though most of this waste soy meal was used for animal feed, some of it made inroads into the human food chain in the form of cheap soy protein isolate, textured vegetable protein and soy flour, which commercial food producers started using as a cheap "extender" in everything from canned tuna to ravioli. For American industry, the age-old Asian method of using the whole soybean and fermenting it to remove its toxins took too long and the end product was often dull and tasteless. To speedily process soy "waste" into soy protein products, U.S. soy producers washed beans with alkaline, heated and pressure-cooked them, combating their naturally bitter taste with sugar and infusing them with additives to prevent spoiling.*** This process greatly improved flavor but removed many of the beneficial nutrients. Daniel argues that ***it also left in, and introduced, many harmful toxins.***

Soy products exploded in popularity after ***the FDA approved*** the health claim in November 1999 that allows food processors to label many soy products with the phrase: "Diets low in saturated fat and cholesterol that include 25 grams of soy protein a day may reduce the risk of heart disease." No longer the cheap filler, the dirty word buried in the fine print of ingredients, soy soon became a cover star, a selling point for the health-minded and cost-minded alike. Soon, markets were flooded with a gaggle of new-fangled soy-based products: soy pastas, soy energy bars, soy breads, soy pretzels and on and on. While upscale consumers were now buying soy products at a premium, ***the general population was consuming even more cheap hydrogenated soy oil in the form of processed foods without even knowing it.***

By 2004, ***80 percent of all vegetable oils would come from soybeans***, and almost every single processed food would contain soy. In that year also, ***U.S. soy farmers produced their biggest soy crop to date -- 85 million metric tons grown on more than***

**46,000 square miles of farmland** (imagine an area the size of West Virginia -- then double it). Soy is now one of the fastest growing sectors in the food industry, with retail sales growing from \$853 million in 1992 to more than \$4 billion in 2004.

### ***Health: Can Soy Help or Hurt?***

With the glut of soy products hitting the shelves of supermarkets, a glut of soy diet books took over the shelves of the bookstore. The most famous, "The Soy Zone," published in 2000 by Zone Diet author Barry Sears, boasts his soy-based diet is the "healthiest diet in the world!" and suggests eating from 50 to 100 grams of soy products a day -- four times the FDA recommended amount.

But recently, a number of articles and reports have suggested that the soy health claim may not only be misdirected, it may be completely false. Daniel claims research proves that eating 45 grams a day (about three-quarters of a cup of tofu, for instance) in a month causes changes in the menstrual cycle of women. Eating as little as 35 grams a day (just 10 grams over the FDA recommended amount) has been proven to cause thyroid function suppression within three months in healthy adult men and women.

***The problem lies in the isoflavones, a "phytoestrogen," and goitrogen (a substance that may cause thyroid enlargement and formation of a goiter) that occur naturally in the soybean.*** In most soy foods, eating 35 grams of soy means you're also eating 35 milligrams of isoflavones. Some soy foods contain higher isoflavones-per-soy-gram ratios, such as soy milk, which includes only 7 grams of soy protein but a whopping 33 milligrams of isoflavones per 8-ounce serving. With a sip more over this amount, Daniel alleges, you risk proven negative effects on the thyroid. She quotes a controversial letter written by Daniel Doerge and Daniel Sheehan. Doerge and Sheehan, both senior FDA food scientists, wrote to Health and Human Services denouncing the FDA's soy health claim and arguing that many of the thyroid-related problems with isoflavones were being ignored.

An extract from the letter reads: "We oppose this health claim because there is abundant evidence that some of the isoflavones found in soy, including genistein and equol, a metabolite of daidzen, demonstrate toxicity in estrogen sensitive tissues and in the thyroid. This is true for a number of species, including humans ... . Thus, ***during pregnancy in humans, isoflavones per se could be a risk factor for abnormal brain and reproductive tract development.***

"Additionally, isoflavones are inhibitors of the thyroid peroxidase which makes T3 [triiodothyronine] and T4 [thyroxine]. Inhibition ***can be expected to generate thyroid abnormalities, including goiter and autoimmune thyroiditis.*** There exists a significant body of animal data that demonstrates goitrogenic and even carcinogenic effects of soy products. Moreover, there are significant reports of goitrogenic effects from soy consumption in human infants and adults."

