

# Facts About Proteins - Different Types and Benefits

By: Saurin Gandhi September 22, 2011

[This is in response to **Adria Sherman's** Question: What is the difference between the different types of protein. Thank You.]



Have you ever wondered what type of protein is best for you? Have you ever wondered whether protein derived from specific meat sources like pork is better for you than from vegetables? Whether you are a body builder or an individual who hardly finds the time to get to the gym, protein is a necessary addition to everyone's diet. Unlike the quick high off of carbohydrates, protein slowly releases energy in your body. A lot of women believe consuming protein will give them too much muscle, but this is not what really happens in most cases. Studies have shown that most women do not get enough protein and participate in 'sarcopenia' or muscle loss. Women on average lose a pound of muscle each year

beginning at 25 so it is essential for women to try to keep their protein intake high. Less muscle slows down your metabolism and can result in the addition of unneeded extra pounds. In this article I will discuss the process of protein metabolism and information about the different types of proteins.

## How Proteins Are Digested (Developed from the Princeton Review):

The story of protein does not begin at the mouth, but rather the stomach. The stomach mixes the protein with acid, mucus, & enzymes. The resulting fluid is called chyme, and it is released into the duodenum & causes the epithelial cells to release CCK & secretin. The gallbladder releases bile & the pancreas secretes a high pH solution of bicarbonate & digestive zymogens. Polypeptides are broken down by proteases & then the brush border peptidases. These are then actively transported into the intestinal epithelial via an apical symport system with sodium. Once the concentration of amino acids gets high inside the cell, uniport basolateral movement occurs into nearby capillaries which result in flowing into the hepatic portal vein to the liver. The liver stores or uses them for energy.

## Whey Protein:

As a protein that has taken over the body-building market, why protein has become the standard or protein supplementation. It's high biological value (approximately 95 for whey concentrate and 125 for whey isolate), is a good indicator of how the protein is effective in the human body, It has a high biological value because it has a high number of branched amino acids and the body is able to easily absorb it. It is a complete protein, meaning that it contains all of the essential amino acids. The creation of whey actually originated from the waste in the cheese-making process. When making cheese by curdling milk, the resulting fractions are curd and whey. Curd is used to make cheese and evaporating the water from whey can create concentrated whey product, now sold as why concentrate in stores everywhere. The downside to whey protein is that it contains a series of highly allergenic components that affect approximately <5% of the human population. The allergenic substances are  $\beta$ -lactoglobulin,  $\alpha$ -lactalbumin, and bovine serum albumin. Also, some of the whey products contain a level of cholesterol that is not advised.



## Egg Protein:

Before the discovery of whey products, eggs used to be the gold-standard of protein products. The good thing about egg protein is that it has a high biological value but also has no fat or cholesterol. It contains all of the essential amino acids and has the highest net nitrogen utilization rating. Egg protein is made out of egg whites and does not contain lactose, ideal for those who are lactose intolerant. There are quite a few downsides to egg

protein however, including the fact that the high sulfur content creates a lot of intestinal gas, which may not be pleasant for your loved ones. Also, egg protein is extremely allergenic, has an extremely unpleasant taste, and is quite expensive.

#### **Casein Protein:**

**M**ilk is the largest source of this type of protein. This type is useful for people who want a steady flow of protein into their bloodstream. It is the slowest digesting protein because it forms a gooey substance in acidic and moist environments, putting your body into an anabolic state.



#### **Soy Protein:**

**M**ost commonly seen in healthy weight shakes, soy protein is extremely beneficial to women, but can be undesirable for men. The reason is that soy protein promotes increased estrogen levels (derived from phytoestrogens), which for women is great, but for men it can actually start replacing your testosterone. This can decrease your sex drive and can decrease the qualities that make you “a manly man.” Other than that, soy protein, originating from soy beans, is free of fat, lactose, and cholesterol. It is absorbed faster than casein protein but slower than whey protein and contains saponins, phytosterols, and isoflavones, which battle cholesterol and promote your immune system. There are however some downsides to soy protein and they begin with its highly allergenic components. The more you eat, the more you get allergic. Unfermented soy can also hinder protein absorption and soy protein with phytates hinders calcium absorption.

#### **Pea Protein and Rice Protein:**

**A**s proteins that are not commonly known, these three proteins can be manipulated into your diet in such a way that you can obtain quite a bit of protein. Rice protein originally has very little protein attributed to it, but when concentrated, it can become a mean supply of protein. When ground flour is made from wheat rice, the addition of water and enzymes can break down carbohydrates and individualize fibers. This can result in a non-allergenic substitute to the allergenic egg protein and can be digested easily into the human body. Even when compared to soy, rice protein can be absorbed by the body in a greater ratio. When correctly made, rice and pea protein gives a protein quality that is close to egg protein but without being allergenic. It also has a large amount of branching, rivaling the chain branching of whey.

#### **Superfood Proteins: Hemp Seed, Spirulina, Chlorella.**

**H**emp seed protein on the other hand has most of its protein content deriving from the protein edestin. Edestin is a hypoallergenic protein easily metabolized and used by the body and can help the immune system by stimulating the creation of antibodies. It is a superfood that doesn't provide a significant amount of protein but is extremely good for the health of your immune system. Spirulina, another superfood, has an extremely high biological value of protein naturally. Although it is easily digested, it is extremely expensive, ranging all the way to \$40 dollars per pound. Chlorella, similar to Spirulina, is a detoxifying protein that binds to the heavy metals. It is highly allergenic to 30% of the human population and runs up to an astounding \$50 dollars per pound.

#### **Meat, Poultry, and Fish Protein:**

**M**eat protein contains all 8 essential amino acids but only 20% of the protein is useable by your body. Meat protein gives a lot of calories, can promote cancerous growth, and if it isn't organic, can have antibiotics, added hormones, pesticides, and even contamination. Chicken and turkey, as poultry protein, provides significantly more protein with less fat but also can be contaminated. When it comes to fish as a source of protein, I highly recommend it except for the fact that they can contain a large amount of poisonous mercury. Fish contain very little saturated fat and carbohydrates and gives quality protein.



**Closing Remarks:**

As you decide what protein is best for you, let me tell you that there is no ONE best protein. All of them have their own little advantage and all of them can help you out in some way. For those who are looking for what protein to have before a workout, try to take advantage of the proteins that promote the availability of your amino acids. This can be done using whey protein for your muscle development, and casein protein (milk) for sustained release of protein. If you are looking for a post-workout drink, look for a protein that is easily and quickly digestible, preferably whey isolate (more expensive than concentrate). For breakfast or as a meal throughout the day try having egg protein and maybe a soy shake here or there. Milk's casein protein works for a third of the day so drink milk before you sleep and your body will slowly be releasing protein into your bloodstream to build those muscles while you sleep. Good luck!

**References:**

1. <http://www.nutribodyprotein.com/protein-types.php>
2. <http://exerciseandnutritiontips.com/the-different-types-of-proteins-to-benefit-exercise>

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