

ABOUT USB

The United Soybean Board (USB) is a farmer-led organization comprised of 69 farmer-directors. Working with independent academic researchers affiliated with the National Institutes of Health (NIH) and academic institutions, USB has invested millions of dollars into health and nutrition related to soy. Soybean farmers take pride in producing one of the healthiest food crops in the world.

ONLINE RESOURCES

Help your clients and patients make the soy connection for better health. Access peer-reviewed, fully-referenced technical bulletins on a variety of health topics, plus delicious healthy recipes, through USB's Web site. For more information, please visit: SoyConnection.com.

SOY FOR HEALTH



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SOY FOR HEALTH

Soyfoods have long been important in East Asian diets, where they are valued for their nutrient content and culinary versatility. For health-conscious Westerners, soyfoods and other legumes are among the variety of healthful options for meeting protein needs.

Evidence suggests that dietary protein is more satiating than fats and carbohydrates, and therefore potentially beneficial for weight management.¹ Furthermore, some recent data suggest the protein recommended dietary allowance (RDA) may be too low and protein intake exceeding the RDA may be advantageous.²⁻⁴ Consuming high-quality protein, such as soy protein, is important for building and maintaining muscle in response to resistance exercise.^{5, 6, 7-9}

Soyfoods are rich in vitamins and minerals such as folate and potassium.¹⁰ Plus, they are good sources of phytochemicals, which are biologically active plant compounds that, although not essential nutrients, may confer health benefits. Soybeans have received particular attention because they are essentially unique dietary sources of isoflavones, one group of phytochemicals. Some soyfoods are also good sources of fiber.¹⁰

Within the past 15 years, soyfoods have attracted the attention of researchers for their potential to reduce risk of certain chronic diseases. There is evidence indicating soyfoods may lower risk of coronary heart disease,¹¹ osteoporosis¹² and certain cancers^{13, 14} and help alleviate menopausal symptoms.¹⁵

Clinical and epidemiologic evidence suggests a reasonable intake of soyfoods is 2-3 servings daily.

CANCER

Governmental institutions and academic laboratories are rigorously investigating the potential for soy to reduce cancer risk. Interest in this area was initially prompted by two observations:

- Soybeans contain a number of purported chemopreventive (anti-cancer) compounds¹⁶ and are essentially unique dietary sources of one class of compounds, isoflavones.¹⁷
- Rates of certain cancers are quite low in countries where soyfoods are commonly consumed.¹⁸

BREAST CANCER

Asian populations have much lower rates of breast cancer than Western populations and evidence suggests that soyfood intake may be one reason for this difference.

Current thinking is that to derive the proposed breast cancer protective effects, soy consumption must occur during childhood or adolescence.^{19, 20} Epidemiologic studies indicate that the consumption of just 1-2 servings of soyfoods per day early in life reduces breast cancer risk by 25-50 percent.²¹⁻²³ Protection is thought to result from the isoflavone-induced changes in the developing breast that make breast cells permanently more resistant to being transformed into cancer cells.^{20, 24}

PROSTATE CANCER

Animal studies indicate that soy protein and isoflavones suppress the development of spontaneous and chemically-induced prostate cancer.²⁵ Asian studies have found that men who eat soyfoods regularly are about 30 percent less likely to develop prostate cancer than those who do not.^{13, 26} There is also both animal²⁷ and human²⁸ evidence that soybean isoflavones inhibit the growth and spread (metastasis) of prostate tumors.

Preliminary research also suggests that soy protein and isoflavones may slow the rise in levels of prostate specific antigen (PSA) – an indicator of prostate cancer – in prostate cancer patients,²⁹⁻³² although not all studies show this to be the case.³³ In addition, pilot research found that isoflavones markedly reduced the side effects associated with radiation treatment for prostate cancer.³⁴

OSTEOPOROSIS

Soyfoods can be part of a diet that improves bone health. The high-quality protein⁵¹ they provide is important for building healthy bones⁵² and the calcium in fortified soymilk^{53, 54} and calcium-set tofu⁵⁵ is absorbed as well as calcium from cow's milk.

