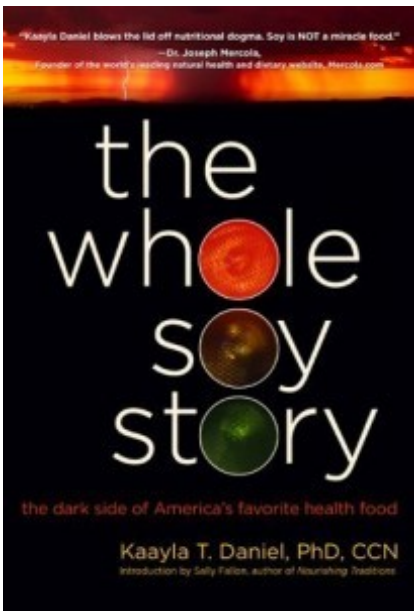
The Dark Side of Soy



Need a short summary of my book The Whole Soy Story? Need the main dangers spelled out? I wrote this article for the British magazine Caduceus and it answers the most frequently asked questions. For a more thorough discussion and more complete references, please do check out the book! Thanks.

Over the past two decades, soy has been widely promoted as a 'miracle' food that can prevent heart disease, fight cancer, fan away hot flushes and build strong bones and bodies in a myriad of ways. Sales of soy foods topped $4bn in the USA for the first time in 2004, with most segments of the industry reporting double-digit growth.1 Although such growth has mostly slowed, sales are not falling and the soy industry has been stepping up its marketing of products all over the world.

The marketing of soy as a 'health food' has been so successful that few people realize that respected scientists have warned that possible benefits should be weighed against proven risks. Even researchers working for the soy industry have admitted to each other at soy symposia that the 'marketing is way ahead of the science'.

Fortunately, the 'whole soy story' is starting to emerge. In July, 2005, the first major alert came from the Israeli Health Ministry, which warned that babies should not receive soy formula, that children under 18 should eat soy foods no more than once a day to a maximum of three times a week and that adults should exercise caution because of adverse effects on fertility and increased breast cancer risk.2

The Ministry's advice come from a 13-member committee of nutritionists, oncologists, pediatricians and other experts who examined the evidence for a year. The committee was most concerned by the possibility of hormonal disruption caused by the estrogen-like plant hormones in soy.3

Also in July researchers at Cornell University's Program of Breast Cancer and Environmental Risk Factors warned that excessive soy food consumption can increase breast cell multiplication, putting women at greater risk of breast cancer.4

That September the US Agency for Healthcare Research and Quality released a report that concluded that much of the research carried out on soy is 'inconclusive'.5 The review, prepared by a team of researchers at Tufts in Boston, concluded that soy products appear to exert 'a small benefit on LDL cholesterol and triglycerides, but the effects may be of small clinical effect in individuals'. Furthermore, the researchers could not determine from the many studies how much soy protein might be needed for lipid reduction. The authors found that studies show that soy products may reduce menopausal symptoms but noted they were of poor quality or their duration was too short to lead to definite conclusions.

The researchers failed to find clear evidence that soy causes thyroid damage – but that is not surprising because they failed to consider foreign studies. Most of the key studies showing thyroid damage from soy have been done at leading thyroid clinics in Japan.6

Then the American Dietetic Association reported that the studies on soy and cancer are inconsistent and that high intake of soy may increase breast cancer risk. Their journal indicated this lack of a 'clear, consistent message' confuses many women and that 'health professionals should take an active role in communicating and clarifying such information'.7

The French Government also takes the soy risk seriously and is implementing new regulations that will require manufacturers to remove soy isoflavones from infant formula and soy foods targeted at children under 3 years old.8 In 2007 the German Institute of Risk Assessment warned parents and pediatricians that babies should not be given soy infant formula without clear medical reasons and then only under strict medical supervision.9 Soon after, the Germans issued a second warning to adult consumers, saying that soy isoflavones offer no proven health benefits and may pose health risks.

