

Soy Can Lead to Kidney Stones

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New research indicates that soybeans and soy-based foods, a staple in the diets of many health-conscious consumers, may promote kidney stones in those prone to the painful condition.

The researchers measured nearly a dozen varieties of soybeans for oxalate, **a compound that can bind with calcium in the kidney to form kidney stones.**

They also tested 13 types of soy-based foods, finding enough oxalate in each to potentially cause problems for people with a history of kidney stones, according to Linda Massey, Ph.D., at Washington State University in Spokane.

The amount of oxalate in the commercial products easily eclipsed the American Dietetic Association's 10 milligram-per-serving recommendation for patients with kidney stones, with some foods reaching up to 50 times higher than the suggested limit, she noted.

"Under these guidelines, no soybean or soy-[based] food tested could be recommended for consumption by patients with a personal history of kidney stones," she said.

No one had previously examined soy foods for oxalate, thus the researchers are the first to identify oxalate in store-bought products like tofu, soy cheese and soy drinks. Other foods, such as spinach and rhubarb, also contain significant oxalate levels, but are not as widely consumed for their presumed health benefits, Massey said.

During their testing, the researchers found the highest **oxalate levels in textured soy protein**, which contains up to 638 milligrams of oxalate per 85-gram serving.

Soy cheese had the lowest oxalate content, at 16 milligrams per serving. Spinach, measured during previous research, has approximately 543 milligrams per one-cup (2 oz. fresh) serving.

Soy, a natural source of protein, fiber and healthy oils, is used to enhance a myriad of foods, ranging from hamburgers to ice cream. It can be ground into flour and used in a variety of grain products, or formed into chunks and ground like meat.

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Soy is also being studied for its potential to lower cholesterol, reduce bone loss and prevent breast cancer. The U.S. Food and Drug Administration recently approved a new label on foods containing at least 6.25 grams of soy protein per serving that boasts of a reduced risk of cardiovascular disease.

Oxalate, however, cannot be metabolized by the body and is excreted only through urine, Massey said. The compound has no nutritional value, but binds to calcium to form a mass (kidney stones) that can block the urinary system, she said.

Further research is needed to find types of soybeans with less oxalate, or to develop a processing method to remove the compound before it reaches consumers, she added.

No one knows precisely why kidney stones occur in particular individuals.

But Massey said **high levels of oxalate in the urine increase the risk and those with a family history** of the ailment are more likely to suffer from the condition; individuals with a low probability of kidney stones are unlikely to be affected by oxalate in soy-based foods.

More than one million people were diagnosed with kidney stones in the United States in 1996, the most recent available data, according to the National Institutes of Health.

Stones can range in size from the diameter of a grain of rice to the width of a golf ball. An estimated 10 percent of the U.S. population, mostly men, will develop a kidney stone at some point in their lives, according to the NIH.