

We are learning this because our diet is important to the body's health.

Learning Intention: To conduct four food tests and remember what a positive test result looks like for each test.

Keywords: Starch, sugar, protein, amino acid, fat, fatty acid, glycerol, Benedict's solution, Biuret test, iodine, Sudan III.

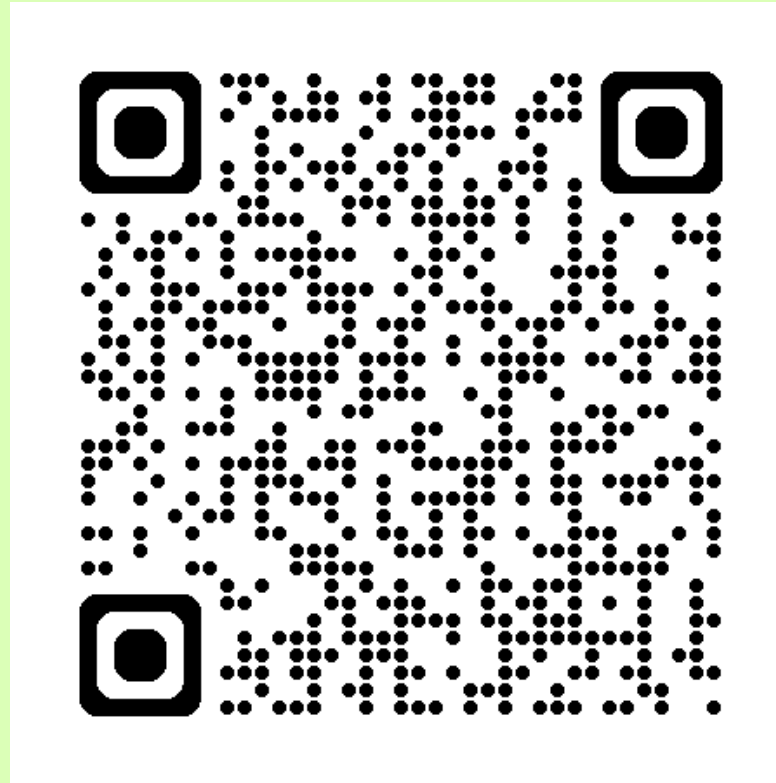
The logo consists of a cluster of overlapping squares in teal, dark blue, and pink, with the word 'ela' written in a white, cursive script over them.

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Can you remember the routine?...

25/09/2025



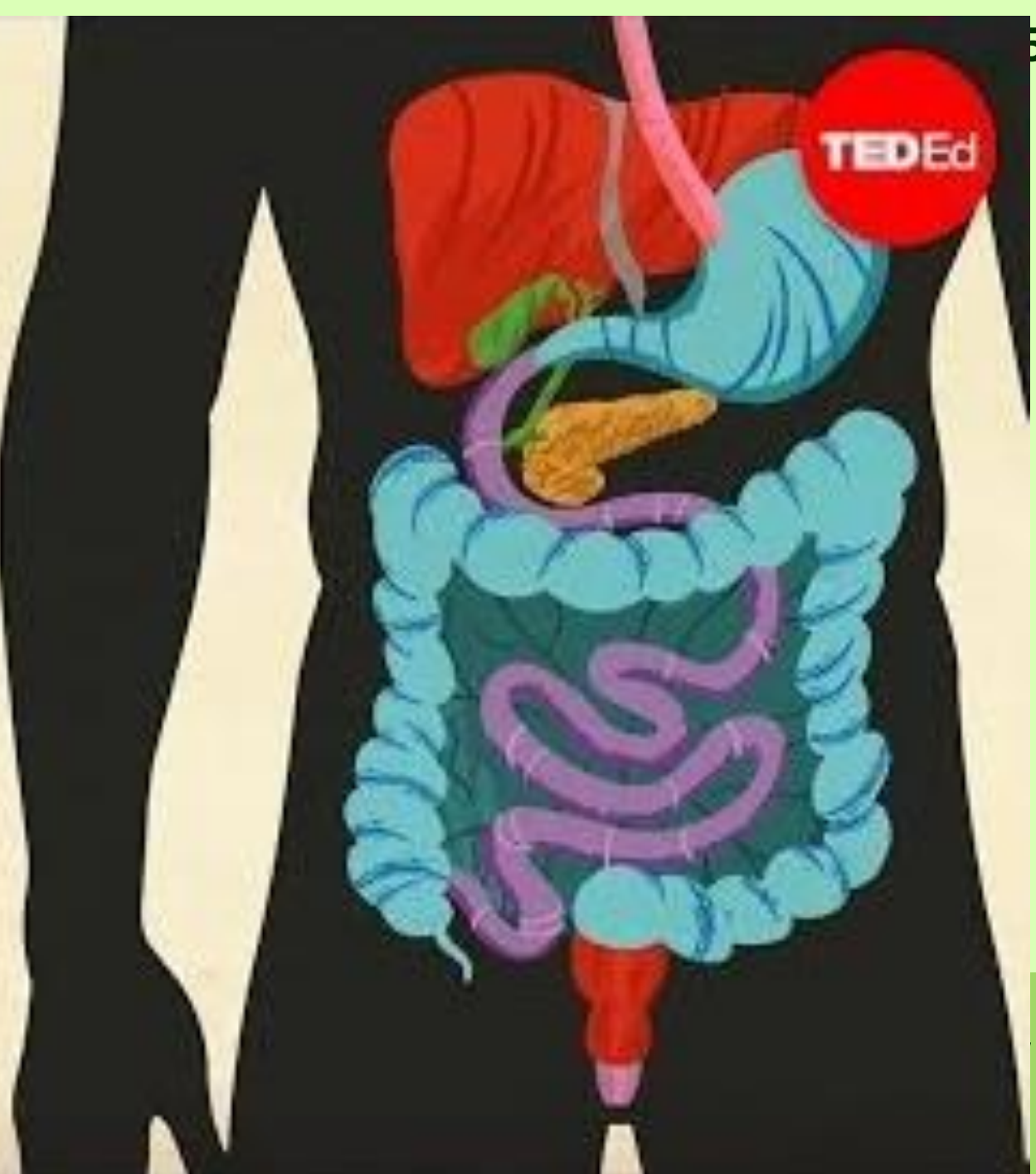
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HOW THE DIGESTIVE SYSTEM WORKS





B2 Organisation - Navigation

25/09/2025

Lesson No.	Topic covered
2.1	Digestive System
2.2	Food tests RPA
2.3	Enzymes
2.4	Enzymes RPA
2.5	Circulatory system, vessels and blood
2.6	Heart Disease
2.7	Respiratory system
2.8	Cancer
2.9	Plant Organs and Transport

Organisation is about different systems in the body and how they provide the required nutrients/material the body needs to survive. It also looks at how damage to these systems can be debilitating if not fatal and how we can treat these diseases with modern medicine.



