

Soy The Miracle Food or Pandora's Box?

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Compiled by Health Action Network Society

What has science been telling us? What does history reveal?

*"Current evidence for the beneficial effects of soy requires a full
understanding of potential adverse effects as well."*

*Quoted here are many of the scientific research studies on soy spanning the
years 1925 through 2010.*

Soy Related Effects

*Cancer and DNA Damage
Brain and Learning Disabilities
Thyroid Problems Etc.*

Blocks Vitamin & Mineral Absorption

Soy Blocks Vitamin and Mineral Absorption Studies indicate that soy (organic and non-organic) causes increased requirements for vitamins E, K, D and B12. Phytic acid from SPI (soy protein isolate) blocks the absorption of essential minerals and creates deficiency symptoms of calcium, magnesium, magnesium, copper, molybdenum, iron, manganese and

especially zinc -in the intestinal tract. (2) This may be contributing to the early onset of osteoporosis in Japan, starting there as early as age 20 versus age 34 in the USA. (1b) Also test animals fed SPI developed enlarged organs, particularly the thyroid gland and pancreas, and caused increased deposition of fatty acids in the liver.

Soybeans have one of the highest phytate levels of any grain or legume. Phytates in soy are highly resistant to normal phytate-reducing techniques such as long, slow cooking. Only long periods of fermentation will greatly reduce soy's phytate levels, but will not eliminate them.

Soy has natural toxins or anti-nutrients. Soybeans contain potent enzyme inhibitors that block the action of trypsin and other enzymes needed for protein digestion. These inhibitors are not completely deactivated during ordinary cooking.

They can produce serious gastric distress, reduced protein digestion and create chronic deficiencies in amino acid uptakes. In test animals, diets high in trypsin inhibitors also caused enlargement and pathological conditions of the pancreas, including cancer. (4, 5)

Soy contains haemagglutinin, which is a clot-promoting substance that causes red blood cells to clump together, setting the stage for clogged arteries and stroke.

Endocrine-disrupting isoflavones, genistein and daidzein are goitrogenic components found in soy. In vitro studies suggest isoflavones inhibit synthesis of estradiol and other steroid hormones. Infertility, reproductive problems, thyroid and liver disease due to dietary intake of isoflavones have been observed for several species of animals including mice, cheetah, quail, pigs, rats, sturgeon and sheep. (5)

100 grams of soy protein - the maximum suggested cholesterol lowering dose - can contain almost 600mg of isoflavones, an undeniably toxic amount. Only 45 mg of isoflavones taken daily for one month, in pre-menopausal women, reduced hormones needed for adequate thyroid function. In some of the women, these effects lingered for 3 months after soy consumption was discontinued.

The Swiss Health Service, in 1992, estimated that 100 grams of soy protein provides the estrogenic equivalent of one birth control pill.

Processing of Soy Adds More Toxins

Processing of soy adds even more toxins. Much soy is acid washed in aluminium tanks, leaching high levels of aluminium into the final product. Nitrites, potent carcinogens, are formed during spray-drying, and toxic lysinoalanine is formed during alkaline processing. Artificial flavourings, particularly MSG are added to SPI and textured vegetable protein (TVP) products to mask their strong, "beany" taste and to impart the flavour of meat. (9)

Cancer and DNA Damage

Cancer and DNA damage Thousands of women are now consuming soy in the belief that it protects them against breast cancer. Yet in 1996, researchers found that women consuming soy protein isolate (SPI) had an increased incidence of epithelial hyperplasia, a condition that preceded malignancies. Additionally, genistein was found to stimulate breast cells to enter the breast cancer cycle. (5,7, 8,)

Since 1993, soy has been known to cause DNA damage, chromosome fragmentation and errors in chromosome orientation. (5, 3) (4) Soy products may increase breast cancer in pregnant women. (3)

Soy advertisers collectively claim lower rates of reproductive cancers for Japanese and Asians eating soy, while ignoring the fact that these people also have much higher rates of cancer of the esophagus, stomach, liver, pancreas and thyroid, particularly as soy causes these same types of cancer in laboratory rats.

Brain - Aging and Learning Disabilities

Brain - Aging and learning disabilities Japanese Americans living in Hawaii show a significant statistical relationship between two or more servings of tofu a week and accelerated brain aging (atrophy).

Participants in another study who ate tofu in mid-life had lower cognitive function in later life, experienced greater incidence of Alzheimer's disease and dementia and looked older. There is strong evidence linking brain damage to infants using soy formulas. (3) (5)

Soy Infant Formulas

Soy infant formula. Daily exposure of infants to isoflavones in soy infant formula is 6 to 11 times higher on body-weight basis than the dose that has negative hormonal side effects in adults consuming soy foods.

