

Nutrient	Begins	Is Completed
Carbohydrates	mouth	small intestine
Proteins	stomach	small intestine
Fats	small intestine	small intestine

Organ	Enzyme(s)	Function of Enzymes
Mouth	amylase	breaks starch into maltose
Stomach	pepsin	breaks proteins into polypeptides
Pancreas	amylase lipase proteases	breaks starch into maltose breaks fat molecules into fatty acid and glycerol break polypeptides into shorter chains
Small intestine	maltase peptidases	breaks maltose into glucose break short polypeptides into amino acids

8 SYNTHESIS: FOOD MOLECULES

Textbook reference: Sections 4-3, 4-4, 38-10, 38-11

Complete the paragraphs below about energy supplying nutrients.

The main function of carbohydrates is to supply energy. The smallest carbohydrates are called (A) monosaccharides. Glucose is the most common simple sugar and it is the primary cellular fuel of most organisms. When two *A* combine by a chemical reaction called biosynthesis, a disaccharide is formed. The majority of your carbohydrate intake is in the form of polysaccharides which are formed when three or more *A* combine. The process by which complex carbohydrates are broken down is called hydrolysis.

Lipids are nonpolar organic molecules that do not dissolve in water. One group of these is (B) fats. The *B* you consume are primarily triglycerides.

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They are composed of three fatty acid molecules combined with a three-carbon alcohol called glycerol. *B* held in adipose tissue stores energy for long periods of time.

Proteins are macromolecules made from building blocks called (C) amino acids. *C* have four parts. Three of the parts are common to every *C*. They are an amino group, a carboxyl group, and a hydrogen atom.

The R group creates different *C*. There are 20 *C*, 8 of which are called essential *C*. Certain foods, such as fish, cheese, eggs, meat, milk, poultry are considered to be complete foods because they contain all of the essential *C*.

9. CRITICAL THINKING: SOURCE AND FUNCTION OF VITAMINS AND MINERALS

Textbook reference: Section 38-12

Vitamins and minerals do not supply the body with energy as food does; they have other important functions. Answer the following questions about vitamins.

- Dean has anemia. What food can he include in his diet to improve his condition? Explain. Liver and green vegetables provide vitamin B₁₂, which helps in the production of red blood cells. Red blood cells are deficient in someone with anemia.
- Maria cannot drive at night because her vision is poor at that time. What foods can she include in her diet to improve her condition? (It is important to note that Maria is allergic to eggs and dairy food products.) Green and yellow vegetables, organ meats, and fish liver oils provide vitamin A, which is needed to overcome night blindness. Maria should not eat eggs or butter because of her allergies.
- When a child is much shorter than others of the same age, there may be many causes. A doctor may check the child's diet to see if there is a vitamin deficiency. If there is a deficiency, which vitamins might be prescribed? Vitamins A, B₁ (thiamin), and B₂ (riboflavin) all help in growth.
- Osteoporosis is a crippling disease which can be avoided by eating a balanced diet which would include dairy products, bean curd, and dark green vegetables
- What vitamin might a person need whose blood is slow to clot? vitamin K
- If you like to eat green and leafy vegetables, which vitamins are most likely sufficient in your diet? vitamins A, B₁, B₂, niacin, B₁₂, C, E, and K
- Extreme activity in summertime can cause some people to experience painful muscle contractions. What foods should these individuals eat more of? meats, dairy products, and salt

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