

Macronutrients Carbohydrates- FNH

Friday 28th March 2025



Lesson Intention

Learning outcomes:

Learning is successful when I know:

- Recall information about carbohydrates
- Address any misconceptions
- Apply knowledge to exam questions

Lacon me... ask
yourself .. Am
I?

Caring?
Empathetic?
Kind?
Respectful?

Determined?
Independent?
Curious?
Resilient?

Innovative?
Organised?
Reflective?
Resourceful?

Lesson Entrance

- **Straight to your seat and sit down in silence**
- **Get desk ready**
- **Write title and date**
- **Prepare for retrieval activity**

Do now - retrieval activity-

1. Dietary fibre helps to lower blood cholesterol levels?
True/ False [1 mark]
2. Dietary fibre can help to prevent diverticulitis?
True/False [1 mark]
3. Identify three sources of dietary fibre [3 marks]
4. Define what a 'monosaccharide' is. [1 mark]



Starter- Question 5, write out and identify the correct information

Fill in the gaps in the text below using the keywords below. Note that each of the keywords may be used once, more than once or not at all.

(4 marks)

<i>primary</i>	<i>50%</i>	<i>35%</i>	<i>sugars</i>	<i>protein</i>
<i>45%</i>	<i>fat</i>	<i>before</i>	<i>starch</i>	<i>secondary</i>
<i>5%</i>	<i>vitamin</i>	<i>after</i>		

- i) Carbohydrates are the _____ source of energy in the human body.
- ii) They act as a _____ sparer, which means that they are used _____ them to provide energy, so that the _____ can be used for growth and repair of the cells.
- iii) Carbohydrates can be divided into three groups: _____, _____ and dietary fibre.
- iv) In a balanced diet, _____ of energy should be provided by _____, and only _____ of energy should come from the _____.

Revisiting Carbohydrates

- ▶ Functions- main energy source, 'protein sparer'
- ▶ Sources-
 - sugars (simple, mono and disaccharides, fast acting)
 - starches (polysaccharides, energy over time)
 - dietary fibre (polysaccharide- cell walls of veg/cereals)
- ▶ Excess- tooth decay, obesity
- ▶ Deficiency- weight loss, constipation, increased risk of bowel cancer



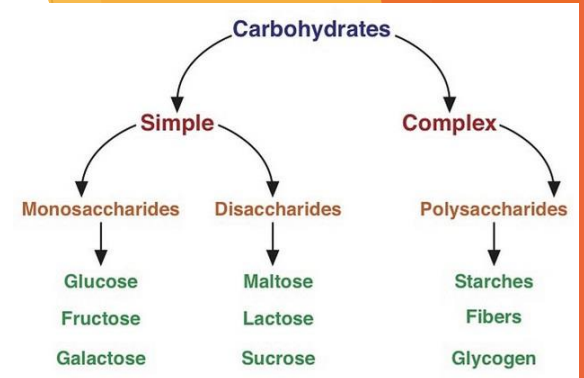
In depth look- Sugars

- ▶ Easily broken down by the body
- ▶ Simple sugars- monosaccharides → glucose (fruits and veg) and fructose (fruits and honey)
- ▶ 'Double sugars'- disaccharides → sucrose (table sugar), lactose (milk), maltose (cereals, beer)

Free sugars-

Sugar added to food or found OUTSIDE cell structures= free sugars (usually processed, includes honey and unsweetened fruit juice)

Sugar- needed for energy, NO NUTRIENTS. Should be restricted to 5% of RDA



In depth look- Starches

- ▶ Complex carbohydrates= polysaccharides
- ▶ Starch- found in plants (size and shape of starch is different in each plant)
- ▶ Pectin - found in some fruits, forms gel in water (jam)
- ▶ Glycogen- made from glucose BY HUMANS- stored in muscle as energy reserve
- ▶ Sources- root veg, cereals and cereal products.
- ▶ RDA- 50% of total food energy from carbs, 45% starches, milk sugar and fruit sugar.



In depth look- Dietary Fibre

- ▶ Polysaccharide found in cell walls of plants, pulses and cereal grains.
- ▶ Not broken down by digestive system easily
- ▶ Function- healthy digestive system

weight control (fuller for longer, slow energy release)

prevent bowel disease (constipation, DIVERTICULITIS, cancer)

provides soluble fibre= reduces cholesterol levels

- ▶ Sources- insoluble- not digested, bulk of poop- wholegrain foods, veg peelings and skin

soluble- slows down digestion and absorption of carbs= controls blood sugar levels- oats, nuts, legumes, some fruit and veg



Plenary- Exam question

Discuss how excessive consumption of sugars can affect the health of an individual and suggest two ways an individual can prevent these negative health effects. (6 marks)

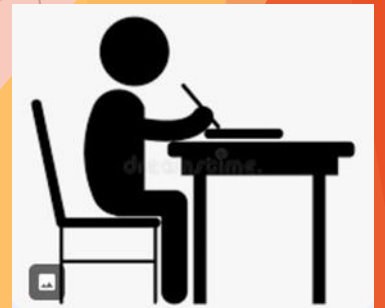
Plan? What do you need to include?

P- Point

E- Evidence

E- Explain

L- Link



Mark Scheme

The answer identifies and describes at least two health effects of excessive sugar consumption (4 marks) and provides two ways of preventing them (2 marks).

Health effects from:

Obesity - excessive sugar consumption will lead to obesity as unused sugar will be transformed into fatty tissue and stored in the body.

Type 2 diabetes - excessive sugar consumption will raise blood sugar levels, which will put stress on the pancreas. As the pancreas cannot produce enough insulin to lower the blood sugar level, the sugar will continue to damage the tissues around the body.

Tooth decay - sugars feed mouth bacteria, which thrive on them and cause tooth enamel to dissolve.

Ways of preventing them:

Avoid eating free sugars from sweets, sweetened beverages, etc.

Choose foods rich in polysaccharides as they are absorbed more slowly into the bloodstream.

Choose foods rich in fibre as they lower blood sugar levels

Increase physical activity to burn more calories.

Physical activity is also helpful in preventing (or even reversing!) type 2 diabetes as it allows the body to use the extra glucose and lower its amount in the blood. Accept any other suitable answer.

Do NOT accept answers which refer to systematic/governmental actions - only accept answers that refer to individuals.

