

**Knowledge
Organiser**

Food & Nutrition

Topic: Micro nutrients

Knowledge Organiser

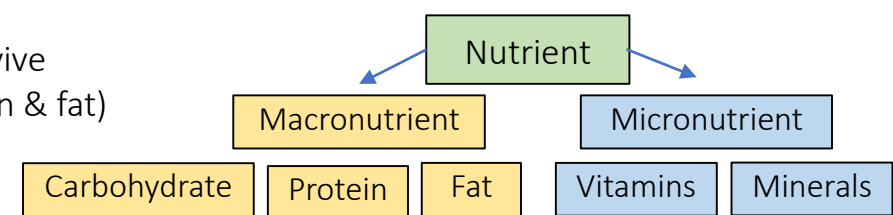
Food & Nutrition

Topic: Macro nutrients

Nutrients: Chemicals which provide nourishment and are needed to survive

Macro: LARGE. Nutrients needed in large amounts (carbohydrate, protein & fat)

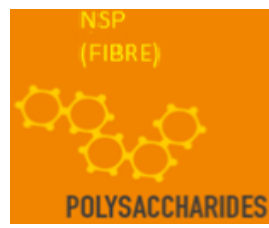
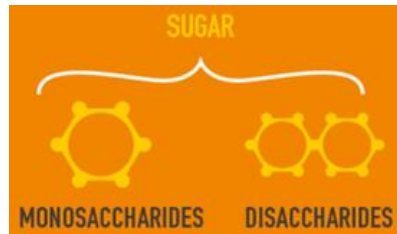
Micro: SMALL. Nutrients needed in small amounts (vitamins & minerals)



Carbohydrates

- Starch
- Sugar
- NSP (fibre)

Carbohydrates provide energy.
Two main categories – complex and simple.
Simple Carbohydrates - natural sugars in fruits/processed sugars in cake etc.
Complex carbohydrates - found in bread, pasta, rice, potato, etc.
Carbohydrates are digested & broken down into glucose.
Excess glucose stored as body fat.



Sugar - SIMPLE
Monosaccharide or disaccharide
Mono – one. *Di* – two (molecules)
Fast release energy as the molecules are already broken down into 1 or 2

Starch - COMPLEX
Yellow section of EWG
Polysaccharide (several molecules)
Slow release energy as body needs to break up the long chain

Fibre
Wholemeal foods, Fruit & veg
Polysaccharide
Helps the digestive system – passes through the body



Fat

- Saturated
- Monounsaturated /polyunsaturated

Fats provide energy.
Too much fat is bad for our bodies but we also need some fat for giving us body warmth (insulation), protect organs, carry fat soluble vitamins and provide essential fatty acids.
Two main categories - saturated and unsaturated fat.

Saturated:
Contain a 'bad' cholesterol which build ups of in the arteries.
Found in animal fats (solid) - butter, lard and dripping.
The type of cholesterol is known as 'Low Density Lipoprotein' (LDLs)



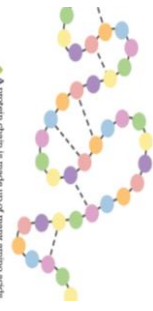
Unsaturated fats
Contain a 'good' cholesterol which remove the build up in the arteries.
Found in plant fats (liquid) - olive oil, groundnut oil, sunflower oil.
Margarine is also unsaturated as it is processed from plant oils.
The type of cholesterol is known as 'High Density Lipoproteins' (HDLs)

Omega 3 & 6
- Essential fatty acids
They also contain Omega 3 and 6 which are essential fatty acids (essential as the body cant make them) these help with the heart.

Protein

Growth & repair of body tissue, muscles & cells.
Made up of long chains of building blocks - amino acids.

Amino acids
There are 20 amino acids that combine to make up proteins
Essential amino acids – these amino acids are not made by the body so have to come from the diet. There are 8.
Non essential amino acids – these are made by the body so are not needed from food.



High Biological Value (HBV)
These contain **all** of the essential amino acids.
These are usually **animal** proteins (meat, fish, poultry, eggs, milk, and milk products like cheese and yogurt).

Low Biological Value (LBV)
These **lack 1 or more** essential amino acid

These are usually **plant** proteins (peas, beans, lentils, cereals such as wheat, flour, pasta, nuts and seeds).
*Vegetarians may struggle to get all essential amino acids so need 'complementary proteins':

Complementary proteins
Combining 2 more LBV protein foods to get all essential amino acids. i.e. beans on toast

Key Words

Deficiency – A lack or a shortage of something.
Excess – too much of something.
Amino Acids – Long chains of building blocks used to make protein.
Complementary protein: Combining 2 + LBV proteins to get all essential amino acids. i.e. beans on toast
HBV protein – Protein from animal sources.
LBV protein – Protein from vegetable/plant sources.
Saturated Fats - molecules without double bonds. Blocks arteries. Animal fats.
Unsaturated Fats – molecules with one or more double bond. Unblocks arteries. Plant fats.
DRV: Dietary reference value. How much people should consume in one day



What might be asked in an exam?

Grade 1-3 – identify nutrients in foods, recipes, menus and diets
Grade 4-6 – explain functions of nutrients, recommend nutrients and state deficiencies and excesses
Grade 7+ - analyse or evaluate a recipe, menu or diet. Modify to improve the nutrition. Recommend types of nutrients.



Summary

Type	Function	Source	DRV	Excess	Deficiency
Carbohydrate Starch, Sugar, NSP	Starch: Slow release energy Sugar: Fast release energy NSP: Help digestive system	Starch: Pasta, rice, bread Sugar, syrup, sweets NSP: Wholemeal, fruit, veg	1/3 daily energy from carbs Sugar: <30g/day Fibre : >30g/day <i>1g = 4kcal</i>	Too much starch/sugar = excess energy turns into fat, leading to obesity. Too much sugar = diabetes & tooth decay. Too much fibre = prevent absorption of other nutrients	Starch/sugar: Tiredness and low energy. NSP (fibre): constipation, bowel disease
Protein HBV LBV	Growth and repair Energy source	HBV: Animal - meat, fish, eggs, LBV: Plant - beans, lentils, cereals	55g per day <i>1g = 4kcal</i>	If you consume more protein than your body needs, the excess protein is used to give your body energy or turned into fat	In children growth slows down or stops. Muscle wasting and anaemia. Poor countries: kwashiorkor
Fat Saturated Unsaturated	Insulation Protect organs Carry fat soluble vitamins Provide essential fatty acids.	Saturated – animal (fat on meat, butter, lard). Unsaturated: plant (vegetable oil, margarine)	<1/3 of daily energy from fat Total fat: 70g (female) 95g (male) Sat fat: 20g (female) 30g (male) <i>1g = 9kcal</i>	Can cause obesity, high cholesterol, coronary heart disease, halitosis (bad breath), type 2 diabetes.	Tiredness and low energy. Body cannot absorb fat-soluble vitamins - A,D,E and K. This would lead to vitamin deficiencies