

Experiment 8

I. Aim : To show that light is necessary for photosynthesis.

II. Materials Required:

- i. Black strip of paper
- ii. A healthy green plant
- iii. Alcohol
- iv. Water
- v. Beaker
- vi. Water bath
- vii. Tripod stand
- viii. Petri dish and
- ix. Iodine solution

III. Procedure:

- i. A healthy green plant is taken.
- ii. It is destarched by keeping it in darkness for about 24 hours so that the food made earlier is used up by the plant.
- iii. The next day the middle of one of the leaf is covered with a black strip of paper.
- iv. The plant is now exposed to sunlight for few hours.
- v. After a few hours the experimental leaf is removed. It is boiled in alcohol in a beaker over a water bath.
- vi. When the leaf becomes colourless, it is removed, and washed with water.
- vii. Now the leaf is dipped in iodine solution.

IV. Observation:

The portion of the leaf which was covered with the black strip of paper did not turn blue black when dipped in iodine whereas the rest of the leaf did.

V. Inference:

Photosynthesis does not occur in the absence of sunlight.

VI. Precautions:

1. The plant should be destarched properly
2. Water bath should be used for boiling because alcohol is flammable.

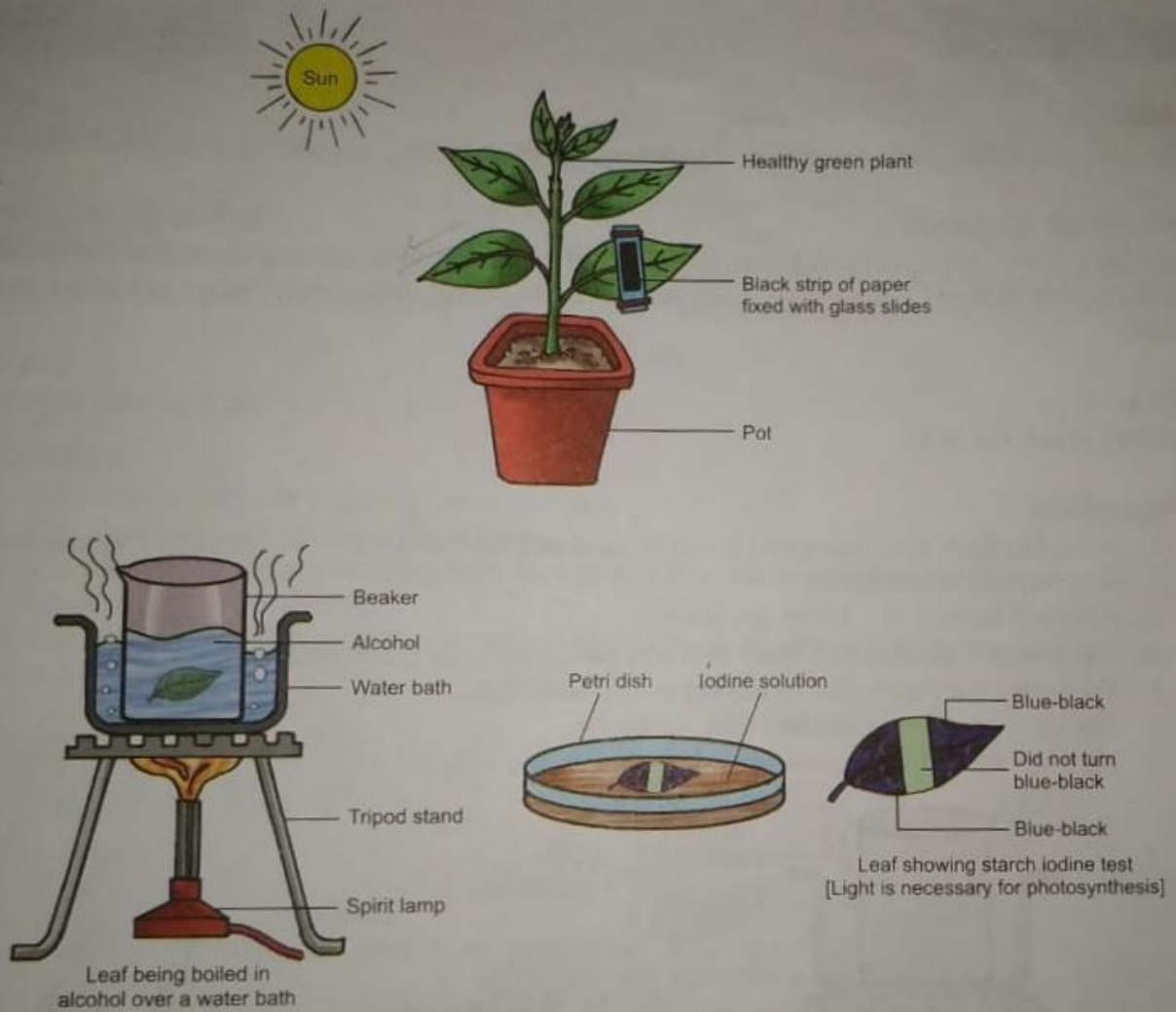


Fig. Experimental set-up to show that light is necessary for photosynthesis

Experiment 9

I. Aim : To show that carbon dioxide is necessary for photosynthesis.

II. Materials Required:

- i. Conical flask
- ii. Split cork
- iii. Potassium hydroxide
- iv. A healthy potted plant.
- v. Iodine solution.
- vi. Alcohol
- vii. Tripod stand
- viii. Water bath

III. Procedure:

- i. A healthy green plant with long leaves is taken.
- ii. The plant is kept in darkness for 24 hours
- iii. The next day a bottle containing potassium hydroxide is taken and its mouth is closed with a split cork.
- iv. One of the leaves of the plant is introduced through the split cork into the bottle. Only half the leaf is introduced.
- v. The plant and the bottle is exposed to sunlight for a few hours.
- vi. 'The leaf which was introduced in the bottle is removed.
- vii. It is boiled in alcohol in a beaker which is kept in a water bath.
- viii. The leaf becomes colourless.
- ix. The colourless leaf is washed in water and dipped in iodine.