These and other warnings follow a lengthy report issued in 2002 by the British Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment, which found no merit in most of the health claims made for soy. The Committee identified infants on soy formula, vegetarians who use soy as a primary source of protein and adults trying to prevent disease with soy foods and soy supplements as being at risk of thyroid damage.10

Confusing consumers

For consumers, such news can be confusing. After all, 'everyone knows' that Asians eat large quantities of soy and consequently remain free of most western diseases. In fact, the people of China, Japan and other countries in Asia eat small quantities of soy and as condiments, not as staple foods.11 While it is true that Asians show lower rates of breast, prostate and colon cancers, they suffer higher rates of thyroid, pancreatic, liver, stomach and esophageal cancers.12 Thyroid disease is also prevalent in Asia, with an epidemic of cretinism in some parts of China, and with 'Hashimoto's thyroiditis' and other thyroid problems common in Japan.13

Asians also eat different soy foods from the ones now appearing on western tables, especially regarding fermented vs unfermented soy [see box]. Think small amounts of traditional, whole soy foods such as miso, natto, tempeh, tofu, tamari and shoyu, not veggie burgers, 'energy bars', shakes, TVP chili, soy milk or other meat or dairy substitutes. Contrary to popular belief, soy milk was rarely drunk in Asia prior to the 20th century and soy formula was first invented by a Baltimore pediatrician in 1909.14

Ingredients such as soy protein isolate, soy protein concentrate, textured soy protein and hydrolyzed plant protein were unheard of until after World War II. These quintessentially western products are manufactured using high-tech, industrialized processes that compromise protein quality, reduce vitamin levels and leave toxic residues and carcinogens. Although the latest refining techniques yield blander, purer soy proteins than the 'beany', hard-to-disguise flavours of the past,

the main reason the new soy foods taste and look better is the lavish use of sugar and other sweeteners, salt, artificial flavorings, colours and monosodium glutamate.15

GM soybean linked to strong allergy increase

Soy is now an ingredient in more than 60 percent of the foods sold in supermarkets and natural food stores, with much of it 'hidden' in products where it would not ordinarily be expected, such as in fast-food burgers, breads and canned tuna. This is a becoming a nightmare for the growing number of people who are allergic to, or sensitive, to soy – which is a lot of people, given that soy is now one of the top eight allergens, with many experts predicting it will soon be in the top four.16

The likeliest reason for this rise in soy allergies is the genetically modified soybean. The York Nutritional Laboratories in England – one of Europe's leading laboratories specializing in food sensitivity – found a 50 percent increase in soy allergies in 1998, the same year in which GM beans were introduced to the world market. York's researchers noted that one of the 16 proteins in soybeans most likely to cause allergic reactions was found in concentrations 30 percent or higher in Monsanto's GM soybeans.17

GM beans carry higher levels of anti-nutrients, which decrease digestion and absorption and increase vitamin and mineral needs, as well as more toxins than regular soybeans, jeopardizing human and animal health. They have also caused vast damage to the environment. Indeed, more of the Amazon Rainforest has been lost to GM soybean farming than to beef grown for fast-food franchises.

Major health problems

Unfortunately, the health problems caused by soy are not completely solved by eating whole bean products and buying organic. All soybeans naturally contain anti-nutrients, toxins and plant hormones, the best-known of which are:

- ➔ **protease inhibitors** – which interfere with protein digestion and have caused malnutrition, poor growth, digestive distress and pancreatitis;
- ➔ **phytates** – which block mineral absorption, causing zinc, iron and calcium deficiencies;
- ➔ **lectins and saponins** – linked to 'leaky gut' and other gastrointestinal and immune problems;
- ➔ **oxalates** – which can promote kidney stones and vulvodynia; and,
- ➔ **oligosaccharides** – which cause gas, giving soy its reputation as the 'King of Musical Fruits'.

