

PROTEIN PRIMER

Amino acids are linked together to form chains of peptides, which fold into proteins. There are 20 amino acids that are used to make up the peptide chains, 8 of which are essential. The essential amino acids are those that must be supplied by eating protein foods containing them. The body is able to produce the remaining non-essential amino acids, as long as the essential ones are present in the necessary amounts.

Protein is vital for many functions in the body including structural (muscle contraction, skin and collagen), enzymes and metabolism, blood, immunity and DNA structure. Of most interest to athletes is the function of building and repairing muscle tissue. Having more muscle tissue also leads to a higher metabolic rate because muscle cells use up more energy just to maintain them. This means that if you have more muscle tissue you need to eat more calories, or if weight loss is your goal you will see results faster with a higher muscle mass once you start reducing your calories. When dieting, eating more protein also helps you to feel full because protein takes longer for the body to digest.

When you are weight training you are causing damage to muscle and breakdown of tissue. It is vital then for this muscle tissue to be repaired in order to grow. To do this, the body needs an excess of the amino acids, as well as energy from carbohydrates. Otherwise, muscle breakdown continues (catabolism), resulting in weight loss. This “anabolic” state is positive nitrogen balance, and means that muscle tissue can continue to grow, and weight gain occurs.

TYPES OF PROTEIN

Protein quality can be measured by its bioavailability, or the amount that can be effectively absorbed and utilized by the body. Of all the protein sources, animal proteins have the highest bioavailability, especially egg whites and meat. Whey protein is often cited as best for use by athletes because it is highest in the branch chain amino acids (BCAAs), especially leucine.

BCAAs are the essential amino acids Leucine, Isoleucine and valine which are used directly by muscle tissue and so are of higher demand in times of muscle repair and growth. Whey protein is also low in fat and calories, usually easy to digest, and is often more affordable when high quantities are used daily.

PROTEIN PRIMER

WHEY PROTEIN ISOLATE (WPI)

- Fast absorption
- Structure of small peptide chains preserved
- >90% protein
- Good post-workout for fast delivery of amino acids

WHEY PROTEIN CONCENTRATE (WPC)

- Sustained release protein
- Larger chains of amino acids
- 80% protein (average)
- Good between meals, longer term muscle repair and growth

HYDROLYSED WHEY PROTEIN (WPH)

- Most rapid absorption and delivery of amino acids
- Pre-digested whey proteins, shorter peptides
- Best for rapid muscle growth after training

CASEIN PROTEIN

- The slowest releasing protein
- Great for overnight muscle feeding
- Calcium caseinate gives protein shakes a creamy texture
- Micellar casein curdles in the stomach and releases slowly into the blood
- Hydrolysed casein is smaller 'chopped' fractions, giving faster absorption and also helps to spike insulin levels for muscle growth

MILK PROTEIN

- High bioavailability
- Mostly casein, smaller amount of whey
- Prevent muscle breakdown, boost immunity

EGG PROTEIN

- Fast absorbing then sustained release in the gut
- High in BCAAs
- In between casein and whey

SOY PROTEIN

- Contains all amino acids
- High bioavailability
- Best of the vegetarian protein sources
- Good for cardiovascular system and disease prevention

WHEAT PROTEIN

- High in glutamic acid, a precursor to glutamine
- High in arginine for nitric oxide production
- Good for vegetarians

PEA AND RICE PROTEINS

- Usually fortified to contain all amino acids
- Easy digestibility may have better taste than soy
- Good for vegetarians
- Low allergy