

The main nutrients in food are carbohydrates, protein and fats. These are called macronutrients.

## Carbohydrates

Carbohydrates are a source of energy. Foods rich in carbohydrates include bread, pasta, rice and breakfast cereals, as well as sugar. Simple carbohydrates are known as *sugars* and this energy is released quickly. Complex carbohydrates are starchy foods such as bananas, chickpeas, nuts, potatoes and wholegrain cereals. These foods release energy slowly as they are digested, which makes your energy levels more stable. For a healthy diet, eat more of the complex carbohydrate foods.

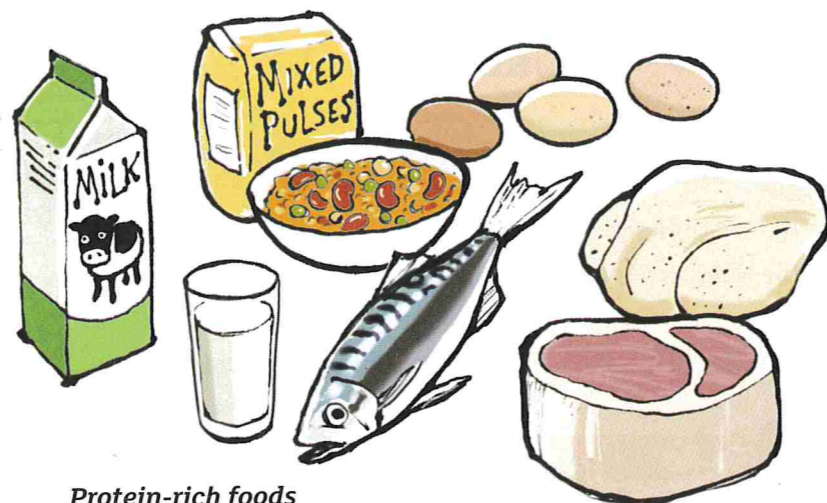


Carbohydrate-rich foods

## Protein

Protein is needed for growth and repair, and is also a source of energy.

Protein-rich foods include meat, fish, chicken, eggs, beans and nuts. Vegetarians obtain their protein from foods such as pulses – peas, beans, lentils, soya products, grains, pasta, bread, nuts and seeds. A balanced diet should contain all the proteins the body needs.



Protein-rich foods

## Fat

Fat is a good source of energy and a source of the essential fatty acids that the body can't make itself, and fat helps the body absorb some vitamins.

All fat is high in calories, so if you are watching your weight, you should limit your fat intake. The total amount of fat you eat should make up no more than 30% of your calories from food.

Foods high in fat include butter, oil, margarine and fried food.

There are two types of fats:

- unsaturated fats
- saturated fats.

Eating too much *saturated* fat can increase blood cholesterol levels and the risk of coronary heart disease.

The healthier type of fat is *unsaturated* fat, which can improve cholesterol levels.

Solid fats which contain saturated fat include butter and ghee (clarified butter), lard and coconut cream. Replace saturated fats in cooking with rapeseed or corn oil, which contain unsaturated fat, or just use less of them.

Fats and oils that are liquid at room temperature are more likely to be unsaturated. Food products high in saturated fat include meat, sausages, pies, hard cheese, cakes, pastries, biscuits and food containing coconut or palm oil.

These crisps have less fat



You can buy lower-fat products such as reduced fat spreads and salad dressings, low-fat yogurts, extra-lean minced beef and pork, skimmed and semi-skimmed milks.

Food	% fat
Chocolate	31%
Crisps	33%
Sausage roll	32%
Bombay mix	33%
Salami sausage	44%
Fried bacon	22%
Biscuits	22%

## Fibre

Fibre is needed to keep the gut healthy and prevent constipation. Fibre is not digested when we eat it. In the UK most people eat far too little fibre, on average about 12 grams a day or less. Ideally, adults should aim for 18 grams a day, or a little more.

