

Let's Talk Soy: Myths and Facts

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Soy is a staple food as old as time, with roots tracing back to 1100 BC in China. However, it wasn't until the 1960s that soy made its way onto American plates. Since then, production and demand for soy products have skyrocketed. A recent valuation of the U.S. soy foods market was estimated at \$955 million USD.

In the past four decades, substantial medical evidence has outlined the unique health benefits of soy products. Unfortunately, there exists widespread misconceptions about soy's safety and its impact on human health. This fact sheet reviews soy, the health benefits of human consumption of soy, and four of the most common myths surrounding soy consumption and what science has to say about them.

What's in Soy?

Soy is a **lactose-free** product chock-full of vital nutrients including:

- ▶ B-vitamins
- ▶ Fiber
- ▶ Potassium
- ▶ Magnesium
- ▶ High-Quality Protein

1

Myth: Soy Affects
Reproductive Hormones

2

Myth: Soy Causes
Feminization in Males and
Impacts Fertility

3

Myth: Soy Causes Breast
Cancer

4

Myth: Soy is Poor Quality
Protein

Health Benefits of Consuming Soy

Increased soy intake has been linked to:

- ▶ Decreased risk of prostate, breast, and endometrial cancer ¹⁻³
- ▶ Lowering of LDL cholesterol and subsequent reductions in cardiovascular events ⁴
- ▶ Improvements in bone density and turnover ⁵
- ▶ Promotion of gut microbial diversity favoring “good” bacteria over bad “bacteria” ⁶
- ▶ Reductions in menopausal symptoms ⁷

MYTH 1: Soy Affects Reproductive Hormones

Background

This is not a new concern and has been around for decades due to a common misunderstanding:

- ▶ Soy contains phytoestrogens NOT estrogen.
 - ▶ This can be confusing due to similar naming conventions.
 - ▶ Phytoestrogen = Estrogen-Like Plant Compounds
 - ▶ These can be found in all kinds of foods we consume including fruits, vegetables, wine, and tea.
 - ▶ Estrogen = Steroid Hormone
 - ▶ Plays a role in both male and female reproductive systems.

This is a **clear distinction** that will be further discussed in **Myths 2** and **3**.

What Does the Science Say?

- ▶ Multiple studies have shown that neither soy overall nor its phytoestrogenic components, such as isoflavones, impact hormone levels. ^{8,9}
- ▶ In fact, phytoestrogens are a significant component of soy's benefits and are potent antioxidants, anticancer, and anti-inflammatory mediators. ¹⁰

What About Dairy?

Dairy milk, produced mainly from pregnant cows, however, does contain significant amounts estrogen and progesterone along with the growth hormone IGF-1 (Insulin Growth Factor-1).

- ▶ These steroid and growth hormone components are of significant concern regarding sexual maturation in children and later cancer development¹¹

Bottom Line

Current studies suggest that typical soy intake has no discernible impact on reproductive hormone levels in either men or women.

MYTH 2: Soy Causes Male Feminization and Negatively Impacts Male Fertility

Background

Another long-standing misconception is rooted in Myth 1.

- ▶ Remember that soy contains plant phytoestrogens **NOT** mammalian estrogens.

What Does the Science Say?

Investigations have found that neither soy products nor isoflavones have any impact whatsoever on male reproductive hormones such as testosterone. ¹²

The same lack of association can be said regarding soy intake and metrics of male fertility, such as sperm concentration and motility. ^{13,14}

Additionally, large scale trials have found a lower risk of prostate cancer (up to 26% lower) among men who consume regular amounts of soy. ^{1,3}

What about Dairy?

Although evidence is limited, studies have noted intake of full-fat dairy products negatively impacting sperm motility and morphology. ¹⁵

- ▶ Possibly due to high estrogenic load in dairy products

Dairy consumption has been linked to increased prostate cancer risk by multiple rigorous studies. ¹⁶⁻¹⁸

- ▶ The Physicians' Health Study, a large trial, found a 34% higher prostate cancer risk among individuals consuming 2.5 daily servings of dairy ¹⁹
- ▶ After diagnosis, whole milk intake was associated with increased risk of progression to a fatal outcome

MYTH 3: Soy Causes Breast Cancer

Background

Most forms of breast cancer are sensitive to your body's naturally occurring hormone levels, particularly estrogen.

Concern regarding soy's role in breast cancer growth and development originated from mice studies, who metabolize soy much differently than humans.

Soy, often mistakenly believed to be an estrogenic compound, is often cited as a culprit. However, soy is protective against multiple forms of breast cancer and is stated in the American Cancer Society nutritional guidelines. ²⁰

What Does the Science Say?

Numerous studies have shown women who eat more soy are less likely to develop breast cancer.

- ▶ One trial found women consuming just one cup of soy milk (or half a cup of tofu) a day have a 30% reduced risk of developing breast cancer compared to those who eat little to no soy ²¹
- ▶ Another recent meta-analysis found this protective affect to apply to both premenopausal and postmenopausal cancers ²²
- ▶ Multiple clinical trials have found no correlation between isoflavones (components of soy) and markers of breast cancer risk

Importantly, eating soy foods during the preteen and teen years, while breast tissue is developing, can be especially protective against breast cancer ²³

Among women with breast cancer, soy food consumption is significantly associated with a decreased risk of death and recurrence ²⁴⁻²⁶

What about Dairy?

Recent research study found some forms of dairy to be potentially associated with increased risk of breast cancer. ^{27,28}

- ▶ Adventist Health Study 2, a recent large trial, found higher intake of dairy milk to be associated with increased risk of breast cancer. ²⁹

Bottom Line

There is no significant evidence to suggest soy intake is associated with an increased risk of breast cancer.

Consuming soy may confer protective benefits, especially at younger ages, and reduce the risk of mortality in individuals already diagnosed with breast cancer.

MYTH 4: Soy is an Incomplete Protein

Background

The notion of “complete proteins” or the purported “inferiority of plant proteins” was debunked decades ago (1994 to be exact). ³⁰

- ▶ The human body has a natural reservoir of free amino acids and a robust protein recycling system to ensure the proper proteins are being synthesized.

Regardless, soy protein is unique not only because of its protein **quantity** (8g of protein in 1 cup of soy milk) but also because it is **high quality protein**.

- ▶ Protein Digestibility Corrected Amino Acid Score (PDCAAS), which assesses a protein’s essential amino acid content + digestibility, is often used to assess protein quality
- ▶ Soy foods range from a PDCAAS score of 0.9-1.0, like dairy products ³¹

Bottom Line

Soy contains high quality protein.

The Least You Should Know

- ▶ Experts and extensive research say soy is a nutritious food with a long history that can help improve overall health and prevent chronic diseases.
- ▶ That’s why the 2020-2025 Dietary Guidelines for Americans asserts that a healthy lifestyle includes a myriad of soy products.
- ▶ For kids who often don’t get enough critical nutrients, soy provides a food packed with high quality protein, fiber, and micronutrients.
- ▶ a healthy lifestyle includes a myriad of soy products.

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