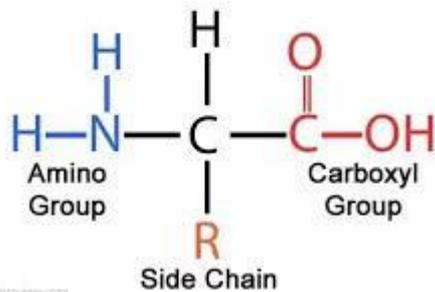


Amino acids/complete/incomplete protein in plant based diet

Amino acids are organic compounds that combine to form proteins. Amino acids and proteins are the building blocks of life.

Amino Acid Structure



Amino acids cause a lot of controversy, as previously it was believed that you need to combine all amino acids on one plate. New studies and recommendations from the American Dietetic Association state that complementary amino acids do not need to be consumed at the same meal and plant proteins can meet all requirements.

A Whole Food Plant Based Diet Contains All Essential Amino Acids. The good news is modern studies have debunked the thinking that every meal needs to contain all EEA and concluded there are no concerns over amino acids in a plant-based diet. All whole foods contain amino acids.

When proteins are digested or broken down, amino acids are left. The human body uses amino acids to make proteins to help the body:

- Break down food
- Grow
- Repair body tissue
- Perform many other body functions

Amino acids can also be used as a source of energy by the body.

Amino acids are classified into three groups:

- Essential amino acids
 - Essential amino acids cannot be made by the body. As a result, they must come from food.
 - The 9 essential amino acids are: histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine

- Nonessential amino acids

Nonessential means that our bodies produce an amino acid, even if we do not get it from the food we eat. Nonessential amino acids include: alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, proline, serine, and tyrosin

- Conditional amino acids

A complete protein is a food that contains all 9 essential amino acids.

There are some plant based sources which contain all 9 essential amino acids:

Soya – tofu, tempeh, soya milk

Amaranth

Quinoa

hemp seed

Chia seeds

Lysine is a building block for protein. It's an essential amino acid because your body cannot make it, so you need to obtain it from food. It's an amino acid you should be aware of when following plant based diet as a lot of vegetarians/vegans don't consume it enough.

Lysine is considered a limiting amino acid because plant foods generally only contain a small amount of it

It's important for normal growth and muscle turnover and used to form carnitine, a substance found in most cells of your body. What's more, it helps transport fats across your cells to be burned for energy.

Lysine increases bioavailability of iron from food and can increase your bone density

A small amount of lysine in diet is often linked with low consumption of protein at all.

When people do not get enough lysine, they may experience the following symptoms:

- fatigue
- poor concentration
- irritability
- nausea
- red eyes
- hair loss
- anorexia
- inhibited growth
- anemia
- problems with the reproductive system

How much lysine do I need ? (please check attachment 1.1 with Lysine content in different plant based products)

A person's body weight affects how much they need as follows:

- 12 mg/kg of body weight for adults
- 44 mg/kg for children 11 to 12 years old
- 97 mg/kg for infants 3 to 6 months old

Here are 4 impressive health benefits of lysine.

Here are other areas where lysine may benefit your health:

- **Cancer:** One animal study found that lysine in combination with the antioxidant catechin reduced cancer cell growth in mice (
- **Eye Health:** A study in rats with diabetes found that lysine supplements could prevent the development of cataract (22Trusted Source).

- **Diabetes:** One study showed that lysine may help reduce blood sugar response in people with diabetes. However, the connection is still unclear (23Trusted Source).
- **Blood Pressure:** A study in 50 adults with lysine deficiency and high blood pressure found that lysine supplements significantly reduced blood pressure (24)

Cereals are generally a poor source. However, quinoa, amaranth and buckwheat contain a decent amount of lysine

Some vegan nutritionists argue that meeting your daily lysine need is more important than meeting your overall daily protein need.

By focusing only on the amount of protein in food, you might hit a huge number of one thing, but totally miss the mark on something else. If you aim instead for your daily lysine requirements, you'll almost certainly meet your overall protein requirements as a result.