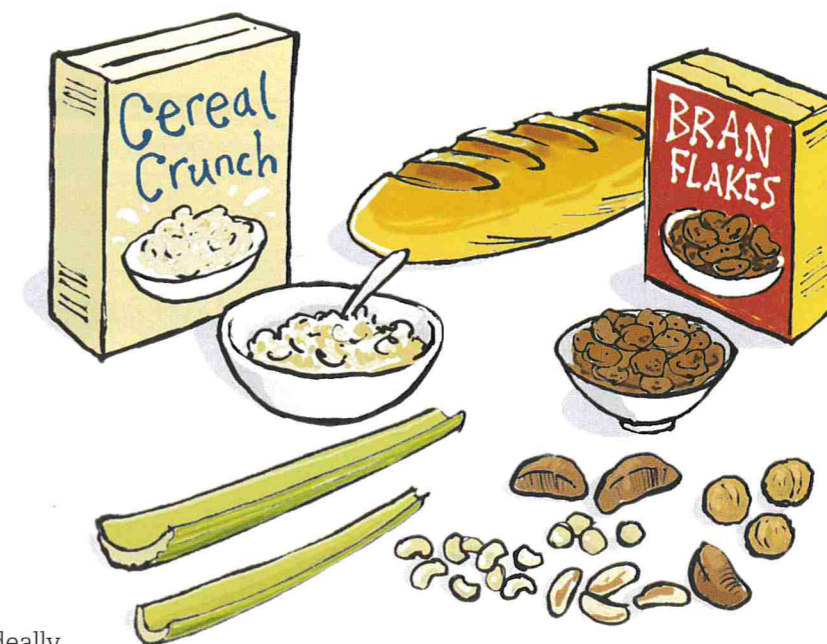
All plant-based foods contain fibre. Good sources of fibre are fruit, vegetables, wholegrain rice and pasta, wholemeal bread, many breakfast cereals, nuts, seeds and bran.

The food label shows the amount of fibre in a food product and you can use a nutritional analysis program to help.

This chart shows foods which are high in fibre. How would you use each one in a recipe? Choose three and describe how you could make them into a recipe or meal.

Food high in Fibre (g)	g/100g
Ingredients	
brussels sprouts, raw	4.1
chapati flour, white	4.1
chestnuts	4.1
chickpeas, canned, drained	4.1
flour, chapati, white	4.1
garlic	4.1
green beans/French beans, boiled in unsalted water	4.1
nut roast	4.1
rissoles, chick pea, fried in sunflower oil	4.1
taro, raw	4.1

Source: The Nutrition Program



High fibre foods

## To do

Collect some food labels and sort them into groups to show a) foods high and low in sugar, b) foods high and low in fat, c) foods which contain a lot and a little fibre. You can use a nutritional analysis program to find these foods, too.

## Questions

- 1 Describe a) the functions of carbohydrates, protein and fat; b) three examples of foods which contain each of these nutrients.
- 2 Why do some people need to reduce the amount of fatty food that they eat? Suggest three ways to cut down on fat.
- 3 What is the difference between unsaturated and saturated fat? Which foods contain lots of saturated fats?
- 4 Why is it important to eat foods which contain fibre? Design a meal which contains foods which are good sources of fibre.

Most people eat too much salt, which can raise blood pressure and increase the risk of heart disease and stroke. Salt is sodium chloride and it is the sodium in salt that can raise blood pressure.

Nutrition information				Guideline daily amount		
Typical values (cooked as per instructions)	Per 100g	Per pizza	% based on GDA for women	Women	Men	Children (5-10 years)
Energy	961 kJ 228 kcal	1922 kJ 456 kcal	22.8%	2000 kcal	2500 kcal	1800 kcal
Protein	15.8g	31.6g	70.2%	45g	55g	24g
Carbohydrate	25.3g	50.6g	22.0%	230g	300g	220g
of which sugars	2.7g	5.4g	6.0%	90g	120g	85g
of which starch	22.6g	45.2g	-	-	-	-
Fat	7.1g	14.2g	20.3%	70g	95g	70g
of which saturates	1.4g	2.8g	14.0%	20g	30g	20g
mono-unsaturates	2.2g	4.4g	-	-	-	-
polyunsaturates	3.2g	6.4g	-	-	-	-
Fibre	5.3g	10.6g	44.2%	24g	24g	15g
Salt	0.8g	1.5g	25.5%	6g	6g	4g
of which sodium	0.3g	0.6g	25.4%	2.4g	2.4g	1.4g

### Cutting down on salt

The average salt consumption of adults should be up to 6g a day – a teaspoonful. Most of the salt we eat – 75% – is already in food, rather than added.

The daily recommended maximum for children depends on age:

- 1 to 3 years: 2g
- 4 to 6 years: 3g
- 7 to 10 years: 5g
- 11 and over: 6g

You need to know how much salt is in the food you eat.

Many food labels show the salt or the sodium content in a portion of food, and the percentage of GDA – the guideline daily amount.



The label shows that in this pizza, which serves one, there is 1.5g salt, which is over 25% of the GDA.

You can see the amber colour on the chart. Amber is a warning sign, and it means 'Go easy on this food'.

To convert from sodium to salt, multiply the grams of sodium by 2.5.

#### Levels of salt

The level of salt in food is measured by the amount of salt in 100g of the food.

- High level of salt: more than 1.5g per 100g
- Medium level of salt: 0.3–1.5g per 100g
- Low level of salt: less than 0.3 g per 100g.

