

# Protein Nutrient

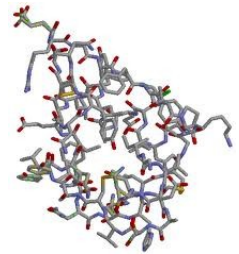
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## What is Protein?

Proteins are probably the most important class of biochemical molecules. They are the basis for the major structural components of human tissue.

Proteins are polypeptides folded into forms to be used for a specific biological purpose. A polypeptide is a long chain made of amino acids linked with peptide bonds. The sequence of amino acids is determined by genetic code. There are 20 amino acids used in the human body.

Proteins are essential parts of organisms and participate in virtually every process within the cells of the body. Some proteins are **enzymes** that facilitate biochemical reactions and are VITAL to metabolism. Proteins also have **structural functions**, such as myosin in muscles. Myosin is one of the 2 proteins in muscle that causes the muscle to contract. Other proteins are involved in cell signaling, immune responses, cell adhesion and the cell cycle.



The protein, Insulin

At every given moment, cells are reproduced and cells die. We must constantly replenish the amino acids used to build cells.

Because we can not synthesize all the amino acids we need, we must obtain ESSENTIAL AMINO ACIDS from our diet. The essential amino acids are: Leucine, Isoleucine, Methionine, Phenylalanine, Threonine, Tryptophan, Lysine, Valine. Soy beans are the only known vegetable to contain all the essential amino acids. Animal sources of amino acids often contain all the essential amino acids.

## How Much Protein Do We Need?

According to Dr. Donald Layman, Ph.D., at the University of Illinois, we need a lot more than the daily recommended 56 grams. The benefit goes beyond just building muscle (which is necessary for sustainable weight loss because muscles burn calories). Protein dulls hunger and can help prevent obesity, diabetes and heart disease.

Daily protein intake needs to be between 0.45-0.68 grams per pound just to preserve calorie burning muscle mass.

Timing is everything. In order to maximize the use of the ingested proteins, we need to eat protein first thing in the morning. Dr. Layman's research shows significant weight loss with starting the day with 30 grams of lean protein such as eggs, and dairy products. Also, within an hour after rigorous exercise, eat 15 grams of protein to help the body build calorie burning muscles.

Douglas Paddon-Jones Ph.D. (University of Texas) published a study proving that only about 30 grams of protein per meal is efficiently metabolized. So, it does no good to eat all your protein in one meal. We need 30 grams of protein per meal and 14 grams of protein per snack in between meals.

### Examples of Proteins

- Hemoglobin
- Insulin
- Collagen
- Cartilage
- Keratin
- Antibodies
- Hormones

### Dietary Sources of Protein

- Beef
- Lentils
- Fish
- Beans
- Eggs (poultry)
- Soy
- Seaweed
- Seeds, nuts
- Tofu
- Dairy

