# Macronutrients, fibre and water

#### Macronutrients

Macronutrients provide energy. The macronutrients are:

- carbohydrate;
- protein;
- fat.

Macronutrients are measured in grams (g).

## Alcohol

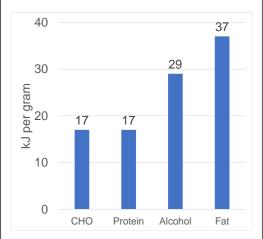
Alcohol is not considered a nutrient, but is a source of energy in the diet.

The government recommends no more than 14 units of alcohol per week for both men and women.

# **Energy from food**

- Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).
- Different macronutrients, and alcohol, provide different amounts of energy.

	Energy per gram
Carbohydrate	16kJ (3.75 kcals)
Protein	17kJ (4 kcals)
Alcohol	29kJ (7kcals)
Fat	37kJ (9 kcals)



# Protein

- Made up of building blocks called amino acids.
- There are 20 amino acids found in protein.
- Eight amino acids have to be provided by the diet (called essential amino acids).

The essential amino acids (EAAs) are isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine.

In young children, additional amino acids, e.g. histidine and tyrosine, are sometimes considered to be essential (or 'conditionally essential') because they may be unable to make enough to meet their needs.

# Recommendations

0.75g/kg bodyweight/day in adults.

# Sources:

Animal sources: meat; poultry; fish; eggs; milk; dairy food.

Plant sources: soya; nuts; seeds; pulses, e.g. beans, lentils; mycoprotein.

# **Protein complementation**

Different food contains different amounts and combinations of amino acids.

Vegans and vegetarians can get all the amino acids they need by combining different protein types at the same meal. This is known as protein complementation.

Examples are:

- rice and peas;
- beans on toast;
- hummus and pitta bread;
- bean chilli served with rice.

# Carbohydrate

All types of carbohydrate are compounds of carbon, hydrogen and oxygen. They can be divided into three main groups according to the size of the molecule.

These three types are:

- monosaccharides (e.g. glucose);
- ٠ disaccharides (e.g. lactose);
- polysaccharide (e.g. sucrose).

The two types main of carbohydrate that provide dietary energy are starch and sugars. Dietary fibre is also a type of carbohydrate.

Starchy carbohydrate is an important source of energy.

Starchy foods - we should be choosing wholegrain versions of starchy foods where possible.

# Recommendations

- Total carbohydrate around 50% of daily food energy.
- Free sugars include all sugars added to foods plus sugars naturally present in honey, syrups and unsweetened fruit juice (<5% daily food energy).
- Fibre is a term used for plant-based ٠ carbohydrates that are not digested in the small intestine (30g/day for adults).

#### Fibre

- Dietary fibre is a type of carbohydrate found in plant foods.
- Food examples include wholegrain cereals and cereal products; oats; beans; lentils; fruit; vegetables; nuts; and, seeds.

Dietary fibre helps to:

- reduce the risk of heart disease, diabetes and some cancers;
- help weight control;
- bulk up stools; ٠
- prevent constipation; •
- improve gut health.

For more information, go to: https://bit.ly/36KUnji

## Fat

Sources of fat include:

- saturated fat:
- monounsaturated fat;
- polyunsaturated fat.

Fats can be saturated, when they have no double bonds, monounsaturated, when they have one double bond, or polyunsaturated, when they have me than one double bond.

## Recommendations

<35% energy, Saturated fat <11 energy.

A high saturated fat intake is linked with high blood cholesterol levels.

# Sources:

Saturated fat: fatty cuts of meat; sk of poultry; butter; hard cheese; biscuits, cakes and pastries; chocola Monounsaturated fat: edible oils especially olive oil; avocados; nuts. Polyunsaturated fatty acids: edibl oils especially sunflower oil; seeds; margarine; spreadable fats made fro vegetable oils and oily fish.

#### Dietary reference values (DRVs) a a series of estimates of the energy a nutritional requirements of different groups of healthy people in the UK

population. They are not recommendations or goals for individuals.

Reference Intakes are guidelines for the maximum amount of energy (calories), fat, saturated fat, sugars salt consumed in a day (based on a healthy adult female).

## Tasks

- recommendations and source.
- 2. http://explorefood.foodafactoflife.org.uk



ensure all EAAs are ingested. <b>Reference Intakes</b> : Guidelines for the maximum amount of nutrients consumed.
kin Hydration
<ul> <li>Aim to drink 6-8 glasses of fluid every day.</li> </ul>
<ul> <li>Water, lower fat milk and sugar-free drinks including tea and coffee all count.</li> <li>Fruit juice and smoothies also count but should be limited to no more than a combined total of 150ml per day.</li> </ul>
20% of water is provided by food such as soups, yogurts, fruit and vegetables.
and The other 80% is provided by drinks such as water, milk and juice.
Drinking too much water can lead to 'water intoxication' with potentially life threatening hyponatraemia.
and This is caused when the concentration of sodium in the blood gets too low.

Create an infographic on macronutrients. Focus on the definition of each nutrient, daily

Keep a food diary for four days and calculate the macronutrients provided per day.