Nutrition

Protein: How Much Is Enough?

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Protein is essential, but the importance of this nutrient has been overstated; its prominence in the average diet far exceeds biological necessity. Several studies suggest that our actual protein needs may be lower than previously thought.

Protein is the name given to the principle nitrogen-containing constituents of all plant and animal tissues. The importance of this nutrient may be understood by noting the root of the word: it is from the Greek word meaning to "take the first place." Despite this and the protein-promoting media blitz, there is far more chance of danger from protein overdose than from protein deficiency in this country.

The primary need for protein is "to supply the material for the building and continuous replacement of cell proteins throughout life."[1] Most of the solid matter of the body is made of protein.

Proteins are also needed to regulate many body processes. Most hormones, all enzymes, and hemoglobin are proteins.

A third function of protein is to provide energy for the body. Protein, however, is only used for energy if the body runs out of fats and carbohydrates. If a calorically-adequate diet is consumed, it is almost impossible not to have sufficient protein intake.

In the same way that a word is composed of letters, protein is composed of amino acids. There are twenty-two different amino acids which, when linked together in varying ways, can form a protein. Most proteins consist of hundreds of amino acids linked together. The *nature and function* of a protein is determined by the way in which the amino acids are *linked,* and by the *amounts* of each amino acid present.

Some amino acids are classified as *essential* (must be consumed in food), whereas some are called *non-essential* (can be formed by the body). A protein which has the ideal amount of *essential* amino acids is called *complete.* The most complete protein is that found in egg. However, as we will discuss later, two incomplete proteins may, if eaten together, form a complete protein just as valuable as that found in egg.

The Food and Nutrition Board's recommended daily allowance (RDA) for protein is 56 grams for a 70kg. (154 pound) man and 46 grams for a 58kg. (129 pound) woman. But these figures are excessively high because the experiments which reported them were performed on people accustomed to a high protein intake.[2] It turns out that the more protein one eats every day, the more s/he will need to eat in order to maintain their large stores of "labile (non-essential) protein."[3]

But large stores of labile protein are not physiologically beneficial. Only when this protein is eliminated from the picture, can the true protein need be determined and it has been found to be much lower than current RDAs. In fact, when all sources of experimental error are eliminated, the protein need is about 20-25 grams per day.[4] And this is not of 100% complete protein, but rather of the types of protein consumed in an average American diet, which is about 70% complete.

Confirmation of the fact that these figures represent the true need of the body comes in the observation that no physiological dysfunction is noted when protein intake is at this level. In fact, improvement in many diseases has resulted: kidney failure,[5-7] heart failure, coronary artery disease and high blood pressure.[8,9] Parameters of protein metabolism—which include levels of protein, amino acids and hemoglobin in the bloodstream—remain normal when 20-25 grams of protein are consumed daily.

Stress does not significantly increase the protein requirement. Research shows that the nervous tension of final exams or sleep deprivation only increased the need by .5 to 1.0 grams per day.[10,11] Strenuous physical activity, despite popular belief, also does not significantly increase the protein requirement; rather, more calories would be needed.[12]

One might ask why extra protein should not be consumed in order to provide a margin of safety? There are many reasons why all nutrients, including protein, should be consumed in the amounts that meet the body's needs with neither an excess nor a deficiency. The dangers of protein deficiency are well known. What are some of the dangers of excess? These would include *intestinal toxemia* (see Jan/Feb 1980 issue of *Vegetarian Times), atherosclerosis* (accumulation of fats on the walls of arteries), *accelerated aging, obesity,* and *osteoporosis.*

Atherosclerosis may be due to excess protein according to Dr. Kilmer McCully, professor of pathology at Harvard Medical School. Dr. McCully has found that an excess of protein delivers excess amounts of *methionine,* an essential amino acid, to the body. This excess methionine is broken down into *homocysteine* which, by irritation of artery walls, causes fat deposition. As regards aging, Dr. Charles Barrows of the National Institute of Aging believes, on the basis of extensive experimentation, that excess dietary protein is an extremely important accelerator of the aging process. Apparently, the excess protein results in excess utilization of the protein "metabolizing machinery" in every cell, and this causes the "machinery" to wear out sooner.[13]

Excess protein may also be harmful by contributing to obesity because much of the protein supplied in excess of the body's needs is converted to fat and stored. A high protein diet may cause osteoporosis by increasing urinary excretion of calcium.[21]

Even before these reasons for not using excess protein were scientifically demonstrated, many doctors cautioned against eating more than the body's true requirements. In many ways, excesses put an added load on the body's metabolism and thereby accelerate the development and increase the severity of diseases.