Approximately 25 per cent of bottle-fed children in the US receive soy-based formula - a much higher per cent than in other parts of the Western world. Toxicologist Dr. Mike Fitzpatrick estimated that infants exclusively fed soy formula receive the estrogenic equivalent (based on body weight) of at least 5 birth controls pills per day. By contrast, almost no phyto-estrogens have been detected in dairy-based infant formula or in human milk, even when the mother consumes soy products.

In the 1986 Puerto Rico Premature Thelarche Study, the most significant dietary association with premature sexual development was not chicken, as the press reported, but soy infant formula.

Early maturation in girls is frequently an indicator of problems with their reproductive system in later life, including failure to menstruate, infertility, breast cancer and possibly uterine cancer. (8) Problems in both sexes associated with soy-based infant formula later in life also include extreme emotional behaviour, immune system problems, pituitary insufficiency, irritable bowel syndrome, asthma, thyroid disorders including thyroid problems in babies and infantile leukaemia.

Thyroid Problems

Thyroid problems Asians throughout the world have high rates of thyroid cancer. Japanese researchers reported in 1991 that consumption of as little as 30 grams or 2 tablespoons of soybeans per day for only one month resulted in significant decrease in thyroid-stimulating hormone. Diffuse goiter and hypothyroidism appeared in some of the subjects and many complained of fatigue, lethargy and constipation, even though their intake of iodine was adequate. (5)

Soy warning labels, for medical reasons. The USA's FDA ignored two of their own expert research scientists, Daniel Sheehan, PhD and Daniel Doerge, PhD, who expressed serious concerns regarding the perceived safe use of soy, if soy was to be granted a 'health claim'. In their letter of protest

they said,

"...it is inappropriate to allow a health claim for SPI..... it could be misinterpreted.... the health labelling of SPI for foods need to be considered just as would the addition of any 'estrogen' or 'goitrogen' to foods, which are bad ideas.

Estrogenic and goitrogenic drugs are regulated by the FDA, and are taken under a physician's care. Patients are informed of risks, and are monitored by their physicians for evidence of toxicity. No similar safeguards are in place for foods, so the public will be put at potential risk from soy isoflavones in SPI without adequate warning and information."

Soy protein has not been given GRAS (Generally Recognized as Safe) status because of its carcinogenic properties; neither has it been given pre-market (1a, 5) approval for its use in food. It is reasonable to ask - is it even legal to add to our food? (4)

'Toxic Load' means that the risk is a function of dose length, dose strength, and of the physical condition of the consumer.

Reference: *"The Dose Makes the Poison: A Plain-Language Guide to Toxicology,"* 2nd edition, by M. Alice Ottoboni.

Soy Protein Used in “Natural” Foods Bathed in Toxic Solvent Hexane

By Mike Adams www.NaturalNews.com

Virtually all “protein bars” on the market today are made with soy protein. Many infant formula products are also made with soy protein, and thousands of vegetarian products (veggie burgers, veggie cheese, “natural” food bars, etc.) are made with soy protein. That soy protein is almost always described as safe and “natural” by the companies using it. But there’s a dirty little secret the soy product industry doesn’t want you to know: Much of the “natural” soy protein used in foods today is bathed in a toxic, explosive chemical solvent known as hexane.

Newest Research On Why You Should Avoid Soy

by Sally Fallon & Mary G. Enig, Ph.D.

http://www.mercola.com/article/soy/avoid_soy.htm

The propaganda that has created the soy sales miracle is all the more remarkable because, only a few decades ago, the soybean was considered unfit to eat - even in Asia. During the Chou Dynasty (1134-246 BC) the soybean was designated one of the five sacred grains, along with barley, wheat, millet and rice.

However, the pictograph for the soybean, which dates from earlier times, indicates that it was not first used as a food; for whereas the pictographs for the other four grains show the seed and stem structure of the plant, the pictograph for the soybean emphasizes the root structure. Agricultural literature of the period speaks frequently of the soybean and its use in crop rotation. Apparently the soy plant was initially used as a method of fixing nitrogen.

The soybean did not serve as a food until the discovery of fermentation techniques, some time during the Chou Dynasty. The first soy foods were fermented products like tempeh, natto, miso and soy sauce.

At a later date, possibly in the 2nd century BC, Chinese scientists discovered that a purée of cooked soybeans could be precipitated with calcium sulfate or magnesium sulfate (plaster of Paris or Epsom salts) to make a smooth, pale curd - tofu or bean curd. The use of fermented and precipitated soy products soon spread to other parts of the Orient, notably Japan and Indonesia.

