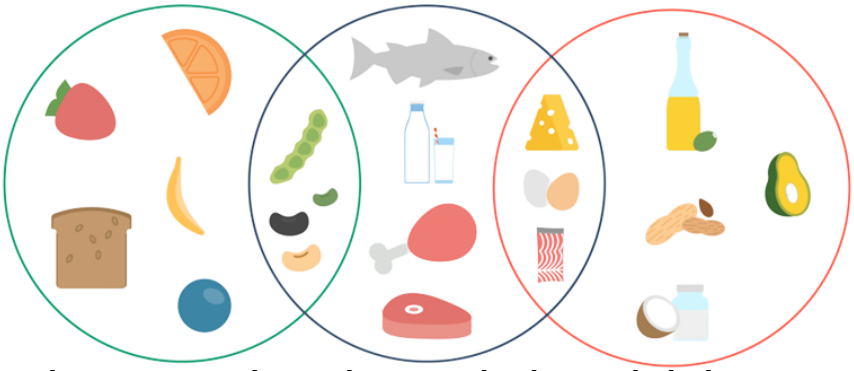
CONSUMER STUDIES: SUMMARISED NOTES
GRADE 11 – TERM 2

Macronutrients

Carbohydrates | Proteins | Fats



Macronutrients are nutrients that your body needs in large quantities to function optimally. It consists of: carbohydrates, proteins and fats.

Macronutrients are a group of nutrients that provide your body with energy.

It contains the components needed to maintain your bodily functions.

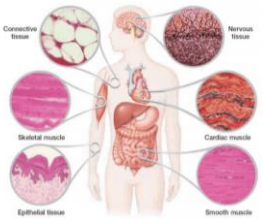
Proteins

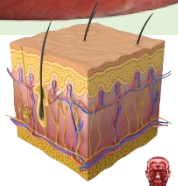
Functions

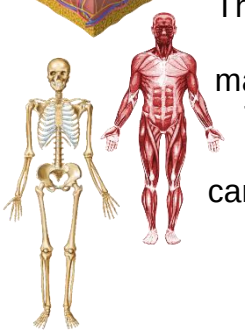
1. Growth and formation

Proteins are required to form and maintain all the **cells** in the body.

Damaged body **tissue** will not be able to **repair** itself without protein.



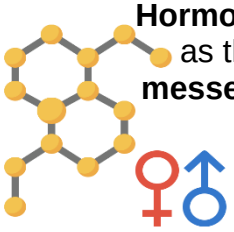




The body's **structural elements** consist mainly out of proteins. These include our muscles, bones, cartilage, tendons, skin and hair.

2. Regulate and maintain

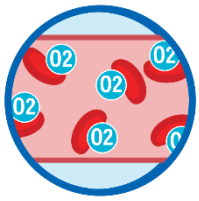
Enzymes = proteins that **speed up** the **chemical reactions** in the body.



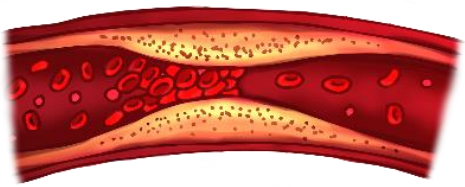
Hormones = proteins that act as the body's **chemical messengers and metabolic regulators**.

Proteins **produce antibodies** to provide resistance to diseases.

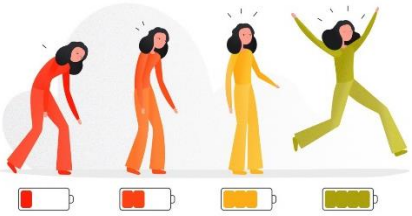
Proteins **transport** elements such as oxygen, through the blood to all parts of the body.



Proteins **control** our body's **blood sugar levels** and help with **blood clotting.**



3. Source of energy



The **rest of the proteins,** which do not contribute to the growth and recovery, **provide energy** to the body.

