

Glossary - Nutrition and Red meat

Amino acids – are the building blocks of protein. There are about 20 different amino acids commonly found in plant and animal proteins. Different types of protein have different sequences of amino acids. Also see **essential amino acids**.

B vitamins – are a group of water soluble vitamins that together have several different functions in the body. They are needed for: the release and utilisation of energy from food; the formation of healthy blood cells, the regulation of metabolic processes and to help keep cells healthy. There are many different B vitamins and each has a specific function in the body, e.g. B1, B2, B6, B12, niacin and folate/folic acid. B vitamins can be found in a variety of foods, such as bread, potatoes, rice, fortified breakfast cereals, fruit and vegetables, eggs, milk and meat.

Cancer – is a large group of different diseases, all involving out-of-control (unregulated) cell growth, which results in the development of malignant tumours that have the potential to invade nearby parts of the body. Risk factors for cancer include genetics (a family history of cancer increases the risk) and modifiable environmental factors (e.g. smoking, radiation, chemicals, unhealthy diet, lack of physical activity, obesity, and excessive alcohol consumption). It has been shown that physical activity helps reduce the risk of colon, womb and postmenopausal breast cancer. Alcohol is a main risk factor for cancers of the liver, mouth, throat and oesophagus; it also increases risk of breast cancer and colon cancer.

Eating plenty of fruit and vegetable is associated with a decreased risk of some cancers. A high consumption of red and/or processed meat (more than 90g of cooked meat per day or 600g per week) has been associated with increased risk of colon cancer. The Department of Health recommends that people with high intakes reduce to around 500g cooked meat per week; this equals about 70g per day. A high intake of salt and salted foods has been associated with increased risk of stomach cancer.

Carbohydrate – is a macronutrient, that provides 4kcal (17kJ) per gram. There are two types of carbohydrate that provide energy: starch and sugars.

Dietary fibre is also a carbohydrate but provides minimal amounts of energy (see **dietary fibre**). Carbohydrates should provide about half of our total intake of food energy, largely in the form of starchy carbohydrates.

Cardiovascular disease (CVD) – is the most common cause of death in the UK and includes coronary heart disease (CHD) (see **coronary heart disease**), angina, heart attack and stroke.

Coronary heart disease – is the UK's biggest killer and causes around 94,000 deaths in the UK each year. A high blood cholesterol level is a major risk factor for heart disease (others are smoking, high blood pressure and an inactive lifestyle). People without heart disease typically take regular physical activity and eat a healthy balanced diet in line with The eatwell plate e.g. high in fruit and vegetables and starchy wholegrain cereal foods.

Dietary fibre – is a variety of carbohydrates found almost exclusively in plant foods, especially wholegrain cereals, pulses and some fruit and vegetables. It is important to include plenty of fibre-rich foods in the diet because fibre is essential for a well functioning gut. Dietary fibre can increase the feeling of fullness and therefore help control energy intake. It also can help prevent constipation and help reduce blood cholesterol levels, especially a type of dietary fibre called beta-glucan. The recommended daily intake for adults in the UK is about 18g/day but on average adults only consume about 14g/day.

Energy – is essential for life and is required to fuel all body processes, growth and physical activity. People's energy (calorie) needs vary, depending on their age, sex, body size and level of activity. Energy (calories) is provided by food and drink in the form of macronutrients: carbohydrate, protein and fat. Alcohol also provides calories. Fat is the most concentrated source of calories, followed by alcohol. Energy is measured in calories (kcal) or kilojoules (kJ). The energy content of foods and drinks can often now be found on food packaging and sometimes on menus. Excessive energy intake compared to energy needs results in weight gain and eventually obesity.

Essential amino acids – can't be made by the body and so have to be present in the diet. Proteins from animal sources (e.g. meat, fish, eggs and dairy products) each contain the full range of essential amino acids needed by the body. Proteins from most plant sources (with the exception of soya) tend to be low in at least one essential amino acid. However, vegans and vegetarians can get all the amino acids they need by combining different plant sources of protein, e.g. pulses and cereals.

Essential fatty acids – can't be made by the body and so have to be present in the diet. There are two essential fatty acids, alpha linolenic acid (an omega-3 fatty acid) and linoleic acid (an omega-6 fatty acid). From these fatty acids the body can make others which are important for health such as the omega 3 'fish oil' fatty acids EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), and an important omega 6 fatty acid, arachidonic acid.

