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Subject: Shaklee Health Sciences Bulletin - The Power of Protein



HEALTHY YOU, HEALTHY HOME, HEALTHY PLANET.™

A banner for the Health Sciences Bulletin. It has a blue background on the left with the text "HEALTH SCIENCES BULLETIN" in white. To the right, there are two images: a close-up of a green apple with water droplets, and a woman in a lab coat and glasses working in a laboratory setting.

HEALTH SCIENCES BULLETIN

Health Sciences Bulletin

October 2009

The Power of Protein

It's essential to the growth, repair, and maintenance of all body tissues. It's also required for making enzymes - catalysts essential to all life processes, and hormones - powerful chemical messengers that circulate through your bloodstream to specific target cells, where they generate a wide range of biological responses. It also helps your body maintain fluid and electrolyte balance, provides a source of energy, and helps your body fight off disease. These are the powers of protein!

These powers are made possible by consuming adequate amounts of dietary protein from a variety of lean meats, fish, and poultry, as well as soy and milk, which supply the body with amino acids, the basic building blocks from which the body can make its own body proteins.

Not All Protein Is Created Equal

Foods provide about 20 different amino acids, of which more than half are considered to be "nonessential." In other words, the body can make them for itself. However, nine other amino acids are considered "essential," meaning the body is unable to make them on its own. And unlike the carbohydrates and fats we consume, amino acids are not stored in the body. Therefore, the body must rely on a constant and steady supply from the protein-rich foods we eat every day.

So what are the best sources of dietary protein? And is there a difference between animal and vegetable sources? Well, it's true that not all dietary protein is created equal. It really is the protein quality of one's diet that, in large part, determines how well a child will grow and develop and how well an adult will maintain his or her health. Put simply, high-quality proteins provide enough of all the essential amino acids needed to support the body's work, and lower-quality proteins don't. Two key factors that influence protein quality are the protein's digestibility and its amino acid composition. Protein digestibility is a measure of the amount of amino acids absorbed from a given protein intake, and amino acid composition refers to the simultaneous availability of all the needed amino acids from a food we choose to eat. In general, animal-sourced proteins (meat, fish, poultry, eggs, and dairy) are considered high-quality proteins, as is soy, a vegetable-sourced protein. However, other vegetable proteins tend to be of much lower quality and are often referred to as "incomplete" proteins because they do not provide all the essential amino acids the body needs. Incomplete proteins can come from fruits, vegetables, grains, and nuts.

Health Benefits

When most of us think about the health benefits of dietary protein, its role in bodybuilding comes to mind—and rightly so.

No new body tissue can be built without it. However, research also suggests that the intake of high-quality protein in the context of an overall healthful diet may also have positive effects on our body weight and body composition as we age, as well as play a role in the prevention of chronic diseases such as heart disease, certain types of cancer, and osteoporosis.

■ **Weight Management:** Studies have shown that achieving a healthy weight and maintaining that weight can help add years to your life, and scientists believe that dietary protein may play an important role in weight management. High-protein diets may promote significantly more weight loss compared to lower protein diets because of protein's role in promoting satiety. In a fairly recent study published in the *American Journal of Clinical Nutrition*, researchers studied the effects of increasing dietary protein while maintaining carbohydrate content on weight loss, appetite, calorie intake, and fat mass in a small group of study participants. Initially, participants were instructed to follow a weight-maintaining diet (50% carbohydrate, 15% protein, 35% fat) for two weeks. Then for the following two weeks, they were asked to follow a diet providing the same amount of calories but with 50% of calories coming from carbohydrate, 30% from protein, and 20% from fat. Two weeks later, they were given an *ad libitum* diet of 50% carbohydrate, 30% protein, and 20% fat to follow for an additional 12 weeks. Even though subjects could eat as much food as they wanted in those 12 weeks, they actually reduced their calorie intake by an average of 441 calories per day. They also lost an average of 10.8 pounds in body weight and 8.2 pounds of body fat.

■ **Age-Related Muscle Loss:** After about age 40, most adults will lose anywhere between 0.5% and 1% of their skeletal muscle mass each year. And in the early years, this gradual loss may go unnoticed because it might be masked by a concurrent increase in body fat. However, chronic muscle loss—or what is known as sarcopenia—is estimated to affect about 30% of people over age 60 and may affect more than 50% of those over age 80. Insufficient protein intake in older adults can contribute to a loss of muscle, and although the optimal amount of protein to prevent or offset the progression of sarcopenia has yet to be established, research findings suggest that protein intakes modestly above the present recommended dietary allowance of 0.8 grams per kilogram of body weight per day (i.e. 1 gram per kilogram of body weight per day or higher) enhance muscle mass in older adults who regularly perform resistance exercise. Protein intake in older adults also appears to have a more beneficial effect when consumed within an hour or so of resistance exercise. Emerging research also suggests that dairy protein, especially whey protein, may minimize sarcopenia because of its high concentration of leucine, an amino acid known to stimulate muscle protein synthesis. For example, findings in older adults suggest that increasing leucine intake may help restore the protein synthesis response to protein-containing meals, which has been shown to diminish with age.

