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Investigation of the Nutritional Value of Natural, Plant-product Foods

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Abstract: Protein is instrumental for growth, maintenance of body tissues and fluid/salt balance. Many plant protein foods complement each other because one usually supplies the essential amino acids missing from the other and creates a "complete protein." Here we have investigated the quality of plant based food and their protein content.

Key words: Vegetarian · plant foods · complete protein · soybean protein

INTRODUCTION

Protein is needed by the diet for growth, maintenance and the repair of body tissues. Proteins are made up of a particular sequence of amino acids. There are eight essential amino acids that must be provided through the diet [1].

Actually, the use of the terms, complete and incomplete proteins, is misleading, because all natural foods contain all of the essential amino acids and no food protein is so perfect as to be the total answer to all our protein needs. Note that *all* natural foods contain *all* of the essential amino acids. True, they are found in differing proportions. This is why a variety of foods should be used from day to day. An example is the way grains and legumes complement each other. Generally, legumes are low in methionine, but abundant in lysine; grains are low in lysine, but abundant in methionine. By combining legumes with grains the deficiency of the one is compensated for by the other [2].

However, it is not necessary to try to "balance" amino acid combinations at every meal, nor each day. There is an amino acid pool from which amino acids are drawn to produce proteins and other compounds. It is good to provide a variety of proteins each day for the needs of the body. Protein is absorbed more efficiently when the intake is normal or low, than when the protein intake high.

Protein content of plant food: Vegetarian diets are healthful and nutritionally adequate when appropriately planned. Studies show that whole soybean protein would be adequate as the only source of protein in the diet. Soybean protein has been shown to equal milk in promoting growth in infants and maintaining proper nitrogen balance in children and has nutritional values equal to that of egg and fish protein.

Soybeans might be adequate as the only source of protein and they do have anticarcenogenic properties; however, they need not be eaten every day. Tofu and other soy foods are complete, high-quality sources of protein. They are a very rich food, high in fats as well as proteins, so should be used, but not too frequently. Soy protein isolate may be injurious. There are many other good plant sources of protein.

Even green leafy vegetables supply high quality proteins and should be used more freely. They are excellent sources of minerals, vitamins and enzymes, too [3].

It is stated that the protein of dark-green leaves has as high a biological value as muscle protein, rated as growth-promoting for children.

Excess protein: Excess protein may cause many problems, including gastro-intestinal, liver, kidney and heart problems, as well as osteoporosis. Protein does not burn "clean" when used as fuel. Amonia, toxic to the system, is produced as a by product. Purines from excess protein form uric acid when broken down. High levels of uric acid contribute to kidney stones, gout and related diseases [4].

It must be remembered that protein consists of amino acids. When you are on a high protein diet, you are on a high acid diet.

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Calcium and other minerals are used in the process of eliminating sulfates, phosphates and nitrogen end products from excess proteins. Calcium and other minerals used to neutralize the effects of excess protein are lost in the urine. If there is not an adequate supply of minerals in the blood, they are leached from the bones, which contribute to osteoporosis. Animal proteins, which are high in sulfur-containing amino acids, seem to cause a greater calcium loss than vegetable proteins. However, calcium requirement is dependent upon protein intake. The higher the protein intake, the higher is the need for calcium. Tests show that on a high protein diet the calcium balance remains negative, even when high levels of calcium are ingested [5, 6].

Calcium containing plant include some fortified breakfast cereals; some brands of orange juice; legumes; some nuts (such as almonds); certain seeds (such as sesame seeds) and some vegetables (such as broccoli, collards, kale, mustard greens, turnip greens, okra, rutabaga and Chinese cabbage).

CONCLUSION

Several studies have reported a significant protective effect associated with the consumption of fruits and vegetables and some have shown an increased risk associated with meat consumption. It is established that compared to diets which include meat vegetarians: are less likely to be obese; are more likely to have lower blood cholesterol and lower blood pressure are at lower risk of certain kinds of cancer and have better digestive function and better health in other ways. Consumption of controlled diets high in fruits and vegetables increased significantly the antioxidant capacity of plasma and the increase could not be explained by the increase in the plasma α-tocopherol or carotenoid concentration.

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