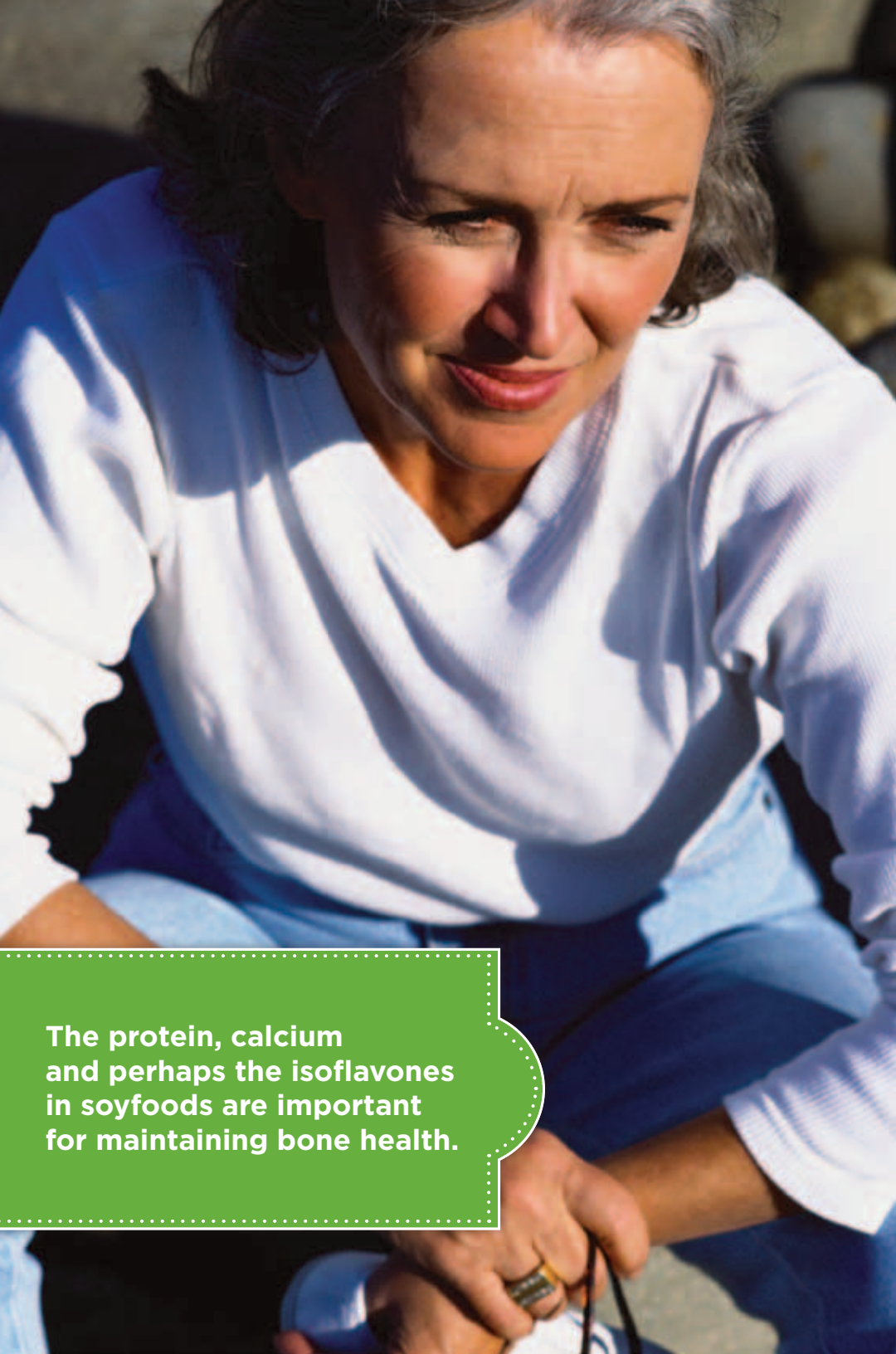
There is also interest in the possible skeletal benefits of soybean isoflavones because of their estrogen-like effects. The presence of isoflavones in soyfoods may explain why in two large Asian epidemiologic studies, soy consumption was associated with about a one-third reduction in fracture risk.^{56, 57} However, clinical studies investigating the effects of isoflavones on bone mineral density have produced mixed results, with some studies showing pronounced benefits⁵⁸ and others showing relatively little effect.⁵⁹