Food tests RPA

- Learning Intention

To be able to describe the positive tests for starch, sugar, protein, and fat

TASKS:

- 1) Investigate the role of different nutrients in the body
- 2) Identify risks to hazardous material we will be using in the lab
- 3) Test for the presence of biomacromolecules in different foods

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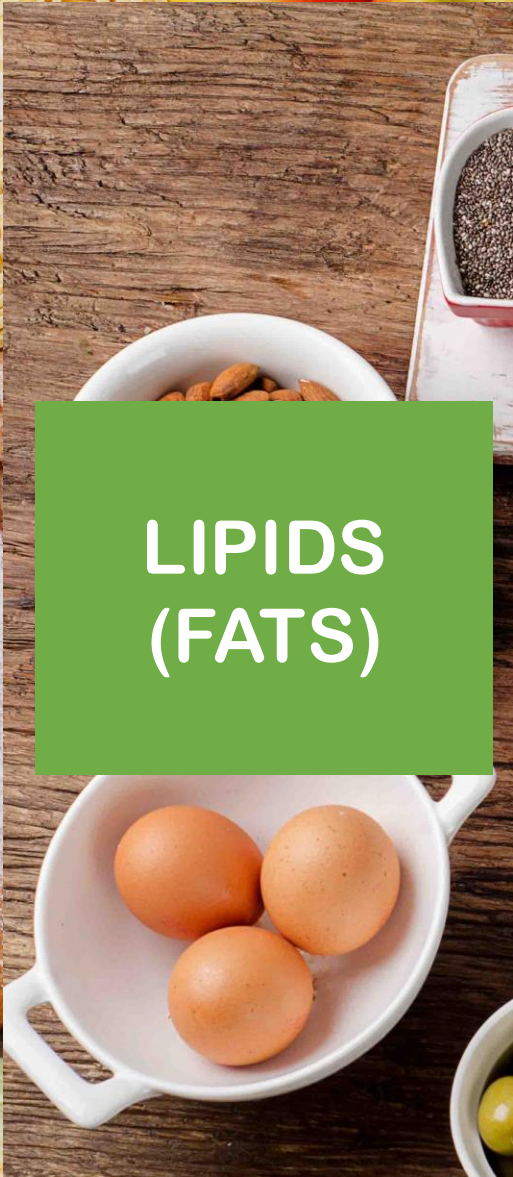
Need to know...



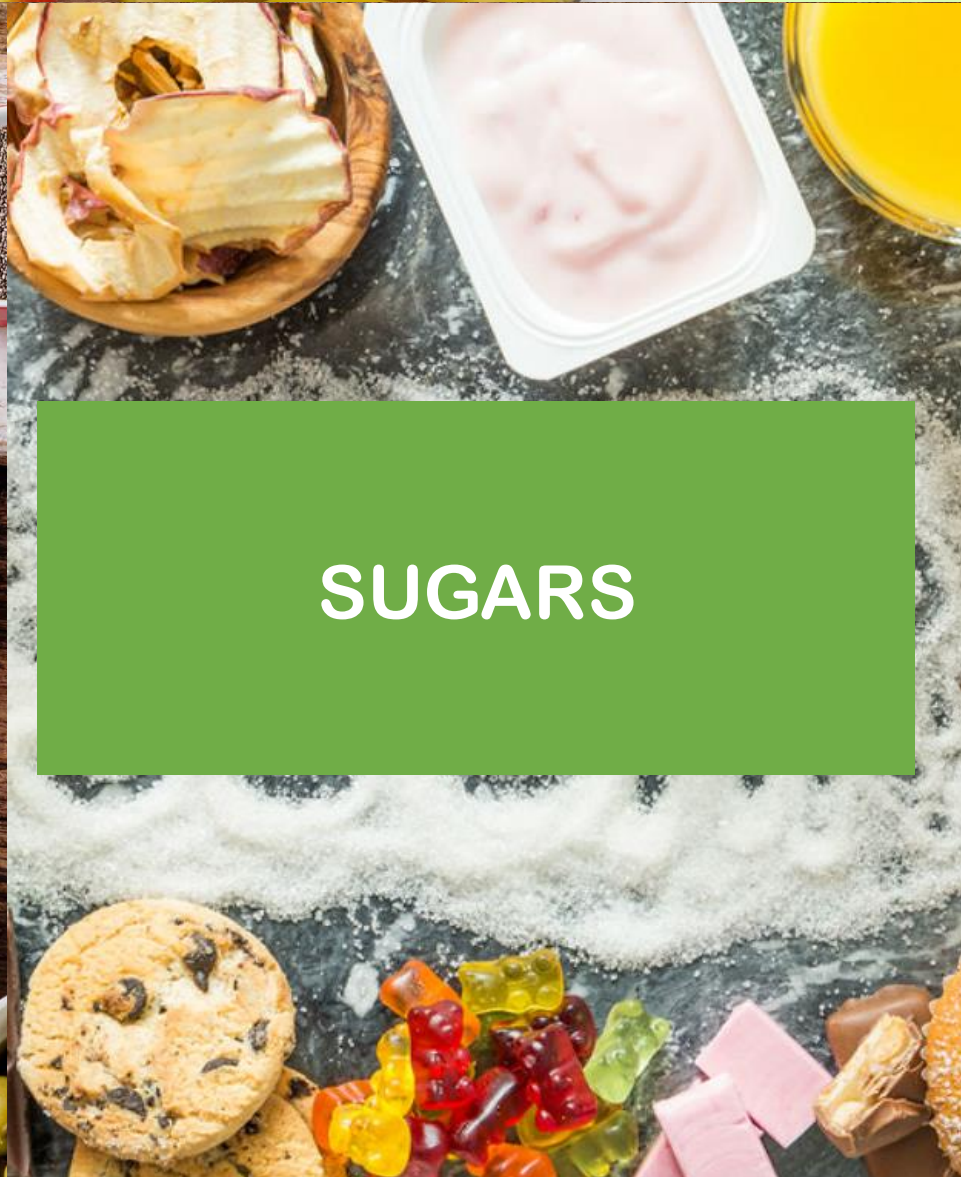
PROTEIN



CARBO
HYDRATES



LIPIDS
(FATS)



SUGARS



Task 1

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Eating a balanced diet is important to have good health.