Apologists for soy dismiss such claims, saying that food processing and home cooking remove most of these anti-nutrients. In fact, modern processing removes some of them, sometimes a lot of them, but never all. The levels of heat and pressure needed to remove all protease inhibitors, for example, severely damage soy protein and make it harder to digest. The trick is to eliminate the most anti-nutrients while doing the least damage to the soy protein. Success varies widely from batch to batch.

For years, the US Department of Agriculture and the soy industry tried to improve the quality of animal feeds by researching ways to get rid of these undesirable anti-nutrients. Although they succeeded to a certain extent, producers routinely supplement animal feeds heavily with vitamins, minerals and methionine, a sulfur-containing amino acid that is low in soy. Even so, makers of animal chows are still limited in the amount of soy they can add without causing growth and fertility problems.

Food processors making soy-protein products for people may add these supplements, but in most cases do not. Generally, calcium and vitamin D are added to soy milk so it can compete with dairy products. B12 often goes in because vegans are well-known to be at high risk of being deficient, but that's about it.

Change of tactics – health claims

In the past two decades, the soy industry has switched tactics – from trying to remove unwanted anti-nutrients to trying to convince people that they are good for them. Protease inhibitors, saponins and lectins are being touted as curers of cancer or reducers of cholesterol, while phytates are being recommended for their ability to remove potentially toxic minerals, such as calcium and excess iron from the body.18

Although some of these uses look promising, it is important to note that researchers are not achieving these successes using regular soy foods. Most take carefully extracted components and administer them in carefully measured and monitored doses. News headlines to the contrary, there's no reason to think that willy-nilly eating of a lot of soy foods will do the trick.

Phytoestrogen risks: hypothyroidism, infertility, infants

Riskiest of all are the high levels of phytoestrogens (plant estrogens) in soybeans. Although these are said to be 'weak estrogens' and are promoted as 'safe and natural' hormone replacement therapy, they are strong enough in numbers to cause significant endocrine disruption, leading most often to hypothyroidism, with its symptoms of weight gain, fatigue, brain fog and depression.

More than 70 years of human, animal and laboratory studies show that soybeans put the thyroid at risk.19 Although individuals deficient in iodine are especially prone to soy-induced thyroid damage, this can also occur even when iodine levels are replete.

Soy phytoestrogens also have a 'contraceptive effect'. Fertility problems in cows, sheep, rabbits, cheetahs, guinea pigs, birds and mice have been regularly reported since the 1940s.20

In women, soy can impair the ovarian development of babies, alter menstrual cycles and cause hormonal changes indicative of infertility for adults.21 In men it lowers testosterone levels, the quantity and quality of sperm and the libido.22 Although scientists discovered only recently that soy lowers testosterone levels, tofu has traditionally been used in Buddhist monasteries to help the monks maintain their vows of celibacy. Thus couples desiring to become pregnant are wise to cut out soy.

Humans and animals appear to be the most vulnerable to the effects of soy estrogens pre-natally, during infancy and puberty, during pregnancy and lactation, and during the hormonal shifts of menopause.23 Of all these groups, infants on soy formula are at the highest risk because of their small size and developmental phase, and because formula is their main source of nutrient. Soy formula now represents about 25 percent of the bottle-fed market and has been linked to premature puberty in girls, delayed or arrested puberty in boys, thyroid damage and other disorders.24

Soy formula also contains 50 to 80 times the amount of manganese found in dairy formula or breast milk, toxic levels that can harm the infant's developing brain, causing ADD/ADHD and other learning and behavioural disorders.25 Because ADD/ADHD has been linked to violent tendencies and crime, the California Public Safety Committee is considering making soy infant formula illegal except by prescription.

These and other known hazards of soy formula have led the Israeli Health Ministry, the Swiss Federal Health Service, the British Dietetic Association and others to warn parents and pediatricians that soy infant formula should never be used except as a last resort. Although children and teenagers are less vulnerable than infants, their young bodies are still developing and are highly vulnerable to endocrine system disruption by soy.

