

# HELPING YOUR PATIENTS ACQUIRE SUFFICIENT SOY ISOFLAVONES TO MATCH THE TRADITIONAL ASIAN DIET

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World-wide statistics indicate that Japan enjoys a 75% decreased incidence of breast cancer and an 80% decreased incidence of prostate cancer compared to the United States, Canada and many other developed countries. Many epidemiological studies suggest that much of the variation in breast and prostate cancer incidence between Asian countries and modern Western countries may be explained by the higher consumption of soy foods and soy isoflavones, which are staples of the Japanese and Asian diets. A high ingestion of soy foods is also associated with lower cholesterol levels and a decreased incidence of cardiovascular disease. **(1,2)** In 1991, the US Food and Drug Administration awarded a health claim for the cholesterol-lowering properties of soy protein, concluding that 25 gm of soy protein was sufficient to lower serum cholesterol levels to a modest degree. **(3)**

The question that many patients ask regarding soy intake is, "how much soy, soy protein and/or soy isoflavones should I consume to derive the potential health benefits associated with soy foods"? To help answer this question a recent research paper published by M. Messina et al (2006) looked at soy intake surveys from Japan, China, Hong, Kong and Singapore, in an attempt to shed light on this matter. Surveys of Japanese individuals living in Japan suggest that in 1961 soy protein accounted for 13.4% of the total daily protein intake, on average. As of 2002, this figure dropped to 9.5%, due to the steady increase over the past 4 decades of more animal protein foods in the Japanese diet. However, total soy intake has remained consistent at about 65 gm per day since the early 1960's. Older Japanese, 60-69 years of age, consume 91.7 gm of soy product each day, on average, which is significantly higher than the population average. As such, one may conclude that the traditional Japanese diet contains approximately 90 grams of soy per day, which yields 6-11 grams of soy protein and 25-50 mg of soy isoflavones. **(3)** A number of investigators have suggested that this is the level of intake that may be prudent to reduce risk of certain degenerative diseases. The daily average of soy isoflavone intake across the entire Japanese population is reported to be approximately 35 mg per day. **(3)**

## **How Much Isoflavone Should One Consider Ingesting**

Based on reports such as the one by Messina et al, I have routinely recommended to both my male and female adult patients, who are free from reproductive disease, soy allergies or sensitivities, that they ingest at least 35-50 mg of soy isoflavones per day from any combination of soy foods, functional foods (e.g. soy protein shakes) and/or supplements containing soy extract, as a means to support their health and help prevent certain degenerative diseases. Many health experts suggest an intake of 50-75 mg per day of soy isoflavones for health optimization.

Patients with a previous history of reproductive organ cancers deserve special consideration when making recommendations about soy and soy isoflavone intake. Some studies indicate that women with breast cancer may slow or reverse tumor growth by ingesting 200 mg per day of soy isoflavones via supplementation and that men with prostate cancer have been shown to benefit from soy isoflavone supplementation of 100 mg per day, which resulted in a slower rise in serum prostate specific antigen (PSA) levels. These findings require confirmation from further studies, however, there is the suggestion that certain patients may benefit from higher intakes of soy isoflavones as a therapeutic measure. **(1,4)**

To help control hot flashes and other symptoms of menopause, and to slow bone demineralization associated with menopause, some studies indicate that 50-100 mg of isoflavones are beneficial as a therapeutic intervention. **(2)**

### Anti-Cancer Properties of Soy

In regards to the prevention and management of reproductive organ cancers soy isoflavones were first shown to have anti-estrogenic effects in rodents in 1966. Most recently, isoflavones have been shown to bind to beta-estrogen receptors. Some data indicates that when these receptors are activated by isoflavones, it inhibits the proliferation of prostate cancer cells and estrogen-stimulated growth of breast cancer cells. (3) Many other anti-cancer mechanisms for isoflavones have also been reported in the scientific literature. For example, soy isoflavones have been shown to lower endogenous estrogen levels, stimulate the production of sex hormone-binding globulin by the liver (which in turn leads to more bound and less free estradiol, reducing the amount of estrogens available for binding with estrogen receptors), inhibit the enzymes that promote cell proliferation (protein tyrosine kinase, DNA topoisomerase and ornithine decarboxylase), inhibit angiogenesis (which prevents the building of life-supporting blood vessels in and around malignant tumors), provide antioxidant defence and induce cell differentiation. Further, the weak estrogenic potential (more than 1,000 times weaker than estradiol) of soy isoflavones do not elicit a strong estrogenic response and thus have an anti-estrogenic effect that tends to inhibit the growth and proliferation of estrogen-dependent cancer cells, as demonstrated by the research of A. Molteni et al. (5,6,7)

### How Much Soy Protein and Soy Isoflavone Is Contained In Common Soy Foods?

In regards to soy protein and soy isoflavone content of common soy foods, the following tables provides a quick reference guide for practitioners: (3)

Soy Food	Protein Content per 3.3 ounces (100 gm)	Isoflavones Content per 3.3 ounces (100 gm)
Tofu	7-8 gm	28 mg
Soy milk	4-5 gm	10 mg
Soy nuts, dry roasted	39.6 gm	9 mg
Soybeans (cooked)	16.6 gm	54 mg

The Chart below indicates the amount of isoflavones available from standard serving sizes of a wider variety of soy products:

### Soy Isoflavone Content Of Foods

Soy Food	Serving Size	Isoflavone content (mg)
Tofu	½ cup	25 mg
Soy Milk unfortified	1 cup (8 oz)	10 mg
Soy Milk fortified	1 cup (8 oz)	43 mg
Soybeans Roasted	¼ cup	78 mg
Soybeans, green cooked (e.g. edamame)	½ cup	50 mg
Soybeans, black cooked	½ cup	40 mg
Soybeans, yellow cooked	½ cup	78 mg
Miso	1 tablespoon	7 mg
Soy protein isolate powder	1/3 cup	53 mg

Textured soy protein, dry	¼ cup	33 mg
Tempeh	½ cup	53 mg

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Many functional foods, such as soy protein shake mixes, soy bars (e.g., chocolate bars with soy), soy sausages, hotdogs, and soy cheeses, list the protein and isoflavone content on the label. It is not uncommon for a 3.3 ounce soy hotdog to contain 15 mg of isoflavones, or for a 3.3 ounce soy burger to contain 15-25 gm of isoflavones. Some soy protein bars contain up to 60 mg of isoflavones in two ounces. Soy cheeses often contain 8 mg of isoflavones in 3.3 ounces.

### Summary

Soy foods are unique in that they are the only nutritionally relevant naturally-occurring food source of isoflavones. People around the world who rely on soy foods as a dietary staple have significantly lower incidence of reproductive organ cancers and other health problems. Investigative research has demonstrated that soy isoflavones and other constituents of soy foods exhibit numerous anti-cancer properties and several clinical trials have demonstrated the ability of soy isoflavone supplementation to slow the growth of breast and prostate cancer. For practitioners who are convinced that soy foods and isoflavones are an important aspect of health optimization, it appears that encouraging patients to consume at least 35-50 mg of soy isoflavones per day is a worthy target. The table and other data included in this discussion are intended to provide practitioners with a reference from which to help patients achieve this goal.

**For more information on this or other related topics, visit Dr. Meschino's website at: <http://www.renaissance.com/>**

### References:

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