1. Outline the dietary roles of carbohydrates, fats and protein.
2. Identify any health risks of eating too much or too little of each nutrient



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Food tests RPA

- Different enzymes catalyse different digestion reactions.

- Carbohydrases: starch → sugars
- Proteases: proteins → amino acids
- Lipases: lipids → fatty acids + glycerol

- Amylase is an example of a carbohydrase. Lipids are fats and oils.

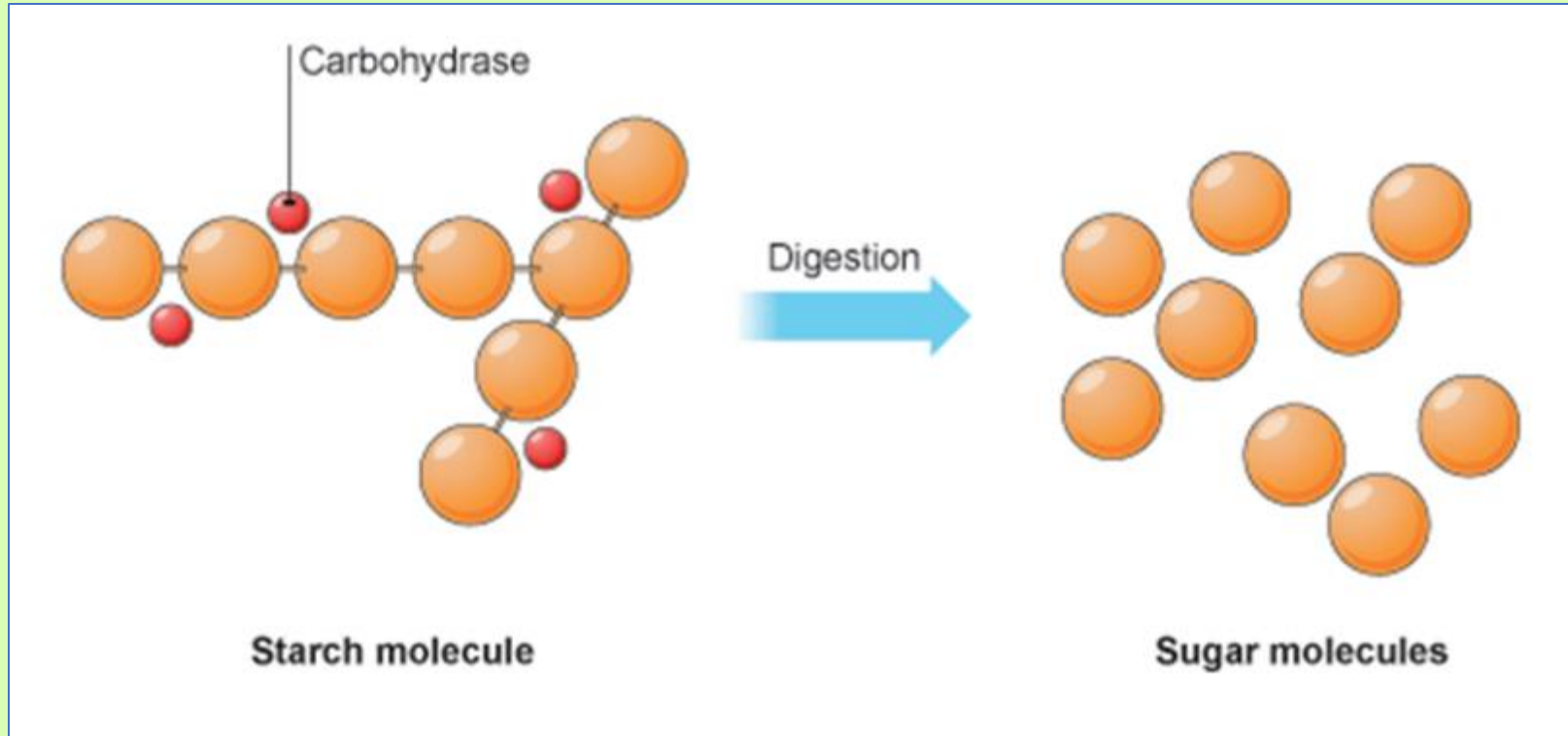
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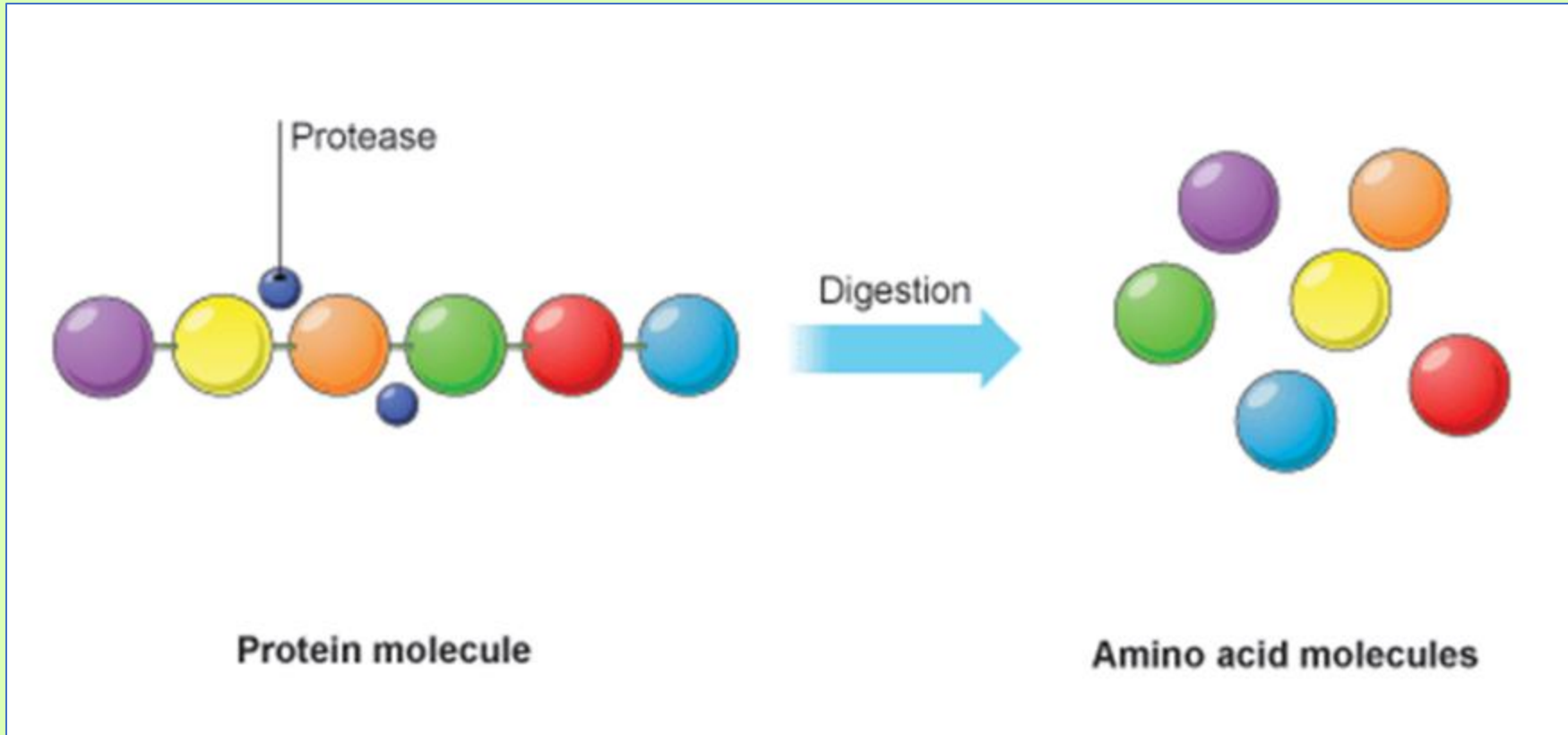
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Food tests RPA