Daniel makes the connection that as the consumption of soy foods has steadily increased, so have overall thyroid cancer problems -- more than 42 percent more thyroid cancer incidences have been identified between 1975 and 1996. She cites, among other research, a Japanese study by a leading thyroid clinic in 1991 claiming that isoflavones adversely affect the thyroid's function, and after a long duration have caused thyroid suppression and sometimes thyroid enlargement.

In the May-June 2000 issue of FDA Consumer, a publication released by the U.S. Food and Drug Administration, author John Henkel states that animal studies, some of which date back to 1959, link soy isoflavones to possible thyroid disorders such as goiter. A 1997 study in Biochemical Pharmacology identified that genistein and daidzein (isoflavones in soy) may prompt goiter and autoimmune disorders of the thyroid. (Critics suggest that the cause may be due instead to iodine deficiency.)

Even bullish soy enthusiast Barry Sears steers clear of isoflavones, claiming that one-third of his soy-heavy diet program should include soy-based meat substitutes, which he claims can be free of isoflavones. He states on his Web site: "I personally feel that once you consume more than 50 mg per day of isoflavones, potential problems may occur in some individuals."

Though other environmental harms such as radiation, mercury, chlorine, plastics and pesticides have been implicated in causing thyroid disorders, Daniel argues the research shows that the *overconsumption of isoflavones in soy products has significantly contributed to thyroid disorders* that, according to Dr. Ridha Arem, clinical professor of medicine at Baylor College of Medicine in Houston, and author of "The Thyroid Solution," are now shared by more than 20 million Americans.

"Shame on you for even talking to her!" says Dr. Mark Messina, adjunct professor of nutrition at Loma Linda University in Southern California, and author of the pro-soy book "The Vegetarian Way: Total Health for You and Your Family." "Here is a person with a mail-order Ph.D., without one paper in a peer review publication, trying to promote a book of quasi-science." (Daniel fervently defends her Ph.D., which she received at the University of Cincinnati, Ohio, and Union Institute. Though both are accredited universities, the latter is a distance learning-based institution.)

"If you want some real perspective," Messina snaps, "look at 70 years of studies, clinical trials, talk to real scientists, look at the thousands of real research trials done on this stuff. It's the thousands of positive trials that never get attention -- only the ones that are different from everything else that the media clings on to."

*Messina*, who also *consults for the soy industry*, co-authored a recent report on the effect of isoflavones on thyroid function in the 2006 issue of the medical journal, Thyroid. In it, he reviewed 14 trials in which the effects of soy foods or isoflavones on at least one measure of thyroid function was assessed in various presumably healthy subjects. With only one exception, either no effects or only very modest changes were noted in these trials. His conclusion: Neither healthy adults nor those with hypothyroid

conditions need avoid soy foods. "The points Kaayla is making are based on semi-science," Messina says. "This is a person who mixes citations from patients with scientific data in her book . . . that's just, it's, reprehensible!"

But the mounting apprehension about soy within world health organizations is hard to shake. In the January 2006 issue of the journal *Circulation*, ***the American Heart Association announced that soy has little effect on cholesterol and is unlikely to prevent heart disease.*** Before that, in October of 2005, the U.S. Agency for Healthcare Research and Quality reported that most of the research carried out on soy and menopause to date is "inconclusive," of "poor quality" and "too short duration." In October 2005, ***the Journal of the American Dietetic Association reported that the studies on soy and cancer are inconsistent and that high soy consumption might actually increase breast cancer risk.***

"You have to understand, we've never said (soy) is some magic bullet," says Nancy Chapman, executive director of the Soyfoods Association of North America, a lobbying leg of the soy industry. "The terminology turnaround is a media description. The advice still at the end of the day is that nobody is saying stop eating soy, nobody is saying soy is unsafe."