MENOPAUSE

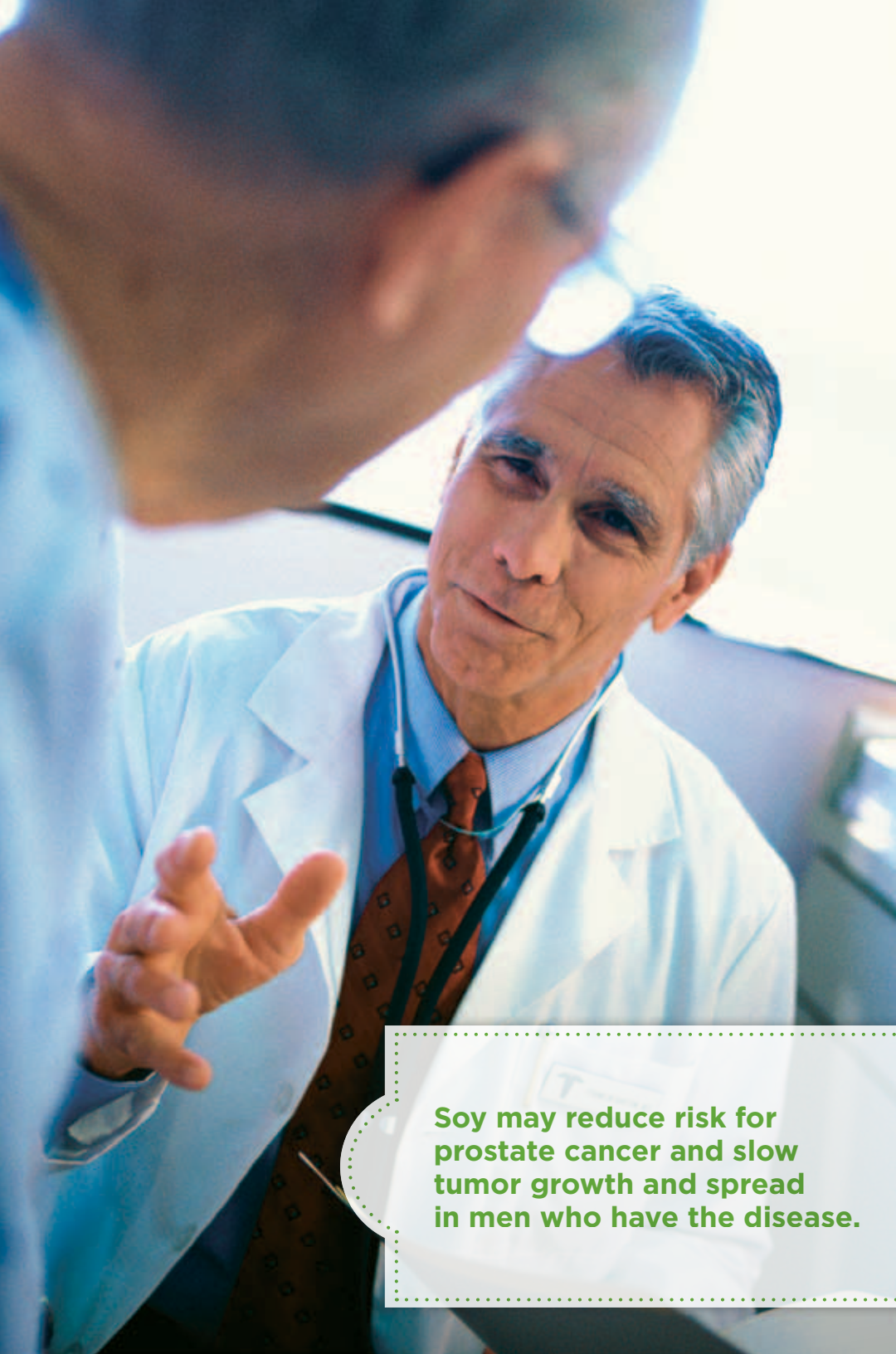
The observation that Asian women are much less likely to report having hot flashes than Western women led to the hypothesis that soyfoods, because they contain isoflavones, may alleviate menopausal symptoms.⁶⁰ More than 50 clinical trials have examined the effect of soyfoods or isoflavone supplements on hot flash frequency and/or severity. Although some recent reviews and analyses of the literature have concluded isoflavone-rich products alleviate hot flashes,^{15, 61} most have concluded that the data do not allow definitive conclusions to be made even though more trials than not showed benefit.^{62, 63}