VII. Observation:

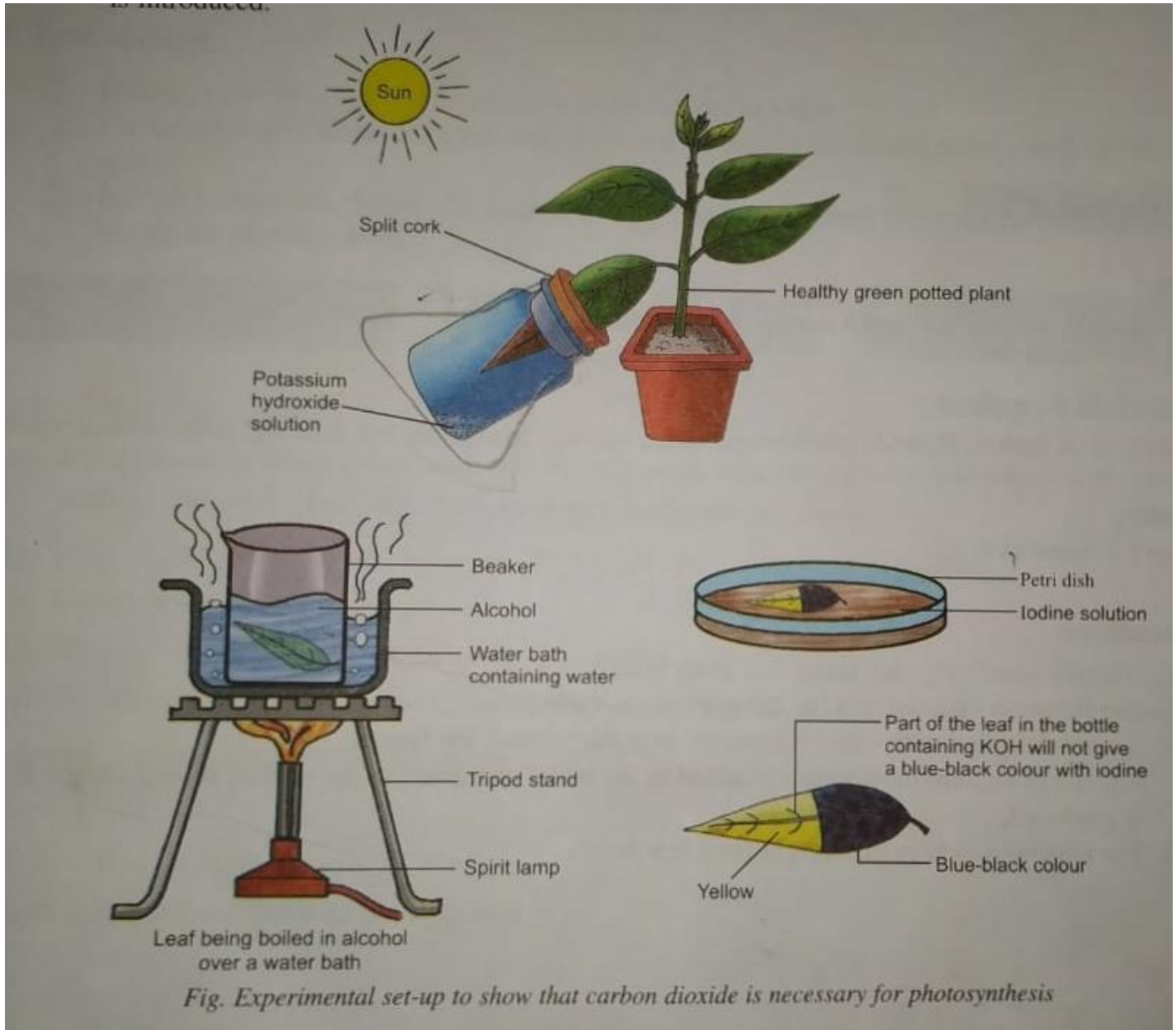
The portion of the leaf which is inside the flask does not give a blue black colour with iodine but the portion of the leaf which was outside gives a blue black colour with iodine..

VIII. Inference:

The Potassium hydroxide solution absorbed all the carbon dioxide inside the flask, due to which photosynthesis could not occur.

IX. Precautions:

- i. The plant should be properly destarched.
- ii. The split cork should fit tightly in the mouth of the flask so that the apparatus is airtight.



Experiment 10

I. Aim : To show that chlorophyll is necessary for photosynthesis.

II. Materials Required:

1. A potted plant with variegated leaf.
2. Pencil
3. Notepad
4. Iodine Solution
5. Alcohol
6. Petri dish
7. Beaker
8. Tripod stand
9. Burner and vessel Containing water.

III. Procedure:

- i. A healthy plant with variegated leaves is taken and kept in darkness for 24 hours to destarch it.
- ii. It is exposed to sunlight
- iii. After 4-5 hours a few leaves are plucked.
- iv. A drawing of the leaf is made in a notepad to mark the green and non green parts.
- v. The leaves are then boiled in alcohol over a bath tub.
- vi. The leaves become colour less after sometime.
- vii. They are washed with water and dipped in iodine solution.

IV. Observation:

The green parts of the leaves turn blue black in colour.

V. Inference:

Green parts of the leaves have chlorophyll and carry out photosynthesis.

VI. Precautions:

- i. The drawing of the leaf should be done carefully
- ii. The plant should be well watered.
- iii. The leaf should be boiled carefully sine alcohol is flammable.