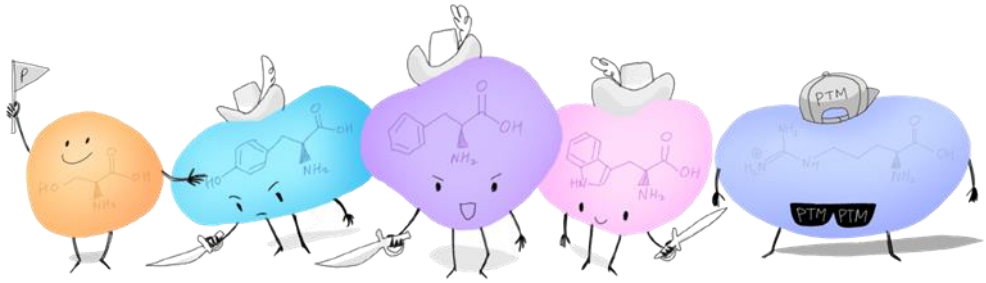
1 gram of protein, **provides** 16.8 **kilojoules** (kJ).

Sources

Amino acids = the building blocks of protein.

The body needs 22 amino acids to form the cells in our body.

8 of these must be consumed, as the body cannot produce them.



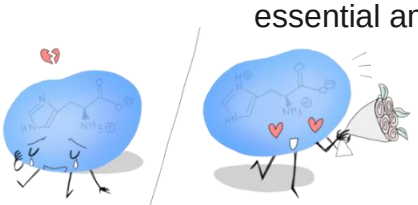
- Proteins' biological value is determined by the number of essential amino acids they contain.
- High quality protein foods contain more essential amino acids.
- Combine different protein sources to ensure that you consume a good quality & amount of protein.

Proteins with a high biological value

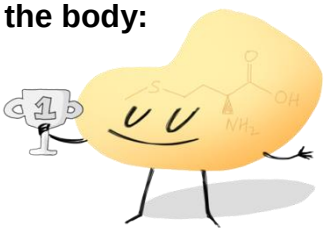
- Mainly found in animal protein sources, such as milk, eggs, cheese, meat and fish.
- Soya beans are an example of a vegetable protein source, which also has a high biological value.

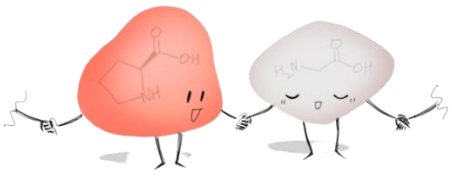
Proteins with a low biological value

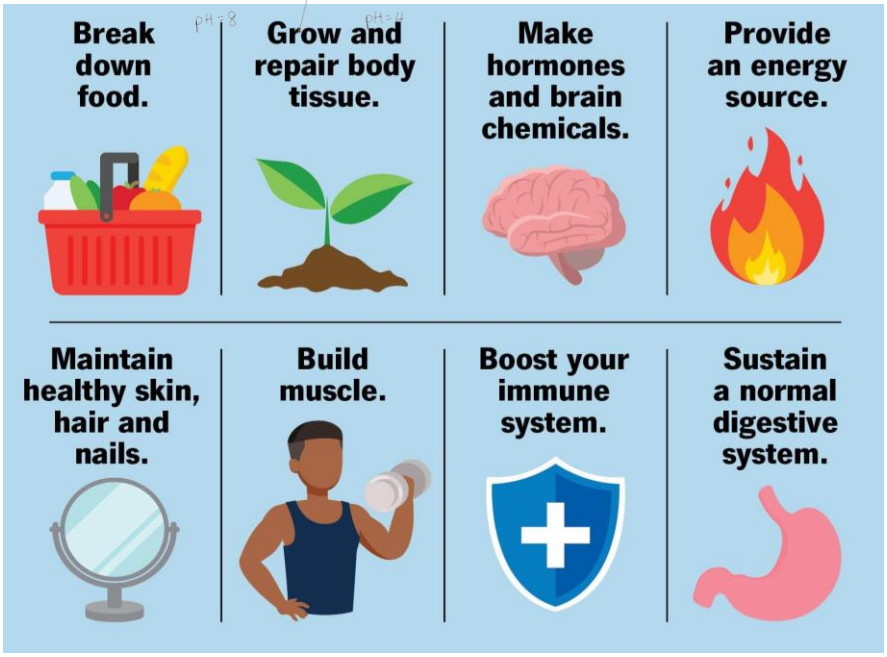
- Bread, cereals, legumes and vegetables.
- Does not contain many essential amino acids.