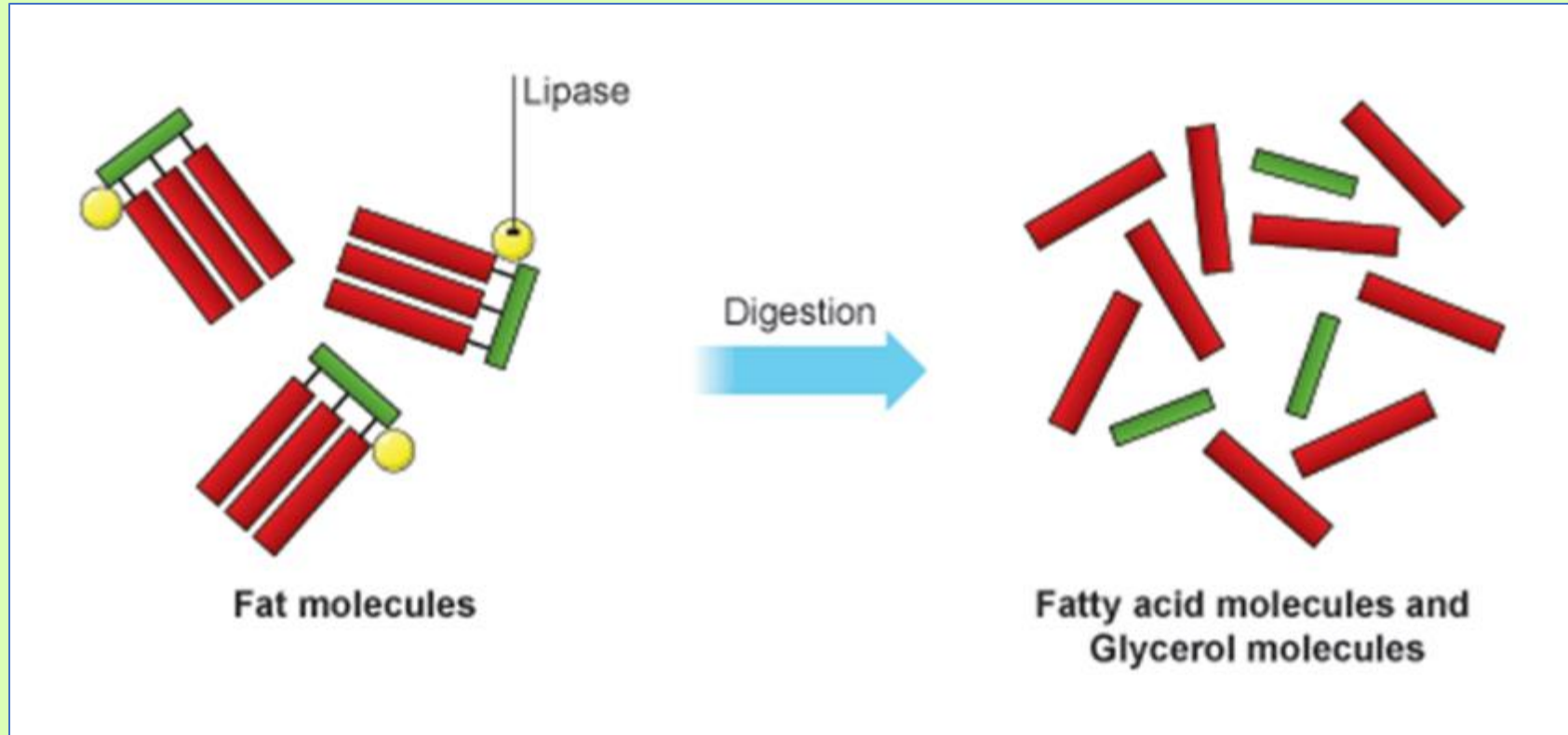
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Task 2

We will be using chemicals to test for different biomacromolecules:

- 1) Iodine – starch
- 2) Biuret Reagent – protein
- 3) Benedict's Reagent – sugars
- 4) Sudan III – fats

Identify a hazardous chemical, state the risk it poses, and also a sensible precaution.

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Practical Time!

DO NOW:

1. Put books/pens/iPad out of the way
2. Stand and push in stools
3. Tie up long hair
4. Wear lab goggles

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Practical Time!

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Collect:

1. Spotting tiles
2. 4 test tubes
3. 100ml beaker

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What's the method?

