

NUTRITION

Nutrition is the study of food - its composition, the amount needed by the body and its effects on the body.

Diet: the selection of foods eaten by an individual

Food: any substance, solid or liquid, which contains nutrients

Nutrient: any substance which can be digested by the body. All nutrients are made up of elements. All food is made up of nutrients

Balanced diet: a diet containing in the correct amount all the nutrients required by the body.

Two types of nutrients:

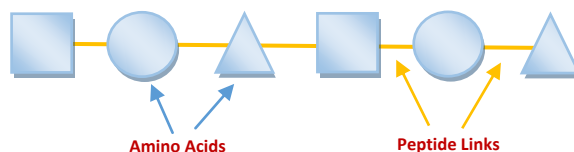
- **Macro-nutrients:** needed in large amounts - Protein, Fats & Carbohydrates
- **Micro-nutrients:** needed in smaller amounts - Vitamins & Minerals

MACRO-NUTRIENTS

1. PROTEIN

Composition (what is it made up of?):

- Protein contains the elements Carbon (C), Hydrogen (H), Oxygen (O), Nitrogen (N)
- It is the only nutrient that contains **nitrogen** which is needed for **growth**
- The elements are arranged into small units called **amino acids**.
- These are linked together to form a protein chain by **peptide link**



- During digestion the protein chains are broken down into single amino acids. These are absorbed by the body into the bloods

Classification:

Protein can be divided into two groups:

1. High Biological Value (HBV)	2. Low Biological Value
<ul style="list-style-type: none">- Animal sources eg red meat, poultry, dairy & eggs- 1st Class Protein- contain more essential amino acids	<ul style="list-style-type: none">- Plant sources eg beans, lentils (pulses) nuts & cereals- 2nd Class Protein- usually contain more fibre, less fat and are cheaper to produce

Sources (where can you get them/what food?):

1. Animal Sources: meat, eggs, milk, fish, dairy products
2. Plant Sources: beans, peas, lentils (pulse vegetables), nuts and cereals (grains)

Functions of Protein (what job do they do?):

1. Growth of body cells
2. Repair of old and damaged cells
3. Production of hormones, enzymes and antibodies

Recommended Dietary Allowance:

- The amount of protein required by each person is 1g of protein per 1kg of body weight.
- Therefore a person weighing 70kg needs approx 70g of protein a day.
- Growing children and teenagers need more.

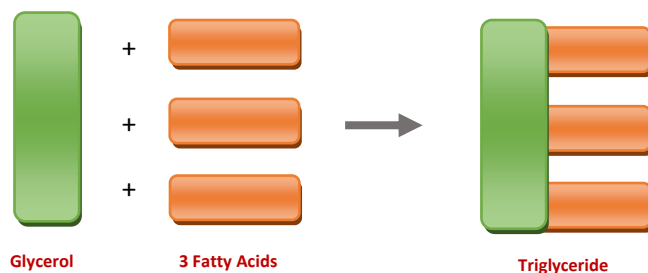


2. FATS OR LIPIDS

- Fats are also known as **lipids**.
- They are called **fats** when **solid** at room temperature and **oils** when **liquid** at room temperature.
- Fats may be (i) **visible** - can be seen on the food eg fat on rashers
(ii) **invisible** - dispersed throughout the food eg sausage or pastry
- They are a source of energy in the body but the body stores any extra fat we eat & too much may lead to obesity.

Composition (what is it made up of?):

- Fats contain the elements Carbon (C), Hydrogen (H), Oxygen (O)
- They are made up of **glycerol** and **three fatty acids**



- During digestion the glycerol is separated from the fatty acids

Classification & Sources:

Fats can be divided into two groups:

1. Saturated	2. Unsaturated
<i>Animal sources:</i> red meat, poultry, dairy & eggs	<i>Plant sources:</i> vegetable oils, nuts & cereals <i>Oily Fish:</i> eg salmon, sardines, tuna

Functions:

- Fats produce **heat and energy**
- They **protect delicate organs**
- They form a layer of **insulation** under the skin, keeping in body heat
- They are a source of **fat soluble vitamins A, D, E, K**
- They give a **feeling of fullness** as they take longer to digest
- They add **flavour** to the diet

Fats in the diet:

- If a person eats too much fat, they will **put on weight**
- Too much fat may lead to:
 - **obesity**
 - **heart disease or stroke**
 - **some cancers**
- We should get most of our fats from unsaturated fats (plant sources).
- Saturated fats increase the amount of cholesterol in the blood and lead to heart disease.

Reducing fat in the diet:

- Don't eat takeaway or fast food - **cook your own meals** eg homemade curry
- Swap** crisps for fruit/popcorn
- Use **low fat dairy** products eg milk & cheese
- Grill** or cook food in the **oven** instead of frying eg oven cooked chips

3. CARBOHYDRATES

- Carbohydrates are found in **plant foods only**.
- Plants make their own food in a process called **photosynthesis**.
- Photosynthesis is when chlorophyll (green pigment) converts sunlight into energy. This is used to make **glucose**.
- Carbohydrates are important in the diet as they are a cheap and plentiful source of energy.

Composition:

- Carbohydrates contain the elements Carbon (C), Hydrogen (H) & Oxygen (O)
- The smallest part of a carbohydrate is a **simple sugar unit** eg glucose
- All carbohydrates are made up of one or more of these sugar units.

Classification:

Carbohydrates are divided into three groups:

1. Sugars 2. Starch 3. Dietary Fibre or Cellulose

Sources:

<i>Sugars</i>	<i>Starches</i>	<i>Dietary Fibre / Cellulose</i>
Honey, table sugar, cakes, sweets, fruit, jam	Potatoes, bread, pasta, cereals (eg wheat, oats)	Wholegrain cereals e.g. brown rice, brown bread, skin of fruit & vegetables, brown pasta, Weetabix, porridge

Functions:

- **Starch** and **sugar** produce **heat and energy**
- Extra carbohydrates are stored in the body as fat (adipose tissue) and they insulate the body but can also lead to obesity
- **Fibre** helps the **digestion** of food and prevents constipation
- Fibre also **prevents bowel disorders** eg IBS (irritable bowel syndrome) and certain cancers

Hidden Sugars – when a food doesn't taste sweet but contains sugar eg savoury sauces (Dolmio)

Empty calories – when a food contains sugar only and no other nutrients

Ways to reduce sugar in the diet:

- Drink water/milk instead of fizzy drinks and fruit juices
- Eat more vegetables as snacks eg carrots sticks and hummus
- Don't add sugar to tea/coffee
- Add fruit to breakfast cereals instead of adding sugar
- Read the food label to check the sugar content of food

Fibre/Cellulose: This is not digested by the body> it absorbs water

How to include more fibre in the diet:

- **Starch** and **sugar** produce **heat and energy**
- Extra carbohydrates are stored in the body as fat (adipose tissue) and they insulate the body but can

4. VITAMINS