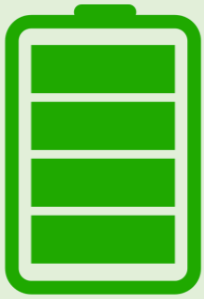
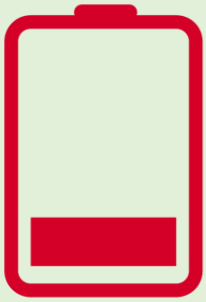
Amino acids' role in the body:







The amount you consume

Too much:	Too little:
 Increases the excretion of calcium through the urine, which can form kidney stones. May be the cause of a heart disease, due to the high amounts of saturated fatty acids and cholesterol it contains.	 Causes a protein-energy undernutrition / malnutrition (PEU / PEM). Advanced PEU / PEM can lead to: • Marasmus in young children. & • Kwashiorkor in older children and adults.

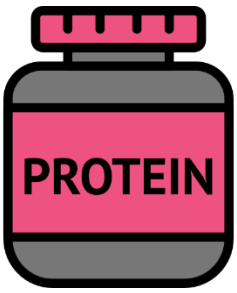
Carbohydrates

Functions

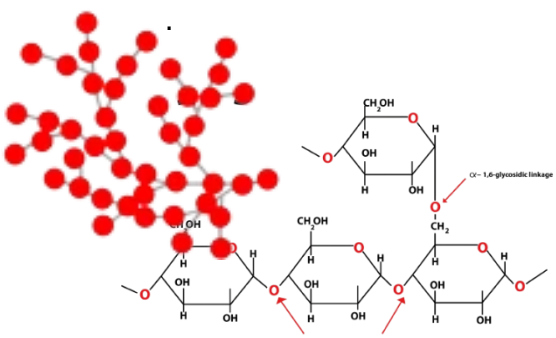
1. Starch and sugar are the body's **main source of energy**.

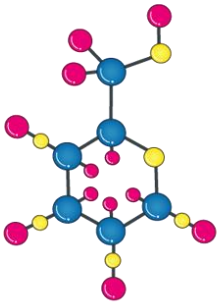
2. Assists with the **oxidation of fats**.

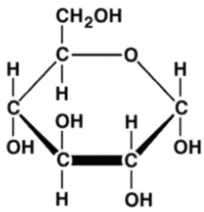
3. If enough energy is obtained from starches and sugars, it has a **protein-saving function**, so that the body does not use proteins for energy.



4. Excess carbohydrates are stored in the liver in the form of **glycogen.** It can be **converted back into glucose**, if the body needs it.







Sources

Daily intake:

25 – 30g.

1. Sugars

Fructose (sugar in fruit)	Sucrose	Lactose	Glucose (blood sugar)
= sweetest of the simple sugars. In fruits, vegetable juices and honey. Safe for diabetics.	Sugar from sugar cane / sugar beet. Ordinary table sugar. In sweets, syrups and soft drinks.	The main sugar found in cow's milk.	Primary source of energy. Natural sugars. In honey, most fruits and some vegetables. Sugar is stored in the blood in the form of glucose. If the body loses its function to regulate blood glucose levels, the person will develop diabetes.

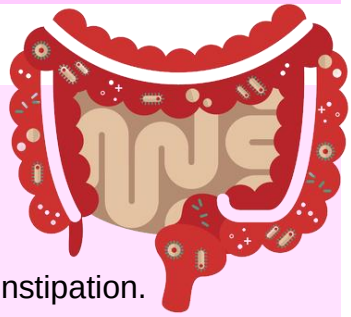
2. Starches

Starch (should be able to provide 55% of the body's daily energy requirements).

= Carbohydrates in plants.

Potatoes, corn, wheat and soybeans.

3. Cellulose (Dietary fibre)

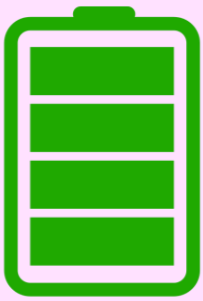
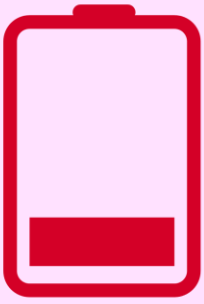


Functions

- Keeps the digestive system healthy.
- Absorbs and removes toxins from the intestines.
- Helps keep bowel movements regular and prevents constipation.
- Creates the feeling of satiety.
- Helps to regulate blood glucose levels.