Protein

To test for protein we use a **Biuret**

(5ml sodium hydroxide + 5mm dilute copper sulphate)

Add a few drops of Biuret solution

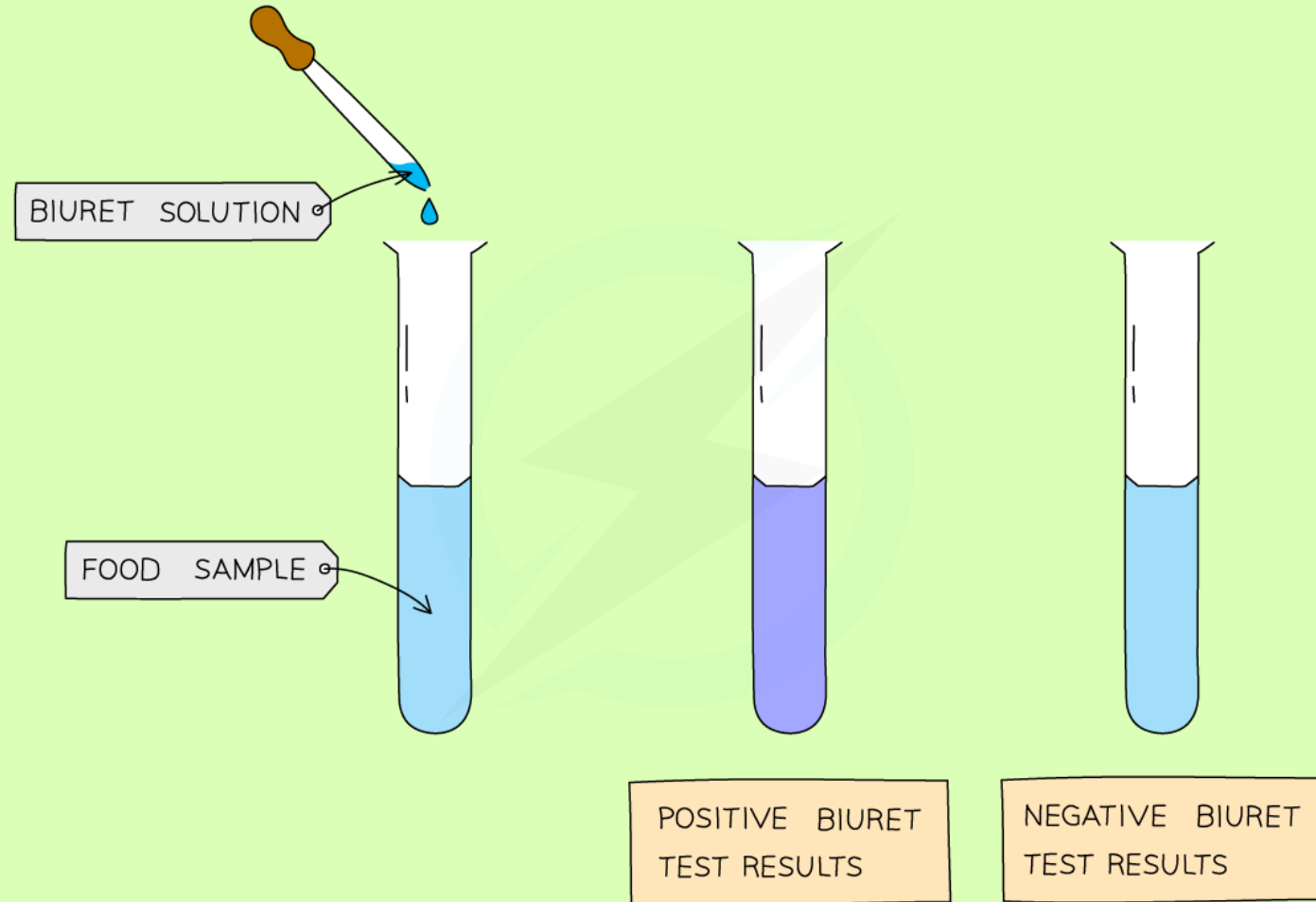
If it stays blue: no protein is present

If it turns purple/lilac: yes, protein is present





Protein Test – Biuret Reagent



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What's the method?

Starch

Add a few drops of **iodine** to the food

If it stays **orange**: no starch is present

If it turns **blue/black**: yes, starch is present

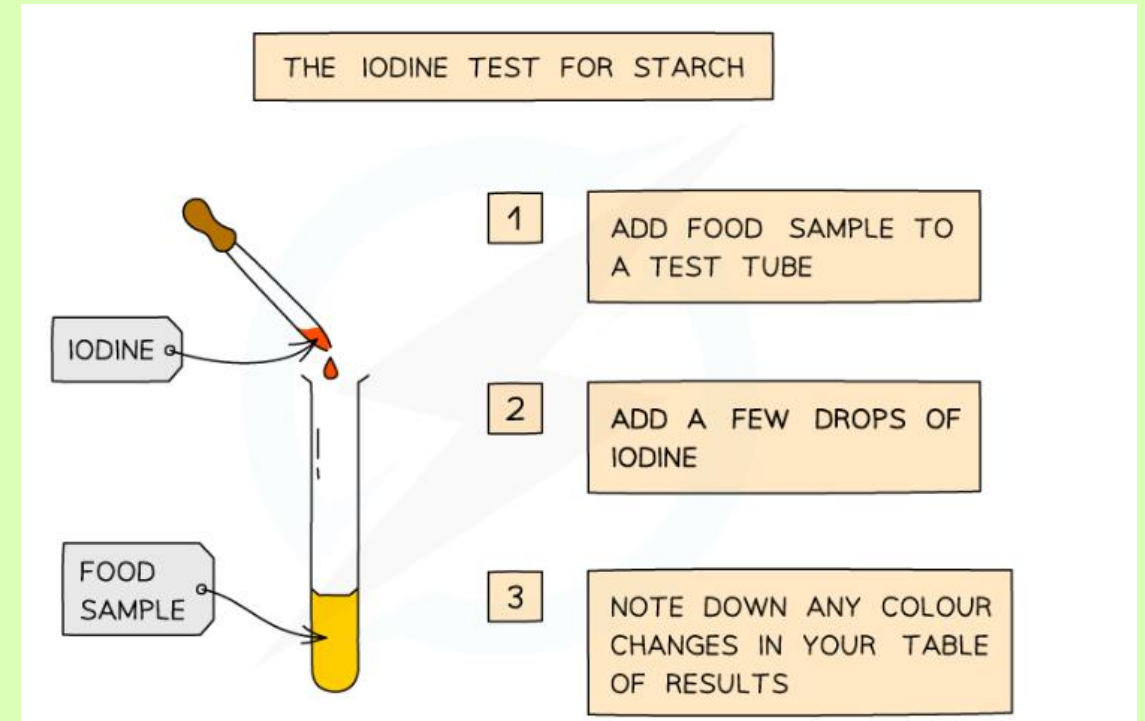
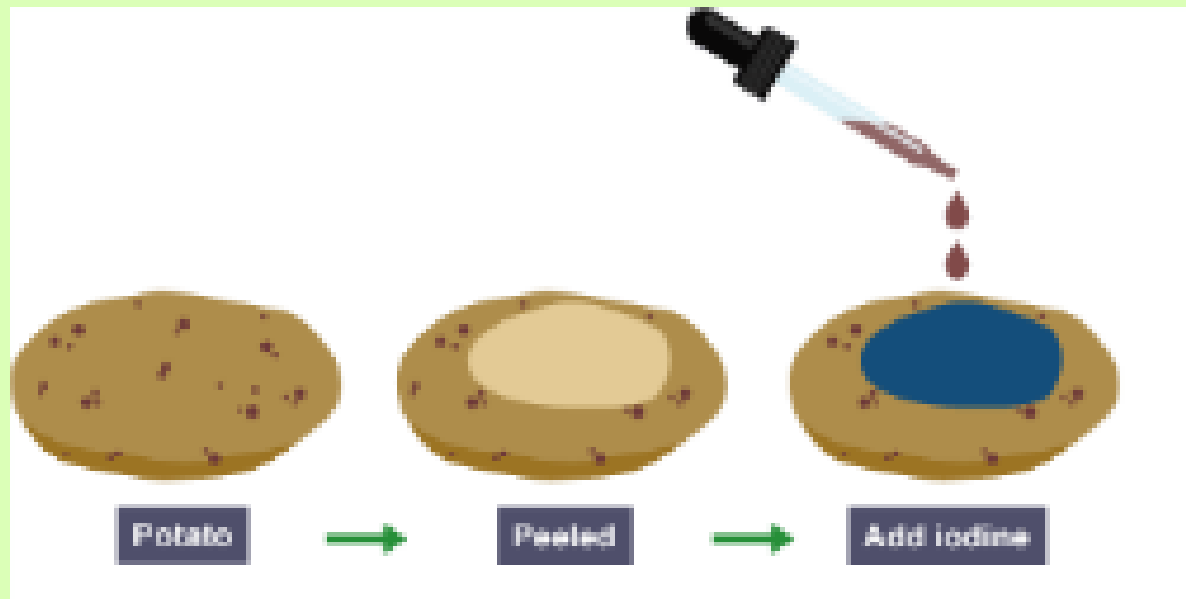
We are learning this because

