

## Fats as elements of nutrition

Like carbohydrates, fats are used in the body primarily as an energy source and have several other minor though important functions. Fats store about twice as much energy in a given weight as carbohydrates do, because many fewer of its chemical bonds have been oxidized.

Fats are a universally popular element of food, probably on account of their various flavours, smooth texture, and the sensation of “fullness” they produce when eaten.

Unlike sugars, fats are not soluble in water, the body’s chemical medium, and so they must receive special treatment during digestion. They are emulsified, or broken down into small droplets, to increase the number of molecules exposed to the digestive enzymes in the small intestine in order to be distributed to the rest of the body.

Fats do much more for us than store energy. Certain fatty acids are converted by the body into phospholipids that are the basic material of cell membranes. The brain, nervous system, and liver are especially rich in phospholipids. A few of the fatty acids that go into these materials are, like some vitamins and amino acids, absolutely

essential to the diet; the human body cannot synthesize them from related materials.

Cholesterol is not a fat, but a different member of the chemical family called the lipids. It is a uniquely animal product. It is well known that excess cholesterol can be deposited on the walls of our blood vessels and so lead to circulatory problems. It is less well known that cholesterol is a very important molecule and that the body synthesizes significant quantities of it. Cholesterol forms the nucleus of the vitamin D molecule, of various regulatory and sex hormones, and of the bile salts that emulsify fats in the intestine. Cholesterol synthesis goes on in the liver and intestine, but all cells can apparently supply their own immediate needs. The problem is that synthesis in the body proceeds independently of dietary intake (although it appears to be raised by the ingestion of saturated fats). In addition, we have few mechanisms for getting rid of cholesterol. There is also evidence that both physical inactivity and emotional stress can increase blood cholesterol levels.

(from: Mc Gee, *On Food and Cooking*, Unwin Hyman)

**1** Complete the definitions using the words below which you have found in Fats as elements of nutrition.

bile salts, blood vessels, brain, carbohydrates, cholesterol, digestion, hormones, liver, nervous system, small intestine, vitamins

- a. .... are organic compounds – including sugars, starches, celluloses and gums – which serve as a major energy source for the body.
- b. .... is the body’s method of taking the food we eat and breaking it down to obtain vital nutrients that will allow us to live.

- c. The ..... is the part of the gastrointestinal tract where much of the digestion and absorption of nutrients and minerals found in food takes place.
- d. The ..... is the body organ which acts as the body control centre, enabling us to think, learn, create, feel emotions and regulating our unconscious body processes, such as digestion and breathing.
- e. The ..... is a complex network of nerves and cells that carry messages to and from the brain and spinal cord to various parts of the body.
- f. The ..... is a vital organ which plays a major role in metabolism and has a wide range of functions in the body, including detoxification, protein synthesis, production of biochemicals necessary for digestion.
- g. .... are organic compounds required by an organism as a vital nutrient in limited amounts.
- h. .... is a lipid produced by the liver which is vital for normal body function and present in the outer layer of everybody's cell.
- i. .... are arteries, capillaries and veins that transport blood throughout the body.
- j. .... are chemicals that carry messages from body organs to cells.
- k. .... are chemicals produced in the liver and stored in the gallbladder which aid in the digestion of fats and help in the elimination of toxins from the body.

2

*Match adjectives a-e, as they are used in Fats as elements of nutrition, with their antonyms 1-5. Tip: copy the pairs in your indexed book.*

- |                    |                          |                |
|--------------------|--------------------------|----------------|
| a. several/various | <input type="checkbox"/> | 1. few         |
| b. minor           | <input type="checkbox"/> | 2. major       |
| c. smooth          | <input type="checkbox"/> | 3. rough       |
| d. essential       | <input type="checkbox"/> | 4. unknown     |
| e. well known      | <input type="checkbox"/> | 5. unnecessary |