Cancer benefit claims

Despite these and many other potential dangers, soy is still widely promoted as a health food – even as a 'miracle food' that can prevent and cure cancer. While a few studies suggest that soy protein – or its phytoestrogens – might help prevent cancer, far more show it to be ineffective or inconsistent. Some studies even show that soy can contribute to, promote or even cause cancer; one company has even tried to claim a benefit for cancer.

In 2004 the Solae Company petitioned the FDA to allow a cancer health claim for soy protein, claiming that 'there is scientific agreement among experts'.26 In fact, no such consensus existed then or now and numerous experts, including the FDA's own National Laboratory for Toxicological Research, warned of soy protein's carcinogenic potential and other health dangers that ensue from consuming excess soy-food.27

In 2004/5 the Weston A Price Foundation (WAPF) and I submitted three detailed documents to the FDA that refuted Solae's claims that soy prevents cancer.28 We showed that Solae was highly selective in its choice of evidence and biased in its interpretations, excluding many studies showing that soy protein can cause and accelerate the growth of cancer, particularly breast cancer.29 In October, 2005, Solae withdrew its petition.

In 1999 the FDA made a big mistake of siding with the soy industry and allowed a positive soy-and-heart-disease health claim. Today, it is having to consider a petition from the WAPF asking it to retract that claim based on the fact that studies on soy and cholesterol are inconsistent and contradictory, and soy may contribute to or even cause heart arrhythmias, cardiomyopathy and blood vessel damage in women.30 The chance of retraction was significant bolstered last August

when the European Food Safety Authority issued a negative opinion to a health claim submission linking soy protein and reduced LDL cholesterol.31

Recently, the marketing of soy for cancer prevention hit a big setback with a study last autumn showing that soy isoflavones do not worsen primary tumours but do cause metastases,32 a sobering finding for all who would make health claims for soy.

The bottom line is that the safety of soy foods and formula has yet to be proven and that people eating large quantities of soy – often unknowingly – are unwittingly participating in a large, uncontrolled and unmonitored, human experiment.

Fermented vs unfermented, soy milk and health 33

The ancient Chinese and Japanese knew soybeans must be soaked, cooked and fermented in order to transform them into an edible and healthful food. When we ferment food, we enlist bacteria, fungi and other beneficial microorganisms to help break down complex proteins, starches and fats into highly digestible amino acids, simple sugars and fatty acids. Fermented soybean products enjoy high status throughout Asia as digestive aids, potent medicines, powerful energizers, stamina builders and longevity elixirs.

Tofu is also an ancient, whole soybean product. A precipitated food, it is made by adding a curdling agent to soy milk, which then separates into curds and whey. Tofu is more digestible than modern soybean products because many of the unwanted components, including the flatulence-producing oligosaccharides, concentrate in the soaking liquid rather than the curd. Although not as healthy as the fermented products, it is not usually a problem when eaten in small quantities, as occurs in Asia where soy is typically consumed as a condiment in the diet and not as a staple food.

Surprisingly, soy milk is not a traditional product. The first historical reference to it as a beverage appears in 1866 and it was not popularized until the 1920s and ’30s when American Seventh Day Adventist missionaries developed soy milk processing plants.

Soy milk production today involves fast, cheap and modern processing methods that destroy key nutrients and decrease the amino acid quality. Furthermore, in order to compete with dairy milk, soy milks are fortified with cheap, mass-produced supplements including hard-to-absorb forms of calcium and the inferior, vegetarian form of vitamin D.

The greatest health hazards come from industrially processed, soy protein ingredients, such as soy protein isolate, textured vegetable protein, hydrolyzed soy protein and other ingredients that were developed after World War II. These ingredients are widely used in shake powders, energy bars, veggie burgers and low-fat versions of soy milk.

Their manufacture involves high temperatures, intense pressure, hexane and other solvents, alkaline and acid baths and other processing methods that deplete nutritional value and leave toxic residues, such as carcinogenic nitrosamines. MSG and other additives are often then added to recipes to improve taste, increasing the risks even more.

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