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Starch Test - Iodine



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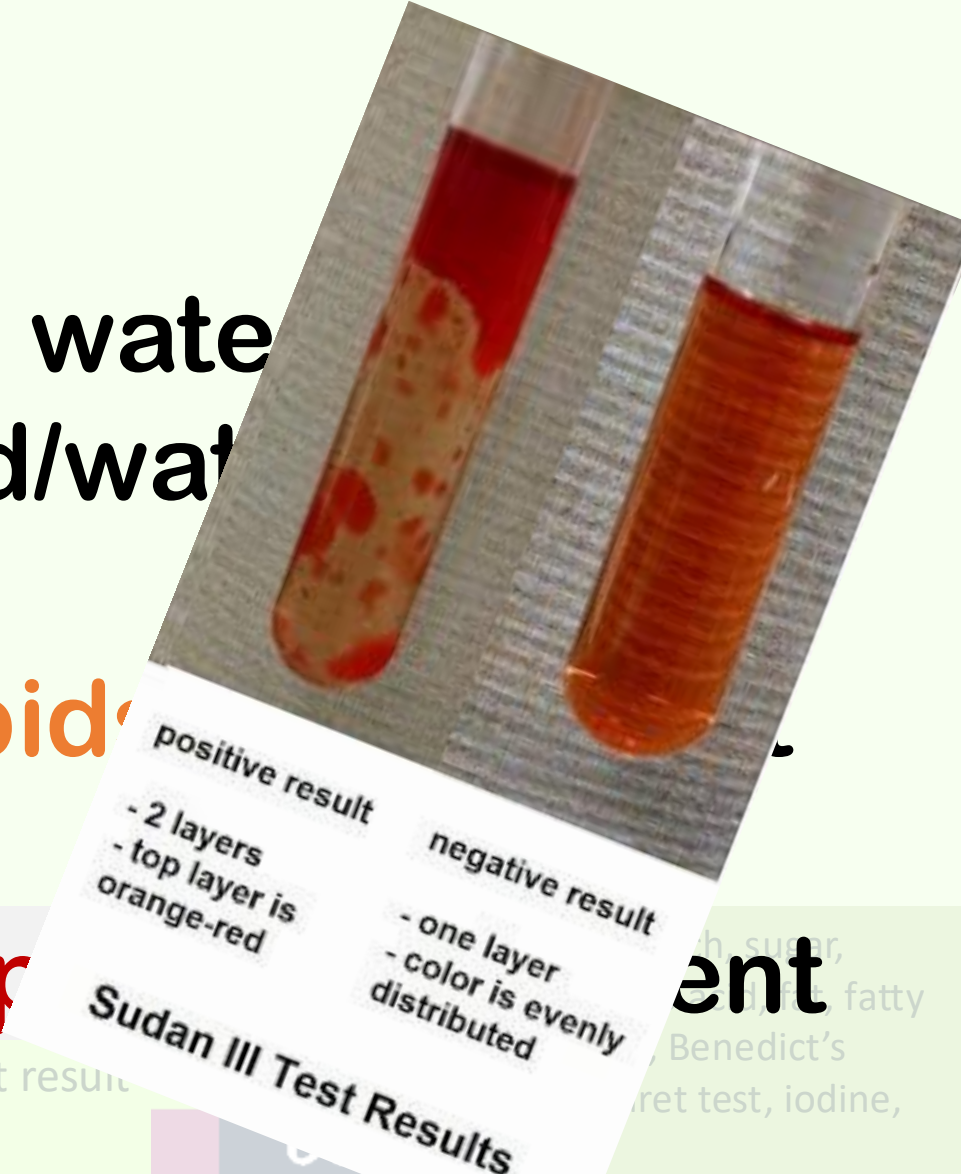
What's the method?

