Testing a leaf for starch

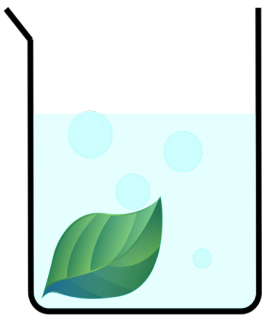
Method

1. Take a leaf from a plant that has been allowed to grow in direct sunlight.
2. Bring 100ml of water to the boil using a Bunsen or stove. Then, place the leaf into the beaker for 2-3 minutes. Turn off the Bunsen/ stove before proceeding!
3. Carefully place the beaker of hot water on a heatproof surface.
4. Fill a boiling tube ¾ full of ethanol. Gently* remove the leaf from the water using a stirring rod and put it into the boiling tube of ethanol.
5. Rest the boiling tube in the hot water for 30 seconds.
6. Remove the leaf from the boiling tube and rinse the ethanol off the leaf using the water in the beaker.
7. Spread the leaf on the white tile and pipette 2-4 drops of iodide.
8. Repeat the procedure for a leaf that has been in kept in the dark for 4-7 days.

*The leaf with be delicate at this stage and can damage easily so handle with care.

Equipment

- geranium or basil plant
- boiling tube
- ethanol
- 250ml beaker
- Bunsen burner
- stirring rod
- white tile
- iodine
- pipette



Explain why this experiment is done with a leaf kept in the sunlight and a leaf kept in the dark.

What is the purpose of placing the leaf in boiling water?

What is the purpose of placing the leaf in ethanol?

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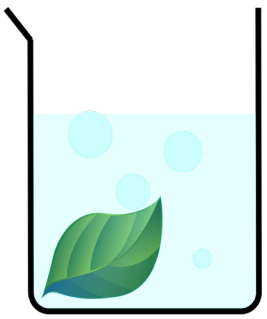

Explain why this experiment is done with a leaf kept in the sunlight and a leaf kept in the dark.

The leaf kept in sunlight will have been photosynthesising, so will produce glucose and then starch which we can detect using iodine which turns blue-black. The leaf kept in the dark will not have been photosynthesising so will not produce glucose or starch, so iodine will remain orange-brown.

What is the purpose of placing the leaf in boiling water?

The boiling water breaks down the cell walls so that we can get to the starch inside the cells.

What is the purpose of placing the leaf in ethanol?

Ethanol removes the chlorophyll from the leaf, which makes it easier for the iodine colour change to be seen.