Complete vs. Incomplete

Brief mention was given above to "complete" versus "incomplete" protein. Examples of complete protein are eggs, meat, dairy products, fish and poultry. However, if eating these proteins was the only way to replace broken down tissue, most of the world would have been dead long ago, since these foods are in scarce supply in India, China and many other non-Western countries. What has made it possible for these people to maintain normal protein nutrition? The answer is *complementation* of incomplete proteins.

For instance, take corn and beans. Corn is low in the essential amino acids *lysine* and *tryptophan,* and beans are low in *methionine.* But, since corn is relatively high in *methionine,* and beans high in *lysine* and *tryptophan,* if the two foods are eaten together the result is a protein just as complete as that found in meat. People in Mexico and Central America often depend on corns and beans for protein. Incomplete proteins which complement each other so that a complete protein is formed include: rice and beans, grains and legumes (such as corn and beans), grains and seeds (such as wheat and sunflower seeds), seeds and legumes, and dairy products combined with either grains, seeds or legumes. This subject has been reviewed in considerable detail.[14]

In regard to green leafy vegetable protein, there is a surprise. This protein is found to be generally well balanced "with respect to all essential amino acids except methionine."[15] Does this mean that it cannot support life and normal growth? Consider this: leaf protein is similar to that found in milk which is also low in methionine.[16] Apparently, university and government nutritionists have concluded that milk protein is inadequate for normal growth and development when compared to the superior egg protein. It is certainly fortunate that newborns cannot read nutrition books! The conclusion must be that leaf protein is complete enough to make a significant contribution to human nutrition since it is similar to milk protein which, if fed exclusively to a newborn, will support large increases in height and weight. Perhaps part of the explanation lies in the fact that 80-89% of the need for *methionine,* the essential amino acid low in leafy greens and milk, can be satisfied by a non-essential amino acid (cystine).[17]

Hygienist Dr. Herbert Shelton, D.C., and the celebrated health food authority Paavo Airola, both stress that a good diet should contain mostly fruits and vegetables. Consider the amounts of protein you would consume from the following sources by adopting such a diet: 4 oz. romaine lettuce—1 g.; 4 oz. carrot—1 g.; 1 stalk steamed broccoli—6 g.; 1 avocado—4 g.; 1 banana—1 g.; 1 pear—1 g.; ¼ cup dry beans (cooked) combined with ½ cup almonds—17 g. If eaten in one day these foods would yield 31 grams of protein. Clearly, getting *enough* protein shouldn't be a problem, even for vegetarians on the strictest of diets.

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More effort needs to be put into avoiding an excess of protein, rather than in providing enough.

It is known that excess cooking reduces the value of protein.[18,19] Therefore, food should be cooked as lightly as possible, or preferably not at all. Such foods as legumes which require prolonged cooking would supply a higher quality protein if sprouted.

One final question remains regarding protein: why the great emphasis on this nutrient in this country? This writer agrees with David Reuben M.D. when he answers: "Because there's a lot of profit in protein."[20] Most Americans eat large amounts of high protein foods such as meat and cheese because they are "constantly nagged and theatened to do so"[20] by the meat and dairy associations, plus others.

Another probable reason for the connection between high protein foods and health in the minds of many people is the desire to justify eating patterns. Whatever diet an individual consumes, that person is likely to build up a whole set of rationalizations to justify it. The fact is that America is hooked on high protein foods (the best example being fast-food hamburgers), and is an easy target for "rationalization" salesmen.

Many vegetarians, however, believe that their diet protects them from eating too much protein. But even vegetarians need to exercise caution in order not to "overdose." This article will, it is hoped, at least remove much of the impetus to do so, and will provide the information needed so that the protein component of our diet may be viewed rationally.

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