



# Not All Proteins Are Created Equal

There are over 10,000 different types of proteins in our bodies. Amino acids are the building blocks of protein. Even though proteins are made up of amino acids, however, depending on how the amino acids are linked, a different protein will be formed. Not only are different proteins assembled by different amino acid sequences, they are also held together by different bonds and folded into a variety of three-dimensional structures.

Of all the amino acids, nine are “essential” and the rest are “non-essential.” Our bodies cannot make “essential” amino acids, so we need to get them from food sources. When we eat food with protein in it, our bodies break down the protein into amino acids, which are then recombined to create new proteins such as muscle proteins, hair proteins, and so on.

## Differences Between Animal and Plant Proteins

Both animal and plant proteins are made up of about 20 types of amino acids. However, the proportion of the various types of amino acids is different.

It is commonly cited that “all plant proteins are not complete proteins.” This is not true because proteins from some plant sources, such as soy, are complete proteins, meaning they contain all the essential amino acids.

Animal proteins contain a higher level of sulfur amino acids compared to plant proteins. Most American adults eat more than two times the recommended amount of sulfur amino acids. Researchers postulate this may lead to high cholesterol, insulin resistance, heart disease, stroke, and liver disease<sup>1</sup>.

Other researchers have found that restricting the consumption of the amino acid methionine—found in red meat and eggs—helped enhance some cancer treatments. When cancer treatments were combined with a methionine-restricted diet, it led to a marked reduction in tumor growth<sup>2</sup>.

There may also be harmful molecules in animal sources of protein. *N*-glycolylneuraminic acid (Neu5Gc) is a molecule found only in animal products, including dairy products. Humans do not produce Neu5Gc, and it is not found in fruits and vegetables. Scientists have found a link between Neu5Gc and cancer. Neu5Gc triggers long-term inflammation throughout the body. Long-term exposure to Neu5Gc is linked to higher incidences of cancer<sup>3</sup>. Atherosclerosis and type 2 diabetes are also worsened by inflammation.

## Saturated Fat, Calories, Cholesterol

There are also differences in what accompanies animal protein and plant protein. Animal sources of proteins are accompanied by higher calories, cholesterol, saturated fat, unwanted hormones, and maybe even traces of antibiotics.

On the other hand, a diet high in plant protein is linked to a lower risk of heart disease, type 2 diabetes, obesity, and cancer.

**Do You Know?**

Whey protein and casein protein may sound like they are derived from plants. But they are actually derived from milk.

## References:

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