***But that's exactly what the Israeli Health Ministry decreed in July 2005 when they issued a public warning about eating large amounts of soy, notifying day care centers and schools, demanding that they limit soy to no more than one serving per day and no more than three times per week.*** In March 2005, the French Center for Cancer Research stated that soy products in no amount should be eaten by children under 3 years of age, children treated for hypothyroiditis, women with a history of breast cancer and/or history of familial breast cancer. ***Soy products in France must now carry warning labels.***

"Did you talk to the people in Israel? Did you talk to the French?" asks Chapman. "The French had no nutritionist on the panel, they had no panel review, there were no soy experts, it was based on research doing injections of genisteine into the backs of rats . . . studies have shown you can't make conclusions (from animal research) on human subjects -- this is extraordinarily important for people to understand!"

Messina also voiced concerns over warnings by Israel and France. "When world health organizations get involved, I admit, that lends an air of legitimacy to this argument, but I still think they've jumped the gun," he says. "The (American) National Institute of Health concluded that isoflavones ... they were of negligible concern, because exposure was so low, they said there was no evidence it was harmful. Consider, too, we're a bigger country here, and the NIH has more scientists than these other countries."

The NIH has no official stance on the benefits or risks of soy, saying, "The NIH doesn't make statements, we fund and make research available, then allow that research to speak for itself." What the research says is listed in the August 2005 report, "Effects of Soy on Health Outcomes, an Evidence Report/Technology Assessment by the Agency for

Healthcare Research and Quality," an agency under the Department of Health and Human Services. The report looked at the effects of soy on cholesterol, menopause, endocrine function, cancer and tumors and bone health.

Three-quarters of the trials used soy supplements; soy foods were used in the remaining trials. Among the soy supplement trials, 57 percent used soy protein with isoflavones, 36 percent used isoflavones alone, and 6 percent soy protein without isoflavones. Total isoflavones ranged from 0 mg to 185 mg per day, and the total protein intake from soy ranged from 0 g to 154 g per day.

The outcome of all trials was, according to the report, "no conclusive evidence of a dose-response effect for either soy protein or isoflavone. However, for LDL reduction, there is a suggestion of a possible dose-response effect for soy protein."

So, the news? There was no news, but *there were some interesting side effects. More than 3,000 subjects in 49 studies reported adverse events that were "gastrointestinal in nature." Fifteen studies reported "menstrual complaints." Other "adverse events" including complaints of headache, dizziness and rashes.*

The report concludes with the generic (though creepy) quasi-disclaimer: "There were a limited number of studies with duration of 1 year or longer; thus the long-term adverse effect of soy in a large population is uncertain."

### ***The Soy Infant Formula Dilemma***

Soy infant formula is currently given to up to 25 percent of bottle-fed infants in the United States, a higher percentage than anywhere in the world. Of the laundry list of dangers pointed out by Daniel based on studies at the University of Irvine and other universities, the manganese levels of soy infant formula are perhaps the most alarming. *Soy is naturally high in manganese, which does not pose a problem for children and adults, but raises serious concerns for infants who, with immature livers, cannot process it safely.*

Per liter, breast milk contains 3 to 10 ug (parts per million) of manganese to soy formula's 200 to 300 ug. *Daniel claims newborns exposed to such high level of manganese are vulnerable to "brain damage associated with learning disabilities, attention deficit and other behavioral disorders, and violent tendencies."* (McHugh comment: Ask any educator, and they will tell you the incidences of Attention Deficit Disorder are epidemic. Why? Thirty years ago, hardly anyone heard of A.D.D.).

Soy formula also contains levels of aluminum -- a result of washing the beans in huge aluminum caldrons -- 10 times greater than milk-based formula and 100 times greater than breast milk. *High levels of aluminum have been linked to dementia, memory loss, confusion, disorientation, loss of coordination and digestive problems.*

But worst of all, according to Daniel, soy formulas contain extremely high levels of isoflavones -- the same agent supposedly contributing to thyroid malfunction. As a

result, *babies fed soy-based formula have 13,000 to 22,000 times more estrogen compounds in their blood than babies fed milk-based formula -- the estrogenic equivalent of at least five birth control pills per day*. It's the extremely high levels of estrogen that Daniel claims could at least be partly responsible for the recent and rampant premature sexual development of girls.

