Strawberry DNA Extraction

Introduction:
DNA is found in cells from Animals and Plants. DNA is a double stranded macromolecule composed of nucleotide bases pairing Adenine with Thymine and Guanine with Cytosine. DNA can be extracted from cells by a simple technique with household chemicals, enabling students to see strands of DNA with the naked eye. Today we will be extracting DNA from the fruit of a strawberry plant.

Materials / Equipment (per student group):
1. heavy duty zip-lock baggie
2. 1 strawberry (fresh or frozen and thawed)
3. cheesecloth
4. funnel
5. 100 ml beaker
6. test tube
7. wooden coffee stirrer
8. DNA Extraction Buffer (One liter: mix 100 ml of shampoo (without conditioner), 15 g NaCl, 900 ml water OR 50 ml liquid dishwashing detergent, 15 g NaCl and 950 ml water)
9. Ice-cold 95% ethanol or 95% isopropyl alcohol

Procedure:
1. Place one strawberry in a zip lock baggie and carefully press out all of the air and seal the bag.

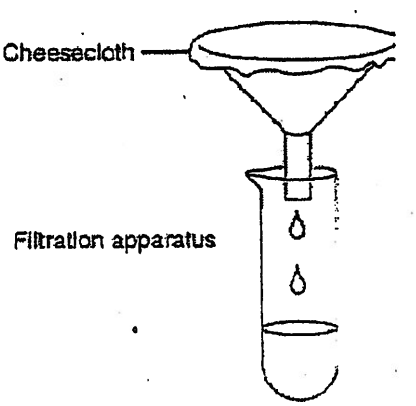
2. Smash the strawberry with your fist for 2 minutes.

3. Add 10 ml extraction buffer to the bag and carefully press out all of the air and seal the bag.

4. Mush again for one minute.

5. Filter through cheesecloth in a funnel into test tube. Support the test tube in a test tube rack.

6. Pour filtrate into test tube so that it is 1/8 full.



7. Discard the extra mashed strawberry.

8. Slowly pour the ice-cold alcohol into the tube until the tube is half full and forms a layer over the top of the strawberry extract.

9. At the interface, you will see the DNA precipitate out of solution and float to the top. You may spool the DNA on your wooden coffee stirrer.

10. Spool the DNA by dipping a wooden coffee stirrer into the tube right where the extract layer & alcohol are in contact with each other. With your tube at eye level, twirl the stirrer & watch as DNA strands collect.

11. SKETCH OF TEST TUBE WITH CONTENTS

Summary Questions:

1. What is the function of the soap in the extraction buffer?
2. What is the purpose of the salt in the extraction buffer?
3. Why was the alcohol used?
4. Draw a nucleotide and label its three parts.
5. Describe the appearance of your DNA sample.
6. What are the 4 nitrogen bases in DNA?
7. What are the base pairing rules for DNA?
8. Draw a diagram of DNA containing 4 sets of nucleotide bases labeling the hydrogen bonds between the bases.