The Chinese did not eat unfermented soybeans as they did other legumes such as lentils because the soybean contains large quantities of natural toxins or "antinutrients". First among them are potent enzyme inhibitors that block the action of trypsin and other enzymes needed for protein digestion.

These inhibitors are large, tightly folded proteins that are not completely deactivated during ordinary cooking. They can produce serious gastric

distress, reduced protein digestion and chronic deficiencies in amino acid uptake. In test animals, diets high in trypsin inhibitors cause enlargement and pathological conditions of the pancreas, including cancer.

Soybeans also contain haemagglutinin, a clot-promoting substance that causes red blood cells to clump together.

Trypsin inhibitors and haemagglutinin are growth inhibitors. Weanling rats fed soy containing these antinutrients fail to grow normally. Growth-depressant compounds are deactivated during the process of fermentation, so once the Chinese discovered how to ferment the soybean, they began to incorporate soy foods into their diets.

In precipitated products, enzyme inhibitors concentrate in the soaking liquid rather than in the curd. Thus, in tofu and bean curd, growth depressants are reduced in quantity but not completely eliminated.

Soy also contains goitrogens - substances that depress thyroid function.

Additionally 99% a very large percentage of soy is genetically modified and it also has one of the highest percentages contamination by pesticides of any of our foods.

Soybeans are high in phytic acid, present in the bran or hulls of all seeds. It's a substance that can block the uptake of essential minerals - calcium, magnesium, copper, iron and especially zinc - in the intestinal tract.

Although not a household word, phytic acid has been extensively studied; there are literally hundreds of articles on the effects of phytic acid in the current scientific literature. Scientists are in general agreement that grain- and legume-based diets high in phytates contribute to widespread mineral deficiencies in third world countries.

Analysis shows that calcium, magnesium, iron and zinc are present in the plant foods eaten in these areas, but the high phytate content of soy- and grain-based diets prevents their absorption.

The soybean has one of the highest phytate levels of any grain or legume that has been studied and the phytates in soy are highly resistant to normal phytate-reducing techniques such as long, slow cooking. Only a long period of fermentation will significantly reduce the phytate content of soybeans.

When precipitated soy products like tofu are consumed with meat, the mineral-blocking effects of the phytates are reduced. The Japanese traditionally eat a small amount of tofu or miso as part of a mineral-rich fish broth, followed by a serving of meat or fish.

Vegetarians who consume tofu and bean curd as a substitute for meat and dairy products risk severe mineral deficiencies. The results of calcium, magnesium and iron deficiency are well known; those of zinc are less so.

Zinc is called the intelligence mineral because it is needed for optimal development and functioning of the brain and nervous system. It plays a role in protein synthesis and collagen formation; it is involved in the blood-sugar control mechanism and thus protects against diabetes; it is needed for a healthy reproductive system.

Zinc is a key component in numerous vital enzymes and plays a role in the immune system. Phytates found in soy products interfere with zinc absorption more completely than with other minerals. Zinc deficiency can cause a "spacey" feeling that some vegetarians may mistake for the "high" of spiritual enlightenment.

Milk drinking is given as the reason why second-generation Japanese in America grow taller than their native ancestors. Some investigators postulate that the reduced phytate content of the American diet - whatever may be its other deficiencies - is the true explanation, pointing out that both Asian and Western children who do not get enough meat and fish products to counteract the effects of a high phytate diet, frequently suffer rickets, stunting and other growth problems.

Soy Protein Isolate: Not So Friendly

Soy processors have worked hard to get these antinutrients out of the finished product, particularly soy protein isolate (SPI) which is the key ingredient in most soy foods that imitate meat and dairy products, including baby formulas and some brands of soy milk.

SPI is not something you can make in your own kitchen. Production takes place in industrial factories where a slurry of soy beans is first mixed with an alkaline solution to remove fiber, then precipitated and separated using an acid wash and, finally, neutralized in an alkaline solution.

Acid washing in aluminum tanks leaches high levels of aluminum into the final product. The resultant curds are spray-dried at high temperatures to produce a high-protein powder. A final indignity to the original soybean is high-temperature, high-pressure extrusion processing of soy protein isolate to produce textured vegetable protein (TVP).

Much of the trypsin inhibitor content can be removed through high-temperature processing, but not all. Trypsin inhibitor content of soy protein isolate can vary as much as fivefold. (In rats, even low-level trypsin inhibitor SPI feeding results in reduced weight gain compared to controls).