■ **Cardiovascular Disease:** One concern that has been raised about the trend in high-protein diets for weight loss has been that eating diets high in protein and fat, and low in carbohydrate, would harm the heart. However, recent research findings suggest that if done in a healthy way, eating a little more protein, especially vegetable protein, while cutting back on refined carbohydrates may actually benefit the heart. A 20-year prospective study of 82,802 women found that those who ate low-carbohydrate diets high in vegetable sources of fat or protein had a 30% lower risk of heart disease, compared to women who ate high-carbohydrate, low-fat diets. But women who ate low-carbohydrate diets that were high in animal fats or proteins did not have a reduced risk of heart disease.

■ **Cancer:** There's no good evidence that eating a little protein or a lot of it significantly influences cancer risk. However, eating a lot of red meat (cured and processed meats, in particular) has been linked to an increased risk of colon cancer. There also has been considerable investigation of the potential of soy-protein-containing foods to reduce the risk of cancer, especially breast cancer. In a fairly recent review of studies based on Asian populations, higher soy intake was associated with an overall 29% decreased risk of breast cancer. Despite these positive findings, the relationship between soy foods and breast cancer risk has been controversial because of data gathered from cell culture and animal studies that suggest isoflavones (the plant-estrogen-like compounds in soy foods) stimulate the growth of estrogen-sensitive breast cancer cells. This has led to questions about the safety of soy consumption in women with a history of breast cancer or women at high risk for the disease. Research continues in this area, but it's important to point out that several lines of existing evidence suggest that women with breast cancer can safely consume soy. First, human studies have shown that isoflavones *do not* stimulate breast cell proliferation or increase breast tissue density (two markers of increased cancer

risk), and a *lack* of harmful effects have been noted in several clinical studies examining the impact of soy food intake on the prognosis of breast cancer patients. In one study, neither soy nor isoflavone intake was related to the disease-free survival rate of breast cancer patients over a five-year follow-up period, and in a second study, higher soy intake was associated with a more favorable outcome for both total mortality and disease-specific mortality or relapse during a follow up period of two years. And even better news is that the benefit of soy food intake on survival was more pronounced among women with estrogen-receptor-positive breast cancer. Although these studies are encouraging, breast cancer remains a very serious health condition. Women with a history of breast cancer should seek the advice of their doctor concerning the consumption of soy foods as part of an overall healthful diet.

■ **Osteoporosis:** Prevention of osteoporosis is a public health priority and among nutritional factors, most attention has focused on the beneficial role of calcium. However, in addition to calcium, many other nutrients are necessary for bone health, including protein. Findings from many, but not all, epidemiological studies point to a beneficial role for dietary protein in bone health. High-protein intakes have been associated with reduced bone loss, high bone-mineral density, and reduced fracture risk in older adults. In a recent trial, increasing protein intake, especially when accompanied by calcium and vitamin D, reduced bone loss, improved muscle strength, and shortened the hospital stay in older patients with hip fractures whose usual intake of dietary protein was low.

On the other hand, some studies suggest that excessive dietary protein intake may have detrimental effects on bone because of its effect on urinary calcium excretion. This controversy may be explained by other nutrients in food or the source of dietary protein. For example, dietary protein has been shown to exert a positive effect on the skeleton of older adults when calcium intake is adequate, but not when calcium intake is low.

Because protein exists in close association with other nutrients in the diet, it is important to consider protein's role in bone health in the context of foods or the overall dietary pattern. A number of studies have demonstrated that intake of milk and other dairy products benefits bone health. Dairy products such as milk are a unique source of protein because their calcium content is high relative to their protein content and they contain other bone-supporting nutrients such as phosphorus, magnesium, zinc, and vitamins A, D, and K.

How Much Protein Is Enough?

Although no one-size-fits-all answer exists for that question and research on the topic is still emerging, the current recommended dietary allowance for protein is 0.8 grams per kilogram of body weight per day for healthy young adults. That comes to about 62 grams of protein a day for a person who weighs 170 pounds. Although growing children, pregnant women, nursing mothers, and older adults may need a little more (1.0–1.3 grams per kilogram of body weight), getting the minimum daily requirement of protein is fairly easy. Cereal with milk for breakfast, a peanut butter and jelly sandwich for lunch, and a piece of fish with a side of beans for dinner adds up to about 70 grams of protein.

It's also important to pay attention to what comes along with the protein in your food choices. An eight-ounce broiled porterhouse steak is a great source of complete protein—54 grams worth. But it also delivers 44 grams of fat, 16 of which are saturated. Saturated fats raise blood cholesterol, and high blood cholesterol increases the risk of heart disease. On the other hand, a cup of cooked lentils has 18 grams of protein, but less than one gram of fat.

Vegetable sources of protein, including soy protein beverage mixes, are also an excellent choice and many also provide healthful amounts of other essential nutrients such as fiber, vitamins, and minerals. The best animal protein choices are fish and poultry. If you are partial to red meat, such as beef, pork, or lamb, stick with the leanest cuts, choose moderate portion sizes, and make it only an occasional part of your diet.

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