#### Hidden salt

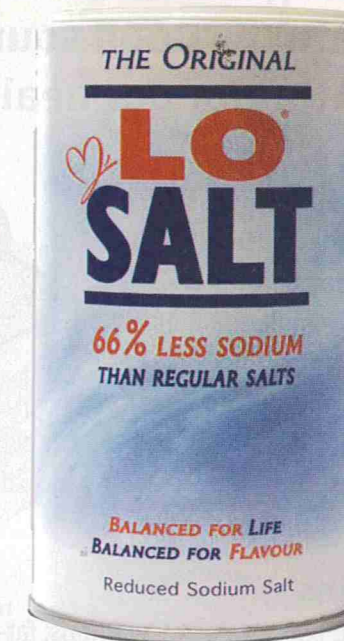
As we have seen, 75% of the salt we eat is already in the foods we buy. Foods high in salt are ready meals, pizzas and sauces such as ketchup. Food companies are trying to cut down on the salt they use.



Reduced salt gravy powder



Reduced salt beans



LoSalt contains 66% less sodium than ordinary salt

#### Foods which may be high in salt:

Baked beans, breakfast cereals, bread products, bagels and ciabatta, cooking and pasta sauces, crisps, pizza, ready meals, soup, sandwiches, sausages, tomato ketchup, mayonnaise, bacon, cheese, chips (if salt added), ham, olives, pickles, prawns, salami, salted nuts, soy sauce, stock cubes, yeast extract.

#### How to reduce salt

- Don't add salt to your foods.
- Try reduced-salt or lower-salt foods.



#### To do

Use a nutritional analysis program to find out how much salt is in 100 grams of each of the foods high in salt. When you have the results, list the foods in order, with the highest first. Now discuss which of these foods you would eat a lot, and then think about how you could lower the salt content.

Look at Jack's diet for the day on page 5 – he has eaten over 17 grams of salt!



#### Hotlinks

Food Standards Agency – search for information on salt  
British Heart Foundation

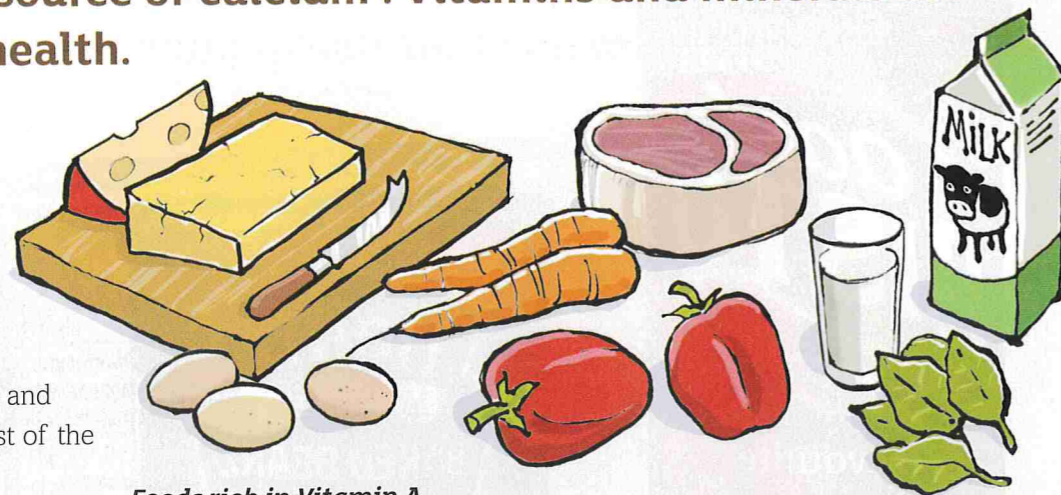


#### Questions

- 1 What is the most salt that someone of your age should be eating per day?
- 2 Look at the pizza food label opposite. Is the pizza high, medium or low in salt? Give your reasons.
- 3 Keep a food diary for a day. Tick the foods you think contain salt. Use a computer program to analyse the amount of salt you have eaten – is it too much? If so, how would you cut down on your salt?

You have seen the claims on drinks and breakfast cereals: 'Rich in Vitamin C', 'Good source of calcium'. Vitamins and minerals are essential for our health.

Vitamins and minerals are called **micronutrients**, which means they are needed in smaller quantities than the macronutrients protein, carbohydrate and fat. If you eat a variety of foods and a balanced diet you will get most of the nutrients you need.



Foods rich in Vitamin A

## Vitamins

There are two groups of vitamins: fat-soluble and water-soluble.

The fat-soluble vitamins – A, D, E, and K – dissolve in fat and are stored in your liver.

Vitamin A maintains healthy eyes, skin and hair.

Vitamin D helps form strong bones and teeth.

Fat-soluble vitamins are found in animal fats such as butter and lard, vegetable oils, dairy foods and oily fish. Margarine can have added vitamin A and D.

The water-soluble vitamins – C and the B-complex vitamins – dissolve in water so that your body can absorb them. Your body can't store these vitamins and any vitamin C or B that your body doesn't use is passed out in your urine. You need a supply of these vitamins every day.

