

Proteins

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Exercise A: Use the following words to complete the text.

structure number animals amounts meat protein building cell part products
during repair sources plants

Proteins are the (1).....blocks of life. The body needs (2)..... to repair and maintain itself. Every (3)..... in the human body contains protein. It is a major (4).....of the skin, muscles, organs and glands. Protein is also found in all body fluids, except bile and urine. Most microorganisms and (5)..... can biosynthesize all 20 standard amino acids, while (6)..... (including humans) must obtain some of the amino acids from their diet. Protein is needed in the diet to help the body (7)..... cells and make new ones. Protein is also important for growth and development (8)..... childhood, adolescence, and pregnancy.

The basic (9).....of protein is a chain of amino acids. When proteins are digested, amino acids are left. The human body needs a (10).....of amino acids to break down food. Amino acids need to be eaten in large enough (11).....for optimal health. Amino acids are found in animal sources such as (12)....., milk, fish, and eggs, as well as in plant (13)..... such as soy, beans, legumes, nut butters, and some grains (e.g. wheat germ). Humans do not need to eat animal (14)..... to obtain all the protein they need in their diet, but vegetarians need to eat a variety of protein-containing foods to obtain all the amino acids needed to make new protein.

Exercise B: TRUE or FALSE? Correct the false sentences.

1. Proteins repair the body.
2. Most parts of the body contain protein.
3. Some body fluids do not contain proteins.
4. Proteins help children to grow and develop well.
5. Amino acids contain proteins.
6. Amino acids are needed to digest food.
7. Everybody requires an adequate supply of amino acids.
8. Animal-derived foods have low levels of proteins.
9. Some plant sources contain amino acids.
10. A vegetarian diet is deficient in protein.

Exercise C: Read the information and answer the questions below with complete sentences.

First class proteins contain sufficient amounts of all the essential amino acids e.g. meat, fish, eggs and dairy products. **Second class proteins** contain just some of the essential amino acids; vegetarian diets need to be carefully balanced, as vegetable proteins are second class.

Twenty-two amino acids have been identified as necessary for body growth, rebuilding of cells and health. Fourteen of these amino acids can be made within the body (non-essential) whilst eight (essential) must be obtained via food.

A protein-rich food, such as meat, is broken down into individual proteins by the gastric juices in the stomach. Pancreatic enzymes released into the first portion of the small intestine (duodenum) split the proteins into their separate amino acids. The amino acids are absorbed by the small finger-like projections (*villi*) lining the intestine walls, and are taken to the liver via the bloodstream.

One of the by-products of protein metabolism is ammonia. At high levels, ammonia is extremely dangerous to the body and so is converted into urea. This water-soluble chemical is collected by the kidneys and eliminated from the body in our urine. The more protein we eat each day, in excess of our needs, the more work our kidneys must do to get rid of the ammonia.

1. What kinds of food are first class proteins?
2. What is the problem with second class proteins?
3. Why do vegetarians need a balanced diet?
4. What kind of amino acids does the body produce?
5. What are essential amino acids?
6. How do gastric juices act on meat?
7. What is the function of pancreatic enzymes?
8. What are the *villi*?
9. What do they do to the amino acids?
10. How do the amino acids reach the liver?
11. How is ammonia produced?
12. Why is it converted into urea?
13. How does it leave the body?
14. How does excessive protein consumption affect the kidneys?