Fat – is a macronutrient that provides 9kcal per gram. Dietary fat provides essential fatty acids (that we can't make ourselves but need in small amounts), as well as energy. It also carries important fat-soluble vitamins and is important for their absorption. Fat can also provide succulence and flavour to food. The recommended intake of fat in the UK is 35% of daily food energy (for children over 5 years and adults). The majority of population groups meet this recommendation. Dietary fat is found in fried foods, fatty meat and meat products, dairy foods (not low fat products), oily fish, nuts, butter and spreads, vegetable oils, cakes, biscuits, chocolate, pastry products, non-baked crisps and other snacks.

Fatty acids – are the building blocks of fat and can be saturated, monounsaturated or polyunsaturated. Saturated fat intake is associated with an increased risk of heart disease. Monounsaturated and polyunsaturated fat has the opposite effect.

Guideline Daily Amounts (GDAs) – are a guide to how many calories and how much of particular nutrients people should consume each day as part of a healthy, balanced diet. GDAs are not targets for individuals or quantities that need to be exceeded, but are a guideline or benchmark to help people make dietary choices and balance their daily intake. They should not be exceeded on a regular basis. Usually, it is the GDA values for adult women that are used for food labels, rather than those for men. This is because these values have been developed for the nutrients often consumed in excess (and the nutrient needs of women are slightly lower than those for men).

Iron – is a mineral and is needed for the transportation of oxygen in red blood cells, the utilisation of oxygen in cells, and the functioning of enzyme systems. Vitamin C helps the body absorb iron from plant sources. A lack of iron leads to iron deficiency anaemia. Women require more iron than men due to menstrual losses. Dietary iron is found in two basic forms; either as haem iron (from animal sources) or non-haem iron (from plant sources). Haem iron is the form of iron that the body can utilise most

efficiently and is found in red meat, poultry, eggs, fish and liver. However, the predominant form of iron in most diets is non-haem iron, found in cereals, vegetables, pulses, beans, nuts, dark green leafy vegetables, dried fruit and iron-fortified foods. Non-haem iron is added to breakfast cereals (voluntarily) and bread (by law), making them important sources of iron. Low iron intakes have been identified in almost 50% of girls aged 11-18 and in 40% of women aged 19-34. Poor intakes are also evident in some preschool children (16% of children under 4 years).

Macronutrients – carbohydrates, protein and fat, which provide the body with energy.

Micronutrients – are required by the body in tiny amounts. They do not provide energy but are required for a number of important processes. Vitamins and minerals are also known as micronutrients (see **vitamins** and **minerals**).

Minerals - are micronutrients that are required by the body in small amounts. They do not provide energy but have many uses in the body, including: constituents of bones and teeth; regulating body water balance and controlling cell function; helping nerves and muscles work; transport of oxygen in blood; and release and utilisation of energy. The amount of different minerals that the body needs changes over time. In the UK population some groups have low intake and/or status (the levels present in the blood or tissues) of certain minerals e.g. iron, calcium, magnesium, potassium, zinc & iodine.

Monounsaturated fat (monounsaturates) – is a type of fatty acid that has an ability to reduce blood cholesterol levels. Much of the monounsaturated fat we eat is provided by meat and whole milk products which also provide saturated fat (a high intake of saturated fat is associated with an increased blood cholesterol level). It is also present in avocados, oily fish and in oils (e.g. olive oil, rapeseed oil, peanut oil, corn oil and sunflower oil) and spreads made from these. Of the oils, olive oil is the richest source, being about 75% monounsaturated. About half the fat in beef is monounsaturated and lard is about 40% monounsaturated.

Nutrients – are required for the normal functioning of the body. Food provides a range of different nutrients. Some nutrients provide energy, while others are essential for growth and maintenance of the body. Most people should be able to get all the

nutrients they need by eating a healthy, varied diet, although there are a few exceptions. For example, women thinking about having a baby are recommended to take a folic acid supplement to prevent deformities such as spina bifida developing in their baby. Supplements of vitamin D are recommended for pregnant and breastfeeding women, young children, elderly people (especially those who are housebound) and women in some minority ethnic groups who are particularly vulnerable to low vitamin D status.

Obesity – is a condition in which abnormal or excessive fat accumulation in adipose tissue (fat storing tissue) impairs health. In most cases, it is the result of energy intake exceeding energy expenditure over a period of years. It is defined in adults as a body mass index (BMI) above 30 kg/m². In England in 2010, 68% of men were overweight or obese (26% were obese) and 58% of women were overweight or obese (26% were obese). This means that around 1 in 4 adults are obese. The number of obese people in the UK has increased threefold over the past 25 years. Obesity is also of concern among children. In England in 2010, 30% of children aged 2-15 were overweight or obese (16% were obese). These statistics are some of the worst in Europe.