However, the most recently conducted statistical analysis of the literature supports the efficacy of isoflavones. This systematic review and meta-analysis found that isoflavone supplements reduced both the frequency and severity of hot flashes.⁶⁴ When including the placebo response, overall frequency and severity were reduced by about 50 percent. Approximately half of that reduction is attributed to the placebo effect and half from isoflavones. Supplements that contain an isoflavone ratio similar to that found in soybeans produced the largest benefits. The level of relief provided by isoflavones is consistent with the degree of benefit deemed satisfactory by women seeking non-hormonal treatments for hot flashes.⁶⁵

During menopause, women who find soy alleviates their hot flash frequency or severity generally feel an improvement within just a few weeks.



The protein, calcium and perhaps the isoflavones in soyfoods are important for maintaining bone health.



Soy may reduce risk for prostate cancer and slow tumor growth and spread in men who have the disease.

SOYFOODS POTENTIALLY REDUCE CORONARY HEART DISEASE IN THREE WAYS

- The U.S. Food and Drug Administration approved a health claim for soy due to the ability of soy protein to directly lower blood cholesterol (LDL) levels.³⁶ Estimates vary, but the results of recent analyses indicate soy protein lowers LDL cholesterol by approximately 4-5 percent.³⁷⁻³⁹ Each 1 percent decrease in LDL cholesterol can lower coronary heart disease risk by approximately 1-3 percent.^{40, 41}
- Soyfoods are generally low in saturated fat and high in omega-6 polyunsaturated fat, and they are one of the few plant sources of essential omega-3 fatty acids.⁴² Consequently, replacing commonly consumed protein-rich foods in traditional Western diets with soyfoods can improve the fatty acid profile of the diet and, as a result, lower LDL cholesterol approximately 4 percent.⁴³ Furthermore, recent evidence indicates that the ideal substitution is to replace saturated fat with a mixture of omega-6 and omega-3 polyunsaturated fat. Soyfoods are ideal for this purpose.⁴⁴

- Several studies have found that Asians who consume 2-3 servings of soyfoods daily are as much as 50 percent less likely to have heart disease.⁴⁵⁻⁴⁷ This degree of protection is far greater than can be due to cholesterol reduction alone. Clinical studies suggest soy may reduce coronary disease by favorably affecting multiple risk factors independent of elevated cholesterol levels.

For example, soy has been shown to:

- + Modestly raise HDL cholesterol³⁷
- + Modestly lower fasting and postprandial blood levels of triglycerides^{37, 48}
- + Make LDL cholesterol less atherogenic⁴⁹
- + Directly improve the health of the coronary arteries⁵⁰

Soyfoods have a heart-healthy fatty acid profile, soy protein lowers blood cholesterol levels and soyfoods may reduce heart disease risk through ways independent of their effects on blood cholesterol.



**Southwest Pork
with Soy Succotash**