

Investigation 31 Testing foods

WHAT YOU NEED:

- a tile or pallet
- a dropper
- toothpicks
- gelatine solution (a protein)
- glucose solution (a sugar)
- cooking oil or butter (a fat)
- starch suspension (a carbohydrate)
- brown paper
- copper sulphate solution
- dilute sodium hydroxide solution
- iodine solution
- Testape
- food samples
- a spatula

WARNING:

Do not let the sodium hydroxide come in contact with your skin. If it does, wash it off immediately with plenty of water.

WHAT TO DO:

PART A: Testing known food types

Glucose test

Add 3 drops of the glucose solution to the first dimple in the pallet ⑥.

Place a piece of Testape in the glucose solution.

Record the colour change.

Starch test

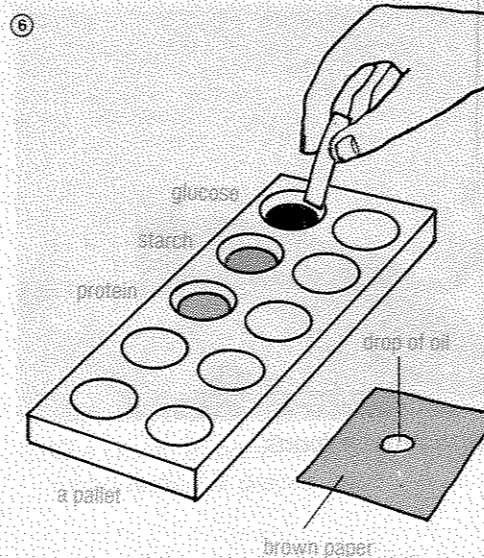
Add 3 drops of starch suspension to the second dimple.

Add a drop of iodine solution. Stir with a toothpick.

Record the colour change.

Protein test

Add 3 drops of gelatine solution to the third dimple.



Add 1 drop of copper sulphate solution, then 1 drop of sodium hydroxide solution. Stir with a toothpick.

Record the colour change.

Fat test

Place 1 drop of cooking oil on a piece of brown paper ⑥. Then hold it up to the light.

Record what you see.

REVIEW

Make sure that you know each of the four food tests before you start PART B.

If you are in doubt, discuss the changes that took place in the food tests with your teacher or classmates.

PART B: Testing common foods

For this part, test foods which you eat: for example, bread, butter, apple, jam, rice, meat, almonds.

Test *one* food at a time: test for protein, sugar, starch, and fat.

If the food is a solid, place about a *pea-sized* portion in a dimple. Then add a few drops of water and mash it up with a spatula. When testing for fats, rub the *solid* food on the brown paper.

Enter your results in a data table like the one shown on the next page.

ANALYSING THE RESULTS:

- 1 Without looking at your results, write down the tests for protein, sugar, starch and fat.
- 2 Group the foods that you tested in Part B into 4 groups—
 - (i) high protein content
 - (ii) high sugar content
 - (iii) high starch content and
 - (iv) high fat content.

DATA TABLE

FOOD	sugar	starch	protein	fat
1 rice				
2				
3				
4				
5				
6				

HOW YOUR BODY USES FOOD

In order to function properly, *every cell* in your body has to receive certain essential substances in the food you eat. Therefore the large pieces of fruit, bread, vegetables, meat, and cake that you eat, have to be broken down to minute particles which can be sent to the cells by blood. This process of food breakdown is called **digestion**.

The digestion of food into minute particles takes place in your **digestive system** or **gut**. As you can see in diagrams ⑦ and ⑧, the gut is a series of long tubes and sacs, with the mouth at one end and the anus at the other.

To see how your gut works, let's follow a piece of bread just after you place it in your mouth.

In your mouth, you chew the bread and tear it up into tiny pieces. A chemical in your **saliva** begins to break down the starch in the bread.

According to the particle model, starch is made up of many invisible particles. And each starch particle is made up of many smaller sugar particles. Imagine a starch particle as a bead necklace ⑨. Each bead represents a small sugar particle which, joined with other sugar particles makes a long starch particle. The chemical