Omega 3 fatty acids – include the essential fatty acid, alpha-linolenic acid (ALA), and the fish oil fatty acids eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA), all of which are polyunsaturated. DHA and EPA is found in oily fish e.g. salmon, sardines, mackerel, algal oil, and ALA is found in plant oils such as flaxseed oil and hemp seed oil. Omega 3 fatty acids have been suggested to be beneficial for heart health, brain function and the relief of stiffness associated with rheumatoid arthritis.

Overweight – in adults is defined on the basis of a body mass index (BMI) of more than 25 kg/m². Over 60% of UK adults are overweight.

Polyunsaturated fat (polyunsaturates) – is a type of fatty acid that is associated with reduced blood cholesterol levels. Omega 3 and omega 6 fatty acids are both examples of polyunsaturates. Polyunsaturates can be found in the oils of nuts and seeds (and foods made from these) and in fish and algae. However, intakes should be moderated as these foods tend to be high in energy (calories).

Protein – is a macronutrient that provides 4kcal per gram. Protein provides amino

acids (building blocks) some of which cannot be made by the body and are known as essential amino acids. Protein is required for growth, development and repair of the body. It also provides energy. Protein is found in meat, fish, eggs, dairy foods, cereal products such as bread, soya products, nuts and pulses. Women and men of healthy weight aged 19-50 typically require 45g/day and 55g/day respectively; average intakes are above this so there is no cause for concern about inadequate protein intakes.

Reference Nutrient Intake (RNI)- The RNI is the amount of a nutrient that is enough to ensure that the needs of nearly all the group (97.5%) are being met. By definition, many within the group will need less.

Satiety - is the feeling of fullness after eating which suppresses the urge to eat for a period of time after a meal. Such feelings of fullness play an important role in controlling how much food is consumed.

Saturated fat (saturates) – is a type of fatty acid. High amounts in the diet cause blood cholesterol levels to rise, which is a major risk factor for heart disease. Saturated fat is found in fatty meat, meat products, whole-milk products, fried foods made with fats rich in saturates (e.g. butter, palm oil and coconut oil) and baked foods (e.g. cakes, biscuits and pastries). The recommendation is that average saturated fat intakes in the UK should not exceed 11% of daily food energy, however intakes exceed this at 12.8% of daily food energy (in adults).

Sodium – is a mineral. It helps regulate the water content in the body and the balance of electrolytes. It is also involved in the use of energy, as well as the functioning of the central nervous system. It is found in very small amounts in raw foods but is often added during processing, preparation, preservation and serving of foods. Currently, in the UK, intakes of sodium are too high and so although some sodium is essential, most people need to reduce their intake substantially.

Vitamins – are micronutrients that are required by the body in small amounts. They do not provide energy but are required for a number of important processes. There are two groups of vitamins: fat-soluble vitamins, which can be stored in the body (e.g. vitamins A, D, E and K); and water-soluble vitamins, which cannot be stored in the body and are therefore required daily (e.g. B vitamins and vitamin C). In the UK population some groups have low intake and/or status of certain vitamins e.g. vitamin

A, vitamin B6, vitamin B12, vitamin C, vitamin D, folate, riboflavin and thiamin.

Vitamin D – is a fat soluble vitamin. It is needed for the absorption of calcium from foods to keep bones and teeth healthy. A lack of vitamin D causes rickets in children, where the legs are bent, and osteomalacia in adults, which causes pain in bones and muscles. Most of the body's vitamin D is synthesised via the action of sunlight on skin during the summer months. Vitamin D is also provided in small amounts by the diet in oily fish, meat, eggs, fortified breakfast cereals and margarine/spreads. Certain population groups in the UK have a low vitamin D status, particularly older children, young adults and people who are housebound. Therefore a daily vitamin D supplement is recommended for the following population groups: children aged six months to five years old, pregnant and breastfeeding women, people aged 65 and over, people who are not exposed to much sun (such as people who cover up their skin for cultural reasons or those who are housebound or confined indoors for long periods) and people with darker skins such as people of African-Caribbean and South Asian origin.

Zinc – is a mineral. It is required for the body's use of carbohydrate, protein and fat, and for cell division, growth and tissue repair. It is also necessary for normal reproductive development, the immune system and healing of wounds. Zinc is found in meat, milk, cheese, eggs, shellfish, wholegrain cereals, nuts and pulses. There is evidence of low zinc intakes in a quarter of girls aged 4-6 and in about a third of girls aged 11-14. Poor intakes are also evident in boys (14% in boys aged 11-14).