Soluble dietary fiber	Insoluble dietary fiber
Can dissolve and solidify in water. May reduce blood cholesterol and the risk of developing a heart disease. Found in: Oats, bran, barley, peas, beans, lentils, pasta, corn, citrus fruits, apples and some vegetables.	The body and water cannot dissolve it. It binds and retains water as it moves through the body. Found in: Brown and whole grain bread, breakfast cereals, legumes and brown rice.

The amount you consume

Too much	Too little
 This will convert into body fat, which is especially stored around the hips and thighs.	 Body fat is broken down too quickly, which can cause imbalances in the metabolism of carbohydrates and fats. The body will use protein as a source of energy. Muscle mass can also be broken down for this. Fatigue, nausea, loss of appetite & a sudden drop in blood pressure when you stand up.

fats / lipids

Functions

1. Provides essential fatty acids, which the body cannot produce itself.

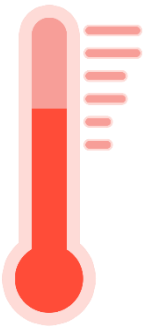
2. A concentrated **source of energy**. 1g fat = 37.8kJ

3. Fats digest slowly and help us **to not feel hungry as quickly again.**

It also helps with the **digestion of other foods.**

4. Helps with the **absorption of fat-soluble vitamins** (A, D, E, K) in the body.

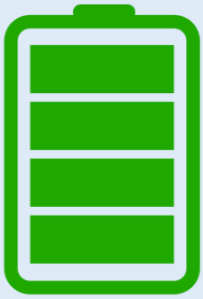
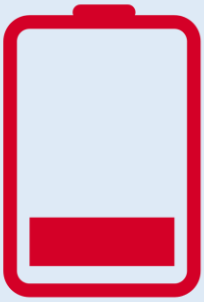
5. Helps to regulate our **body temperature.**



Sources

Saturated fats	Polyunsaturated fats	Trans fatty acids
Solid at room temperature. Limit the intake to a third of the total daily fat intake. **Animal fats:** meat, butter, lard, cream, bacon, eggs and some fish oils. **Vegetable oils:** Coconut oil, palm kernel oil, cocoa butter. **Hidden in:** nuts, milk, cheese, chocolate, cakes, pies and potato chips.	The body cannot produce it itself, but the body needs it to function properly. Especially found in vegetable oils. Sources: Sunflower oil & oily fish (Omega 3) - such as salmon, sardines and pilchards. Omega 3 and -6 are very beneficial to the body, therefore it is recommended to consume 2 portions of oily fish per week.	**= harmful:** Can cause cardiovascular diseases. It is very difficult to avoid this, as hydrogenated fats are added to many food products. Formed when hydrogen gas, at room temperature, is added to the oil to solidify it (hydrogenation). It can also be produced if fat / oil is heated repeatedly. Especially found in hard margarine, cookies, pies, cakes, potato chips, fast food and any food fried in old oil.

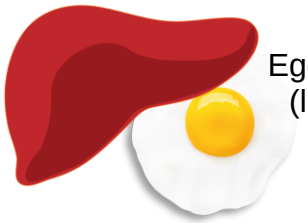
The amount you consume

Too much	Too little
 Can cause heart diseases, high blood pressure and obesity.	 Harmful effects on the metabolism.

Cholesterol

Cholesterol = fatty substance found in all animal food products, such as: meat, poultry, fish, milk & egg yolk. The body also produces it itself. It will also increase the risk of developing a heart disease.

Low-fat products contain less cholesterol.

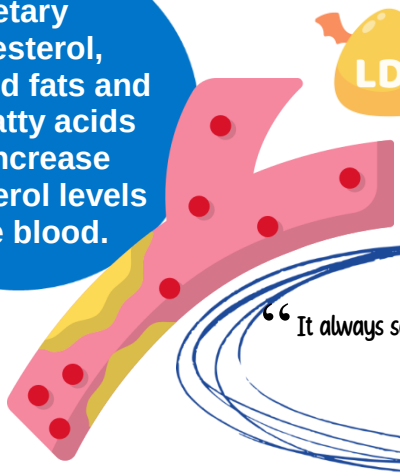


Egg yolk and organ meat (liver) contains a lot of cholesterol.

Plant-based foods contain no cholesterol.

Dietary cholesterol, saturated fats and trans fatty acids can increase cholesterol levels in the blood.

Limit your total fat intake according to the food pyramid's guidelines.



"It always seems impossible until its done."

-Nelson Mandela

A. Jonker