Lipids

Crush the food and mix it with water
drops of **Sudan III** to the food/water

If goes **orange evenly**: no lipids

If has **dark red layers**: yes, lipids



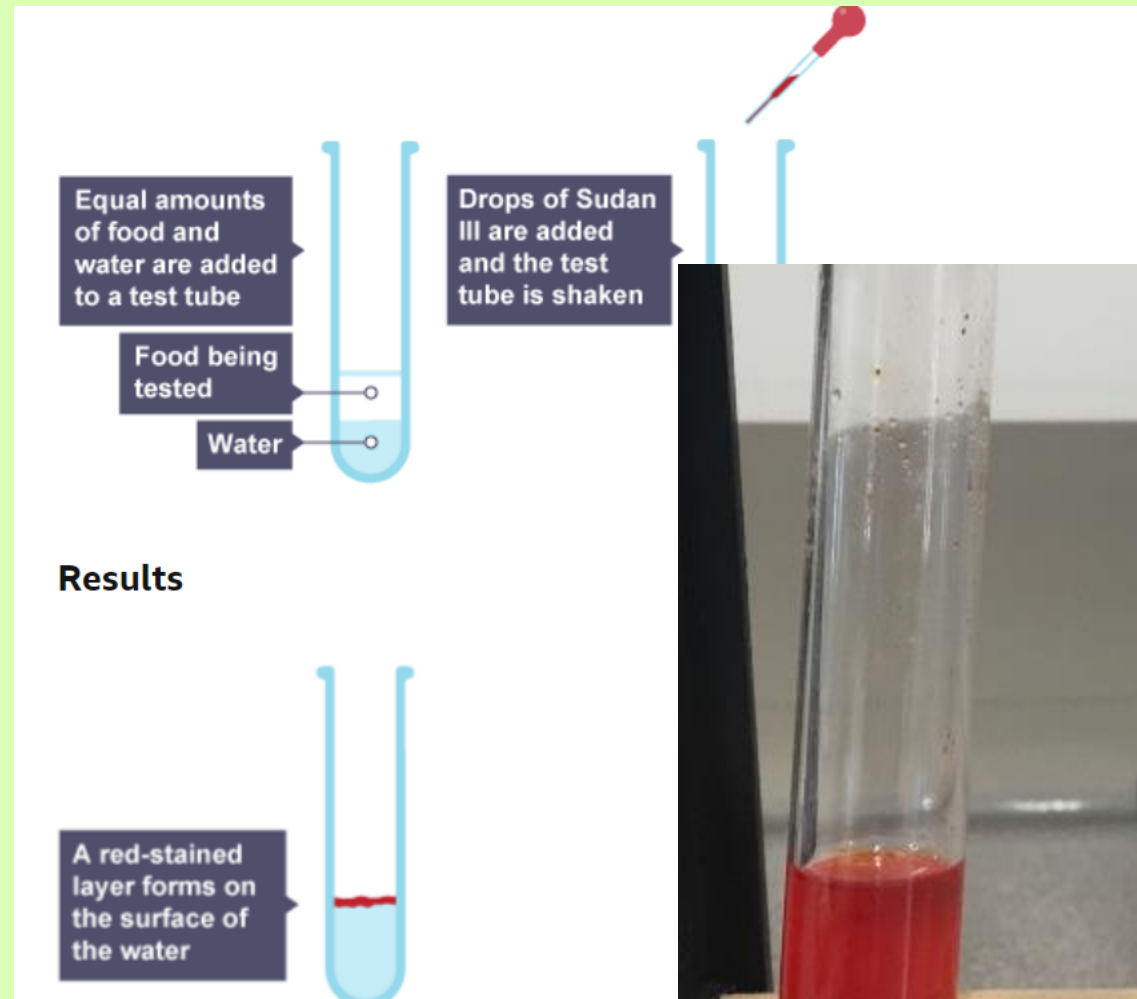
We are learning about the different types of food tests and how to perform them. The tests are for carbohydrates (sugar, starch), proteins, and lipids. The tests are performed on a sample of food and the results are compared to known results. The tests are performed in a test tube and the results are observed. The tests are performed in a test tube and the results are observed. The tests are performed in a test tube and the results are observed.

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Fat Test – Sudan III



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ar,
t, fatty
acid, glycerol, Benedict's
solution, Biuret test, iodine,
Sudan III.

What's the method?

Sugars

Crush the food and mix it with water. Add a few drops of **Benedict's** solution to the food/water solution. Heat the test tube in water at 75°C.

If it stays **blue**: no sugars

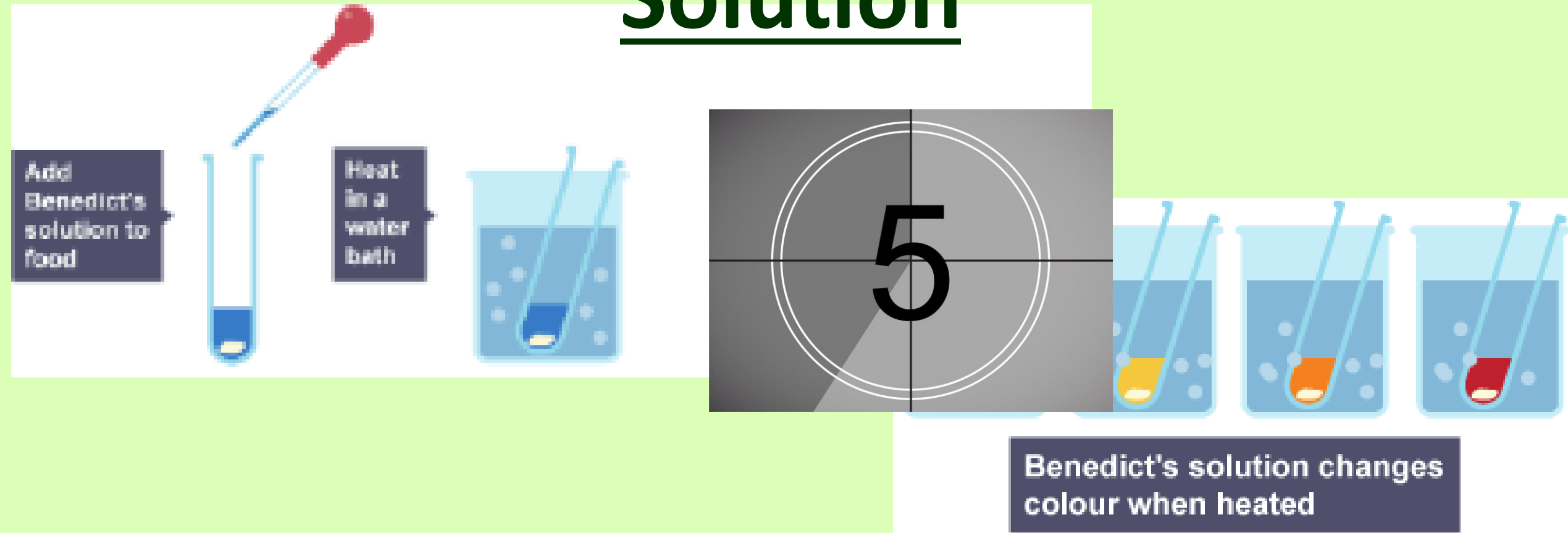
If it changes colour to **green, orange, or red**, sugars are present.



