Lipid

Protein

Glucose

Starch

Murder and a Meal

The Case

A murder has occurred right here in Jacksonville, NC. As top-notch biology students at Southwest High School you have been asked to assist in the investigation of this most unfortunate incident. Central to identifying the individual who committed this crime is establishing where the victim, beloved SWHS Principal Mr. Foster, was the day of the crime so that detectives can question the individuals with whom the victim came into contact. An autopsy was performed on the victim has revealed that the victim ate just prior to the time of death. Upon questioning the victim’s family, friends and colleagues, detectives working the case have learned that the victim enjoyed eating at the following places.

 ***Tony’s Pizza @ the Jacksonville Mall***

The victim would never eat thin crust pizza from anywhere else! The victim would typically order a pizza with sausage, pepperoni, and bacon.

***What macromolecules would you expect to find in the stomach contents of the victim if the victims final “pie” was eaten here?***

***Buffalo Wild Wings***

The victim would hang out here to watch sporting events while feasting on

Blazin’ naked wings and celery.

***What macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten here?***

***Pie Sano’s Restaruante***

The victim loved to go here for a night of bread, olive oil, and spaghetti.

***What macromolecules would you expect to find in the stomach contents of the victim if the victims final meal was eaten here?***

The forensic pathologist has removed the contents of the victim’s stomach for you to analyze in order to determine where Mr. Foster had his last meal.

Procedure

Before analyzing the stomach contents of the deceased, you must obtain the test results from your teacher. Using this information given out you will analyze the results to determine the last place Mr. Foster, the victim, ate before his murder. Upon completing your investigation and analyze you will need to complete a one page report for the Jacksonville Police Department explaining your detailed findings from the report.

**Table 1. Positive and Negative Results for the Presence of Organic Macromolecules**

|  |  |  |  |
| --- | --- | --- | --- |
| **Macromolecule** | **Chemical Test** | **Positive Test Result** | **Negative Test Result** |
| Lipids | Brown Paper Bag Test |  |  |
| Proteins | Biuret’s Test |  |  |
| Carbohydrates— Glucose | Benedict’s Solution Testt |  |  |
| Carbohydrates— Starch | Iodine Test |  |  |

Lab Analysis

1) Report your findings in a one page report. Open the discussion with a statement regarding which restaurant the victim visited for his last meal**.** Provide a logical explanation, using data from the tests on the stomach contents, that explains how you reached that conclusion**.** You will also need to explain why the other two restaurants were eliminated as possibilities for being the restaurant visited. The report should explain the results of the investigation in regard to the scientific concepts that are being applied in the investigation. In this case, the scientific concept being applied are *macromolecules* and the specific chemical tests used to determine their presence or absence in Mr. Foster’s stomach.

 Mr. Foster enjoyed his last meat at Buffalo Wild Wings. Lipids such as, oils and meats are used to store energy. Proteins are used to build muscles with the help of carbohydrates, which provide energy. The victim’s last meal did not contain glucose, however.

 Tony’s Pizza provides lipids, proteins, glucose, and starches to its patrons. Meats such as sausage, pepperoni, and bacon are made of lipids and proteins. The crust of the pizza is a starch carbohydrate and the sauce contains glucose. Marinara sauces used sugar to enhance the taste.

 Pie Sano’s Restaruante serves starch products such as, bread and pasta. The sauce provided by the restaurant is a tomato, or marinara sauce. Tomatoes are naturally unsweet, providing explanation as to why the sauce contains glucose.

 However, Buffalo Wild Wings is the only establishment Mr. Foster would not order a consumable containing glucose. The victim would have ordered Blazin’ Naked Wings and celery. The wings are meat. Chicken is a type of protein and lipid. Though plants use glucose, celery is not sweet and does not contain the substance.

 Reason stands that Mr. Foster would not have had his last meal anywhere else.