



Quick facts

Green plants are the only organisms that can convert energy from the sun, into organic food.
This is why plants are known as producers.

Plants that do not contain chlorophyll must use other ways to obtain food. Here we can distinguish between saprophytic plants and parasitic plants.

Saprophytes

Saprophytes are plants that survive on dead organic tissue, e.g. sugarcane, Indian pipe and certain orchids.



Photos: Derrick Ditchburn, Victoria, Canada

Parasites

Parasitic plants live on living organic tissue, and obtain all its nutrients from the host. Later in the term we will study parasites in more detail. The host is harmed in the relationship. Examples of parasitic plants are dodder and mistletoe.



Practical investigation 1

Date:

Aim: To prove that green plants produce starch when exposed to sunlight.

Investigative question:



Quick facts

An investigative question always has a question mark. The answer may not be only "yes" or "no". Tip: Start question with "How?".



Hypothesis:

Apparatus:

- Two living plants
- A dark cupboard
- Sunlight
- Glass beaker
- Bunsen burner
- Test tube
- Gauze
- Glass bowl
- Tripod stand
- Alcohol/ethanol
- Iodine solution
- Water
- Petri dish

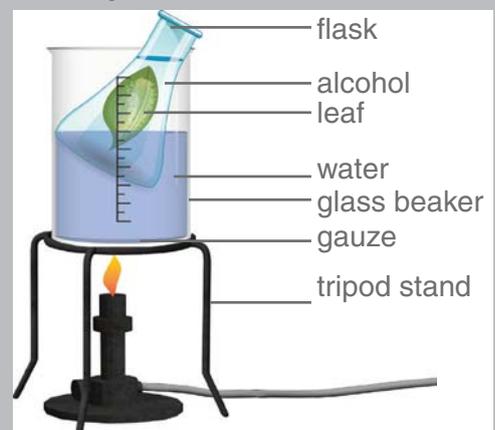
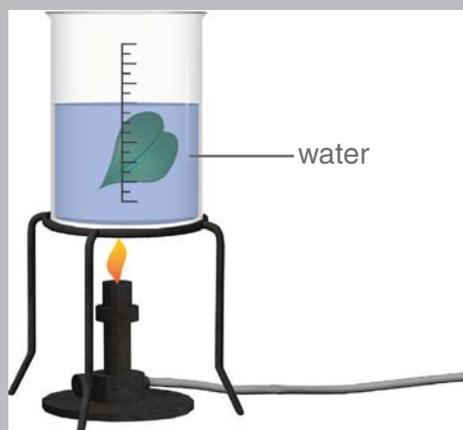


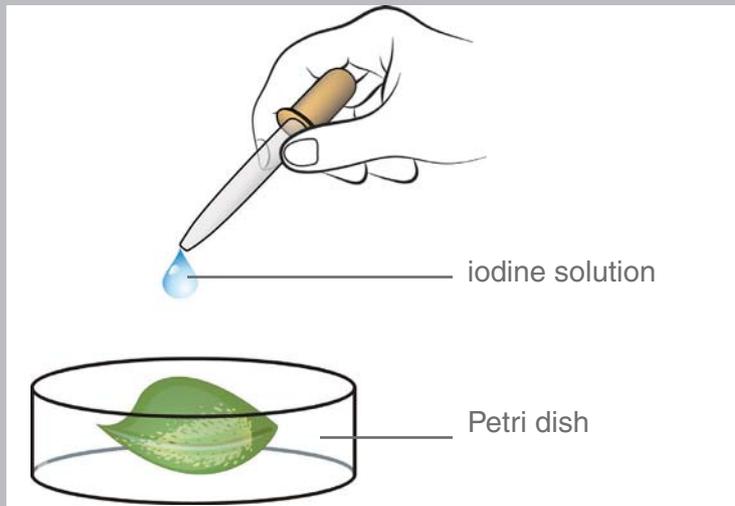
Quick facts
Hypothesis:
A statement that contains the variables.
It can be true or false.

Method:

1. Place the two living plants in a dark cupboard for 48 hours.
2. Take out one of the plants and expose it to sunlight for six to eight hours.
3. Pick a green leaf of the plant that has been exposed to sunlight.
4. Boil the leaf in a glass beaker filled with water.
5. Put the boiled leaf in a flask with alcohol and put the flask into a glass beaker filled with boiling water.
6. Boil the leaf in alcohol/ethanol.
7. Remove the leaf and boil it in water again.
8. Spread the leaf in a Petri dish and cover it with iodine solution.
9. Repeat steps 4 – 8 with one of the leaves you have picked from the plant that was left in the dark cupboard, and compare the results.

*For absolutely accurate results, it is better to repeat this practical investigation.





Questions:

1. Why do you have to boil the leaf in water first, before boiling it in alcohol/ethanol?

2. Why do you have to heat alcohol/ethanol over water and not over an open flame?

3. Why do you need to boil the leaf in alcohol/ethanol?

4. What do you observe after the leaf has been boiled in alcohol/ethanol?

5. Why do you have to boil the leaf in water the second time?

6. What variables must remain constant during this practical investigation?

7. What is the difference in the results between the two leaves that were tested?



Results:

Conclusions:



Exercise 1

Date:

1. Which pigment does plants need to be able to photosynthesise?

2. What do green plants produce during photosynthesis?

3. Give two reasons why photosynthesis is very important to humans and animals.

4. What do plants need to photosynthesise?

5. How do plants obtain the water required for photosynthesis?

6. How do plants obtain the carbon dioxide required for photosynthesis?

7. How do plants release oxygen into the atmosphere?