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Sugar Test – Benedict's Solution



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Food tests RPA

Test for starch

1. Add a few drops of iodine to the food.
2. If starch is present, it will turn blue/black.

Test for protein

1. Mix small amount of the food sample with water in a spotting tile/test tube
2. Add a few drops of sodium hydroxide solution
3. Add a few drops of Biuret (copper sulfate) solution.
4. If protein is present, it will turn lilac (purple).

Test for sugar

1. Mix small amount of the food sample with water in a testtube.
2. Add Benedict's reagent to the food. Place in a hot water bath.
3. If sugar is present it will change brown/red.

Test for fat

1. Mix small amount of the food sample with water in a test-tube.
2. Add 3 drops of Sudan III stain to each test tube. Shake gently to mix.
3. A red-stained oil layer will separate out and float on the water surface if fat is present.

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What to expect?

To summarise, each test and what a positive result looks like:

Protein

Biuret Solution
Turns Purple/Lilac



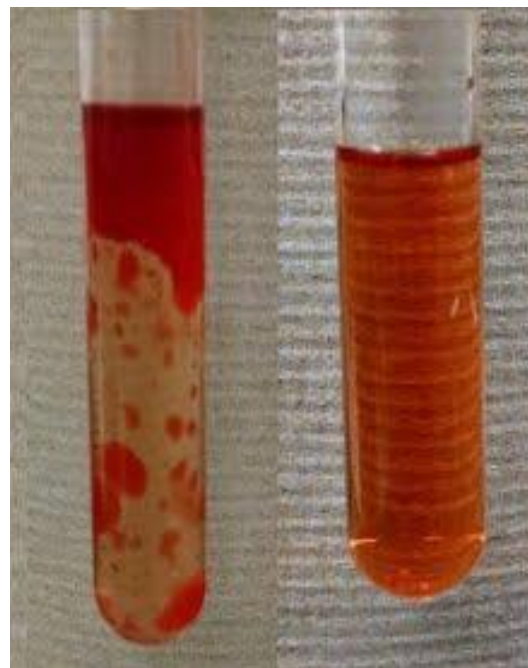
Starch

Iodine Solution
Turns Blue/Black



Lipids

Sudan III Solution
Dark red layer on top



Sugar

Benedicts Solution
Colour change





Example table:

Food	Starch Test (Iodine)	Sugar Test (Benedicts)	Protein Test (Biuret)	Fats (lipids) Test (Sudan III)
Egg white				

Etc.

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Task 3 & 4

- Fill out the tables
- Glue in your tasks to the feedback book

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Setting the scene...

You are a room full of Doctors and Dieticians.

Your task is to:

1. Test foods to work out what biomacromolecules are present in different foods .
2. Produce a meal plan for the different individuals on the next page: which foods should they eat, and which should they avoid?

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These are your patients.

	Patient 1: Dr McLaughlin	Patient 2: Dr Timney	Patient 3: Mr Baywood	
Condition	Heart Disease	Diabetes	N/A	
Lifestyle	Due to his tendency to eat rich food and not exercise, he has developed heart disease – fatty plaques have built up on the insides of his coronary arteries.	Dr Timney is so sweet, he has spent years eating sugary foods – the sweeter the better! This has however led to Type 2 diabetes: his body has stopped responding to insulin!	This man is a fitness fanatic. He gets up every morning and runs 30km before school, he goes home and runs another 30km. He is looking to complete an ultra marathon soon.	

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Diet plan:

1. Based on your results, it is now time to design one meal for each of the patients above.
2. You need to explain why you have chosen certain foods and which foods have you avoided/why?

Extension:

Look at the recommended dietary intake for people of different ages, can you give the quantity of foods they should be eating as well based on this?

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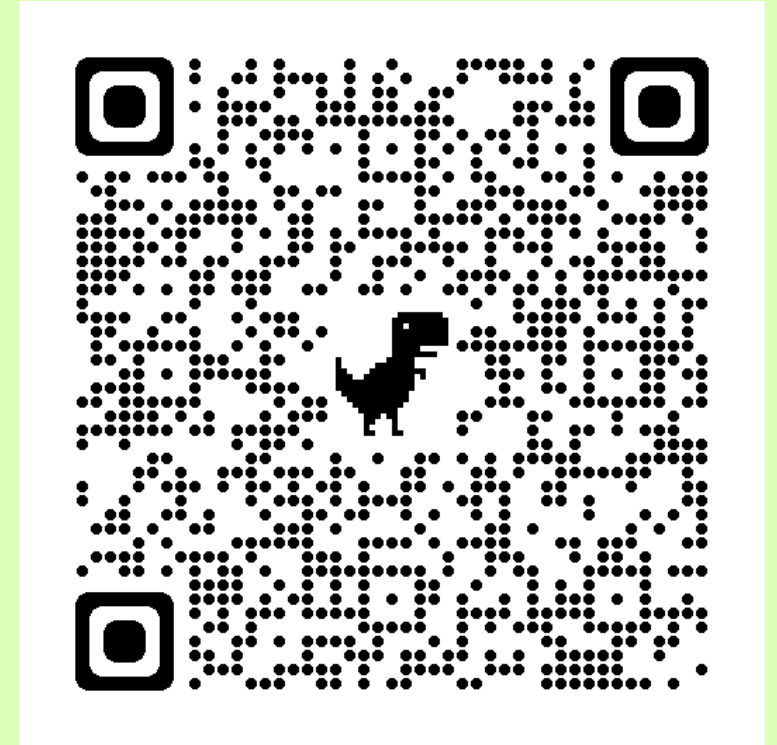
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Test yourself:

- Sign in to Quizlet
- 'Save and edit' flashcard set
- Complete definitions by filling in the blanks
- Practice with 'learn mode' and 'test mode'
- Quizlet live coming soon!
- <https://quizlet.com/gb/784781813/food-tests-personalised-flash-cards/>



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Exit quiz:



Mr Rumbol-Neville's GCSE
Food Tests Quiz



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