

Saturday, 15 September 2001

## Experiment to test Starch in Two Types of Leaf

Apparatus and Materials:

1. Forceps
2. Tongs
3. Scalpels
4. Bunsen burner
5. Gauze
6. Test tube rack
7. Tripod
8. Alcohol (ethanol)
9. Ceramic tile
10. Variegated leaf
11. Germanium leaf
12. Boiling tubes
13. Beaker
14. Iodine
15. Splint

Method

1. Firstly heat 150ml of water using a Bunsen burner. Rest the beaker of water on a gauze which is on the tripod. Wait for a few minutes until the water starts bubbling vigorously. This is the sign that the water is boiling. When this happens turn out the Bunsen burner. This is very important to do as if it is not the substances may react and possibly cause a fire.
2. Use forceps to dip both of the different leaves into the hot water for about 30 seconds. The reason for this is to break down all the cell walls. The hot water will kill the cytoplasm, denature the enzymes and will make the leaf more permeable to the iodine solution that must be used at a later stage.
3. Then we pushed the leaves into the bottom of two different test tubes and covered both with alcohol (ethanol). We placed both of the tubes in the hot water beaker, using the beaker as a water bath.
4. The alcohol will boil and dissolve out most of the chlorophyll. This will enable colour changes to be more visible.
5. We removed the alcohol and dipped the leaf in the hot water once again to soften it. It is important that you handle the leaf with care

at this stage, as the leaf will be as soft as wet tissue paper and is likely to break unless it is handled with care.

6. Next, spread the decolourised leaf flat and spread out on a ceramic tile. Drop a few drops of Iodine solution on the two leaves. The parts containing starch will turn blue and the parts without starch will stain brown or yellow with iodine.

### Conclusion

I can conclude that both the leaves had a colour change to blue. This indicates that both of the leaves contained starch. However only the green parts of the leaves turned blue whereas the yellow parts remained the same. This is because only the green parts had chlorophyll but the yellow parts did not contain chlorophyll. The Iodine solution used reacted with the chlorophyll to make a colour change from the original green to blue. This is the sign of present starch in the leaf.