Names-



Who Killed Mr. Palermo?

Testing for Organic Compounds

**Aim:** How can we use chemical indicators to determine who killed Mr. Palermo?

## POLICE REPORT: At approximately 10:00PM, Mr. Palermo entered the emergency room at University Hospital complaining of an upset stomach, dizziness, weakness, and blurred vision. A blood sample and brief medical history was taken by the attending physician. While in the emergency room, Mr. Palermo fell into a coma and died at 3:00AM. The blood tests indicated that Mr. Palermo had been poisoned. As part of the emergency room report, Mr. Palermo indicated that he began to feel ill shortly after dinner. It was his birthday and six of his coworkers had taken him to dinner at a local Chinese restaurant. He stated that they had ordered a large rice and meat dish with vegetables and all shared the same food. He also recalled that after dinner, he invited one coworker to his house for a birthday toast, and the coworker shared a bottle of sweet plum wine. All of the other coworkers had gone home alone. He became unconscious before he could name which coworker came to his home. The police were contacted and feared that the coworkers may have contracted food poisoning. Each was rushed to Stony Brook University Hospital where they had their stomachs pumped as a precautionary measure. However, none of the coworkers showed any signs of being poisoned. The police then concluded that the rice and meat dish with vegetables could not have been the source of poison, since all had shared the same meal. However, Mr. Palermo had sweet plum wine with only one of the dinner guests. When questioned, all of the coworkers indicated that they went directly home alone after finishing dinner at the restaurant.

## INVESTIGATION: We must determine which of the six coworkers drank sweet plum wine with Mr. Palermo the night of the murder. To do this, we must analyze the stomach contents of each of the suspects collected that night at the hospital and look for traces of glucose that would have been broken down from the wine. Your group will analyze only one suspect. At the end of the lab, we will compare results from all the lab groups to determine who the murderer was. The names of the six murder suspects are:

Suspect # 1: Mr. Ryon Suspect # 2: Ms. Drury

Suspect # 3: Mr. DiGiacomo Suspect # 4: Ms. Bloch

Suspect # 5: Ms. Butler Suspect # 6: Mr. Kellerman

## PRELAB QUESTIONS:

* 1. Which organic compounds will be present in every suspect’s stomach contents?
  2. Complete the chart with your answers from question # 1.

|  |  |
| --- | --- |
| **Food eaten by every suspect** | **Type of Organic Compound** |
| 1. |  |
| 2. |  |
| 3. |  |

* 1. Which substance will only be present in the murderer’s stomach contents?

## PROCEDURE:

1. Label one test tube for each indicator test: Starch Protein Glucose
2. Carefully pour your suspects stomach contents into the THREE separate test tubes. Fill the test tubes approximately 2 centimeters from the bottom.
3. Test for the presence of organic compounds as follows:
   * **STARCH-** use the IODINE SOLUTION. Add 2-3 drops of iodine into the test tube labeled starch.
     + If the color changes from brownish-orange to BLUE- BLACK, then starch is present.
   * **PROTEIN**- use the Biuret reagent. Add 15 drops of Biuret reagent into the test tube labeled protein.
     + If the color changes from blue to PINK-PURPLE, then protein is present.
   * **GLUCOSE**- using a GLUCOSE TEST STRIP, dip the PINK end of the STRIP into the test tube labeled glucose. If the strip turns a DARK PURPLE, then glucose is present.

## DATA:

1. Who is your suspect?

## Complete the data table chart below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Substance Tested** | **Indicator Used** | **Color results after the Test** | **Is the substance present?** |
| *TEST TUBE # 1* |  |  |  |  |
| *TEST TUBE # 2* |  |  |  |  |
| *TEST TUBE # 3* |  |  |  |  |

1. Is your suspect the murderer?
2. How could you tell if your suspect was or was not the murderer?
3. Who is the murderer?
4. What is the purpose of using a chemical indicator?
5. How could have your results changed if everyone ate chocolate birthday cake for dessert?