

## Nutrients

### THE COMPOSITION OF FOOD

Most foodstuffs are composed of many different **nutrients**. These nutrients all have very defined roles and must all be provided in what we eat. Nutrients are **chemical molecules** principally made up of carbon, hydrogen, oxygen and nitrogen atoms. For example, water is comprised of hydrogen and oxygen, hence the chemical formula  $H_2O$ .

### PROTEINS

Proteins are large molecules formed by a chain of **amino acids**. There are 20 amino acids. These 20 include 8 which are known as 'essential' amino acids as the body cannot produce them. They therefore have to be provided by what we eat.



### LIPIDS

Lipids consist of **fatty acids**. Like amino acids, there are 'essential' fatty acids. The body is unable to synthesise them, despite the fact that they are essential for brain development. We can distinguish between 'saturated' and 'unsaturated' fatty acids.



Unsaturated fatty acids are liquid at room temperature. They are found in vegetable oils. Saturated fatty acids are solid at room temperature. They are found in solid animal and vegetable fats such as butter and coconut oil.

**Keywords > Unsaturated fatty acids: vegetable oils**

**Keywords > Saturated fatty acids: solid animal or vegetable fats**

### CARBOHYDRATES

Like fats, carbohydrates are made up of carbon, hydrogen and oxygen. We distinguish between 'simple' and 'complex' carbohydrates.



Fructose and glucose are simple carbohydrates. Starch and fibre are complex carbohydrates – which means they are made up of several simple carbohydrates. The digestive system can split starch into simple carbohydrates, which can be absorbed. However, we are not able to digest fibre, so it regulates the intestines.

**Keywords > Simple carbohydrates: fructose, glucose**

**Keywords > Complex carbohydrates: starch, dietary fibre**

## MACRONUTRIENTS

We call all these molecules macronutrients. However, to assimilate and use these macronutrients, the body needs what we call micronutrients.



**Keywords > Macronutrients: proteins, fats, carbohydrates**

**Keywords > Micronutrients: vitamins, minerals**

Vitamins and minerals are examples of micronutrients that are vital for the body to function correctly.

## VITAMINS



Vitamins are made up of a variety of elements. They are vital to us but only needed in small amounts. They are present in most unprocessed food, yet not every vitamin is available in every kind of food.

For example, vitamin C is primarily available in fruit and vegetables while vitamin B12 is only available in food coming from animals. By eating food from all of the food groups we are more likely to cover all of our vitamin requirements.

**Keywords > Vitamin C: fruit and vegetables**

**Keywords > Vitamin B12: animal-based food**

## MINERALS



**Minerals** are inorganic elements. Some are present in large quantities in the body. These are called **macroelements**. Others are only present as traces and so we call them **oligo-elements** or simply trace elements.

Calcium and potassium are examples of macroelements, whereas iron and fluoride are oligo-elements.

**Keywords > Macroelements: calcium, potassium**

**Keywords > Oligo-elements: iron, fluoride**

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## DIGESTIX

This online course is connected to a game called DIGESTIX. This game features proteins, carbohydrates and fats, i.e. the macronutrients. To be absorbed by the body, these must be converted into simpler elements like amino acids or fatty acids. Micronutrients such as vitamins and minerals are also featured in DIGESTIX but, unlike macronutrients, they can be absorbed directly by the body.

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