But high-temperature processing has the unfortunate side-effect of so denaturing the other proteins in soy that they are rendered largely ineffective. That's why animals on soy feed need lysine supplements for normal growth.

Nitrites, which are potent carcinogens, are formed during spray-drying, and a toxin called lysinoalanine is formed during alkaline processing. Numerous artificial flavorings, particularly MSG, are added to soy protein isolate and textured vegetable protein products to mask their strong "beany" taste and to impart the flavor of meat.

In feeding experiments, the use of SPI increased requirements for vitamins E, K, D and B12 and created deficiency symptoms of calcium, magnesium, manganese, molybdenum, copper, iron and zinc. Phytic acid remaining in these soy products greatly inhibits zinc and iron absorption; test animals fed SPI develop enlarged organs, particularly the pancreas and thyroid gland, and increased deposition of fatty acids in the liver.

Yet soy protein isolate and textured vegetable protein are used extensively in school lunch programs, commercial baked goods, diet beverages and fast food products. They are heavily promoted in third world countries and form the basis of many food giveaway programs.

In spite of poor results in animal feeding trials, the soy industry has sponsored a number of studies designed to show that soy protein products can be used in human diets as a replacement for traditional foods.

An example is "Nutritional Quality of Soy Bean Protein Isolates: Studies in Children of Preschool Age", sponsored by the Ralston Purina Company. A group of Central American children suffering from malnutrition was first stabilized and brought into better health by feeding them native foods,

including meat and dairy products. Then, for a two-week period, these traditional foods were replaced by a drink made of soy protein isolate and sugar.

All nitrogen taken in and all nitrogen excreted was measured in truly Orwellian fashion: the children were weighed naked every morning, and all excrement and vomit gathered up for analysis. The researchers found that the children retained nitrogen and that their growth was "adequate", so the experiment was declared a success.

Whether the children were actually healthy on such a diet, or could remain so over a long period, is another matter. The researchers noted that the children vomited "occasionally", usually after finishing a meal; that over half suffered from periods of moderate diarrhea; that some had upper respiratory infections; and that others suffered from rash and fever.

It should be noted that the researchers did not dare to use soy products to help the children recover from malnutrition, and were obliged to supplement the soy-sugar mixture with nutrients largely absent in soy products - notably, vitamins A, D and B12, iron, iodine and zinc.

References

(1a) from The Weston A. Price Foundation. www.Westonaprice.org Also see update (1b). Both are c 2000 by S. Fallon & M.G. Enig, PhD: (1a)

"Newest Research on Why You Should Avoid Soy"

www.mercola.com/article/soy/avoidsoy.htm and (1b) "Tragedy and Hype

The Third International Soy Symposium

"www.westonaprice.org/soy/tragedy.html

(2) The Gerson Institute, 1572 Second Avenue, San Diego, California 92101, Phone; 619 685 5353 www.gerson.org/

(3) Optimal Wellness Center, by Dr. Joseph Mercola, and newsletter "eHealthy News you Can Use" (In 'search', type: soy)

(4) The 1958 "Delaney Amendment" to the USA FDA Reg.s prohibits the use of any food additive if it is found to cause cancer in any animal species or man, at any dose level. www.iisd1.iisd.ca/pcdf/meadows/delaney.htm

(5) Soy OnLine Service, SOS, are a small group of private citizens from New Zealand, the United States and the United Kingdom. They have no industry connections and are not funded by any outside interest groups. Their mission is to uncover truths about soy and to provide consumers with an alternative opinion to the information generated from the soy industry. www.soyonlineservice.co.nz

(6) USA Scientists Protest Soy Approval, FDA Lay Out Concerns. Researchers, Daniel Doerge PhD and Daniel Sheehan PhD are two of the USA's Food and Drug Administration 's experts on soy who signed a Feb 18 1999 letter of protest documenting 26 referenced studies that show a link between eating soy and serious health problems.

www.abcnews.go.com/onair/2020/2020_000609_soyfdaletter_feature.html

(7) Estrogen found in soy stimulates human breast-cancer cells in mice . Three studies from the University of Illinois, Nov 1, 2001,

www.eurekalert.org/pub_releases/2001-11_uoia-efi110101.php

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(8) Basing infant formula on soy? American Association for Cancer Research, article "Uterine Adenocarcinoma in Mice Treated Neonatally with Genistein" June 1, 2001.

www.cancerres.aacrjournals.org/cgi/content/abstract/61/11/4325

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Further details available from Health Action Network Society.

ww.hans.org

A comprehensive information package on soy is available from

The Health Action Network Society.