Protein in Human Nutrition

Protein

Proteins are large, complex molecules that have many critical roles in the body. They are composed of amino acids and bound together by peptide bonds.

Proteins are used in many different ways throughout the body:

- part of DNA
- part of haemoglobin
- creating neurotransmitters
- creating antibodies in blood
- part of keratin in hair and nails
- creating enzymes throughout the body

In the gastrointestinal tract proteins undergo hydrolysis via proteolytic enzymes resulting in amino acids.

Amino acids are classified as:

- **Essential**: cannot be made by the body, and must be supplied by the diet.
- **Non-essential**: are made by the body from essential amino acids or in the normal breakdown of proteins.

Complete proteins: usually of animal origin, contain all essential amino acids (which the body cannot synthesise itself).

Incomplete proteins: mostly of plant origin, they are deficient in one or more of the essential amino acids. The capacity of proteins is called their *supplementary value*.

Food sources from animals (meat, fish, eggs, dairy) usually score highly on the amino acid profile and are subsequently regarded as “high-quality proteins”. Some vegetables are good sources of protein, such as beans, peas, lentils, and seaweed. For vegetarians and vegans, the most complete protein comes from soya beans.

Requirement

The recommended daily allowance of protein for:

- Adult females is 46g/day (more in children, pregnant and lactating women)
- Adult males is 56g/day
- Approximately 10-35% of daily caloric intake should be protein.

Excess

The human body is unable to store extra protein. An upper limit of safe protein intake has not yet been established but an intake of more than 2g/kg body weight leads to increased levels of nitrogenous substances, increased glomerular filtration and changes in liver function.

Deficiency

Protein deficiency is a state of malnutrition in which an insufficient amount of protein is taken in for the body to utilize in order to produce energy. This condition is largely responsible for the high incidence of starvation and disease in many developing countries. However, protein deficiency also occurs in developed countries, primarily due to poverty. Certain individuals may also become prone to protein deficiency, such as crash dieters and vegetarians who neglect to properly balance their diet.

Symptoms of protein deficiency include:

- weight loss
- diarrhoea
- oedema
- hair loss, scaly skin, and lethargy

Links

Related articles

- Lipids and Carbohydrates in Human Nutrition
- Minerals in Human Nutrition
- Trace Elements in Human Nutrition
- Food Contaminants

External links

- http://www.cdc.gov/nutrition/everyone/basics/protein.html (http://www.cdc.gov/nutrition/everyone/basics/protein.html)
- http://www.webmd.boots.com/fitness-exercise/default.htm (http://www.webmd.boots.com/fitness-exercise/default.htm)
- http://health.nytimes.com/health/guides/nutrition/protein-in-diet/overview.html (http://health.nytimes.com/health/guides/nutrition/protein-in-diet/overview.html)

Bibliography

- BENCKO, Vladimir, et al. *Hygiene and epidemiology : selected chapters.* 2. edition. Prague. 2008. ISBN 80-246-0793-X.