Almost 15 percent of white girls and 50 percent of African American girls show signs of puberty such as breast development and pubic hair before age 8. Some girls are showing sexual development before age 3. (Daniel claims that soy formula is heavily targeted to blacks, Asians and American Indians because many infants of these races are presumed lactose intolerant, and thus many of them start on soy formula outright. Most Caucasians start out with a dairy formula but switch to soy if there are any problems.)

"The chances that the amount of estrogen in soy formula is going to affect a child later in life, I find that hard to swallow," says Dr. Michelle Barratt, associate professor of pediatrics at University of Texas Medical School. "I like what Kenneth Setchell (professor of pediatrics at Cincinnati Children's Hospital Medical Center in Ohio) said about it in the June 2002 issue of Environmental Health Perspectives (a peer-reviewed journal of the United States' National Institute of Environmental Health Sciences)." Barratt reads from the article, "When we've had so many infants raised on soy formula and we haven't really seen these horrendous effects that people keep saying these compounds cause, then there's probably no reason for concern. However, I accept that the lack of evidence is not evidence for the lack of effect."

Along with the American Academy of Pediatrics, where she serves on the committee on adolescence, Barratt supports soy formula as a safe and effective alternative for infants -- but not in excess.

"I think the bottom line is to use moderation, and whenever possible, I always suggest breast milk as the best formula. But, as far as soy formula causing premature puberty in girls, or delaying puberty in boys, I just don't think that's correct." Spurred by ongoing concerns over soy infant formula, an independent panel of 14 scientists met in March to decide whether soy formula was hazardous to human development.

"I'm not an expert in infant nutrition," says Messina. "But I'm impressed by the fact that over a 40-year period, 20 million infants fed soy formula without case reports in medical literature -- I personally wouldn't have a problem with an infant consuming soy formula."

Daniel counters: "Given the facts, and the risk, and there are proven risks, I don't know who would want to take the chance."

### ***Whatever Happened to Moderation?***

How did we ingrain into our collective ethos that if a little of something is good for you, then a lot must be really good for you? The road of excess may lead to the palace of wisdom but there's wisdom in the saying, Everything in moderation. And now we're at

nutritional extremes: One-half of us tries to cheat ourselves by doing too much for too long, the other half lazes idly by doing not enough for too little. Critics pick sides to sell books and make headlines. Those in the middle might try to filter the results, but through the constant white noise of bickering the only voices that come through are distorted.

What happened to the voices of (unsponsored, un-self-promoting, unaffiliated) reason, of temperance, of moderation?

Marion Nestle is the noted author of "Food Politics and What to Eat," a decidedly moderate voice in the nutrition wars, neither a soy lobbyist nor a detractor. Her unbiased, no-nonsense nutritional advice is trusted by hundreds of thousands of Americans. Can she clear this up?

"I think overall the research on soy is really unconvincing," Nestle says. "What the data shows is that if there is harm from soy, it is very small; and if there are benefits, they are also very small. That means the data revolves around zero. And the FDA health claim was on soy ... I think it was way out of line. Foods aren't medicines!"

"People don't have to eat soy if they don't want to!" Nestle says. "To figure you have to eat it for any reason makes no sense to me at all -- nobody needs to eat this stuff to be healthy."

James Nestor last wrote for the Magazine on surfer "Doc" Rennaker.

<http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2006/08/13/CMGJJK1BP31.DTL>

**McHugh Comment:** My beef is that they are sticking soy in everything. Nestle's claim that nobody needs to eat this stuff is nonsense, because the Master Planners have put it in almost all of our food supply. We need to be able to have the option to choose a product that is soy free, and that is getting harder by the minute.