Vitamin C is required for the structure and maintenance of blood vessels, cartilage, muscle and bone.

- The B group of vitamins help convert food to energy and also help to build healthy nerve tissue.
- These vitamins are found in fruit, vegetables and grain.

## Minerals

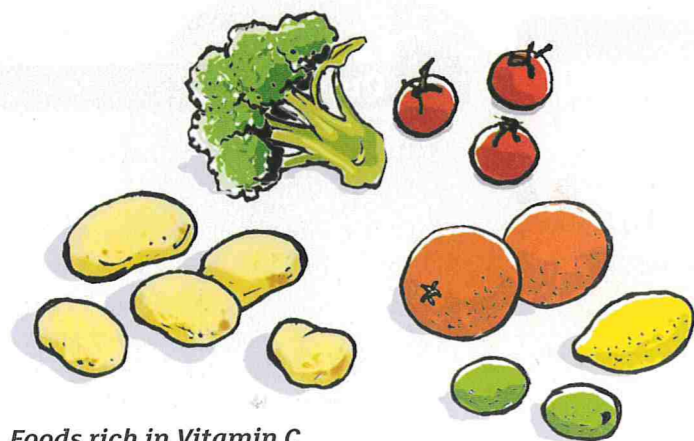
Minerals are found in the soil and water, and pass into plants and animals that we eat for food. Your body needs small amounts of minerals to grow and stay healthy.

Minerals are necessary for three main reasons:

- building strong bones and teeth
- controlling body fluids
- turning food into energy.

Important minerals include:

*calcium iron magnesium  
phosphorus potassium sodium*



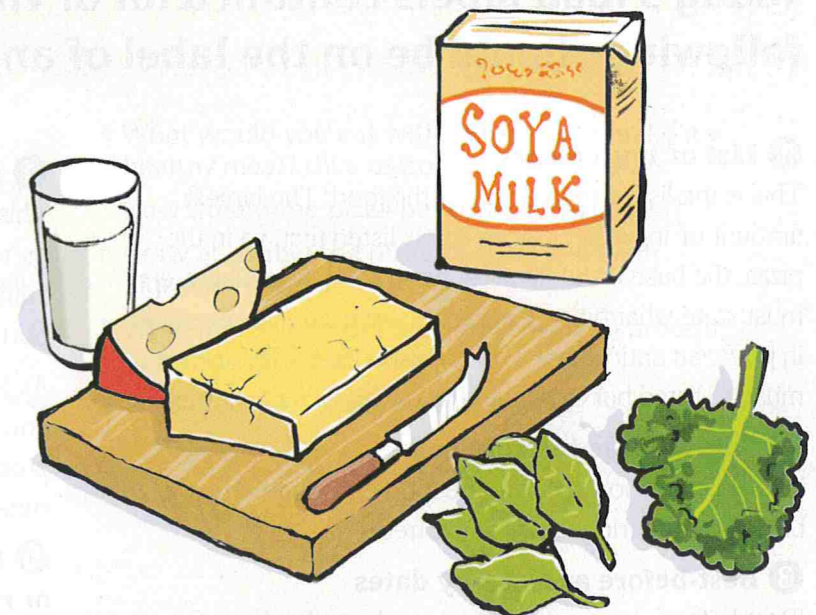
Foods rich in Vitamin C

## Calcium

Calcium is essential for the healthy growth and maintenance of teeth and bones and helps blood clotting and muscle contraction. Good sources of calcium include milk, cheese and other dairy foods, green leafy vegetables, soya beans, tofu, and soya drinks with added calcium.



Alpro drink is fortified with calcium



Foods rich in calcium

## Phosphorus

Phosphorus is also essential for healthy bones and teeth and is found in red meat, dairy foods, fish and bread.

## Iron

Iron helps to make red blood cells, which carry oxygen around the body. Eat food rich in vitamin C at the same time as you eat food containing non-meat sources of iron to help the body absorb the iron. For example, drink orange juice with a fortified breakfast cereal.

Good sources of iron include liver, meat, beans, nuts, dried fruit, whole grains, fortified breakfast cereals, soybean flour and most dark green, leafy vegetables.



Breakfast cereal fortified with vitamins and minerals

## To do

Choose a vitamin or mineral. Your job is to present information on this nutrient to the rest of the group, to show its importance. Each person in the group should present a different nutrient, and at the end the group will vote on which one they think is the best, based on the presentation.

## Questions

- 1 Why are vitamins and minerals important in our diet, and how can you try to make sure you get the nutrients you need?
- 2 Which are a) the fat-soluble vitamins, b) the water-soluble vitamins? Which foods are good sources of each type of vitamin?
- 3 Why do we need a) calcium, b) iron in our diet? Which foods are good sources of each mineral?
- 4 Which foods can have added minerals and vitamins?