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growing children.
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**ASSIGN
BUSTER**

Due to this reason, proteins are of great importance in food. They are composed of carbon, hydrogen, oxygen, nitrogen, phosphorous and sulphur in varying amounts. Proteins differ from carbohydrates and fats that they contain nitrogen.

Proteins are made up of simple compounds known as amino acids. There are 22 known amino acids which are needed by the body. Out of them 10 are such which cannot be synthesized in the body, but are otherwise essential for the body and must be supplied in the food. These are termed as essential amino acids.

These essential amino acids are: 1. Leucine 2. Isoleucine 3. Lysine 4. Methionine 5.

Phenylalanine 6. Threonine 7. Tryptophane 8. Valine 9. Arginine 10. Histidine. Arginine and histidine are required for growing children.

Some authorities do not include these two in the list of essential amino acids. Non-essential amino acids are those which can be synthesized in the body. Examples of such amino acids include alanine, aspartic acid, cystine, glutamic acid, glycine, proline, tyrosine etc. During the process of digestion the proteins are broken down in gastrointestinal tract by enzymes into simpler amino acids, which are absorbed and pass on to the liver where these amino acids again combine to form the proteins needed by the body.

Sources of Proteins:

Proteins are available from two sources i.

e. animal and plant sources. 1. Protein rich animal sources include milk, cheese, eggs, meat, fish etc. 2. Protein rich plant sources include pulses, cereals, beans, nuts, grams and soybeans'. These sources contain as much as 25 to 40% protein because of which they are called ' poor man's meat'.

From nutritional point of view, animal proteins are considered superior to vegetable proteins because they contain all the essential amino acids needed by the body but animal proteins are relatively costlier and everybody can't afford it. Moreover, on religious grounds certain community's in India do not take animal proteins. On the other hand vegetable proteins are cheaper and readily available but they are usually deficient in one or more of the essential amino acids needed by the body hence they are considered inferior to animal proteins. A mixed diet containing both animal and vegetable proteins meet the needs of essential amino acids required by the body. Each gm of protein on oxidation yields 4. 1 calories of heat, but generally the body depends for its energy on carbohydrates and fats rather than proteins.

Functions of Proteins:

Proteins are needed by the body: (i) For growth and development (ii) For repair and maintenance of body tissues. (iii) For the synthesis of antibodies, hormones, enzymes, hemoglobin and plasma protein

Protein Requirements:

The daily requirement of protein for an adult is about 1. 0 gm/kg body weight; and it is desirable that one fifth of it should be animal protein. Body requirements of proteins are greater in infancy, pregnancy and lactation

when new tissues are formed. The body cannot store excess protein, the body utilizes what it needs and the excess protein is utilized as body fuel.

The nitrogenous waste of this protein is excreted by the kidneys.

Effects of Protein Deficiency:

The deficiency of proteins in pregnancy may lead to still birth, low birth weight, anemic baby, mentally retarded and under developed child. In adults it may lead to loss of weight, under weight, anemia, increased susceptibility to infection, weak muscles, general lethargy, delay in wound healing, oedema and loose stools.

Prolonged protein deficiency may cause death of large number of liver cells (i. e. liver necrosis).