Principles of Biomedical Science

Virtual Learning

9-12 / PLTW® PBS

May 19, 2020

Principles of Biomedical Science

9-12/PLTW® PBS
Lesson: May 19, 2020

Objective/Learning Target:

Students will be able to: identify and research various biochemical tests that are used to help determine specific types of bacteria. *(Reference: PLTW® 5.1.5 Bacterial Identification)*

Let’s Get Started (Bell Ringer):

Watch Video:

Biochemical Tests-Part 1

Microbiology Lab Practical Information Part 2

Lesson/Activity:

Start by getting out your notebook, lab journal, or a blank piece of paper and read over the article from Microbiology Info.com Amino Acid Decarboxylase Test - Procedure, Uses and Interpretation. Once you have done this answer the following questions about the test.

1. What are the three decarboxylase enzymes that are routinely tested for?
2. The increased pH of the medium in this test is detected by color change of the pH indicators bromocresol purple and cresol red present which results in a color change to what?
3. How many methods are used in this test? What are their names?
4. What are the expected results when doing the test?

Answers:

1. Arginine decarboxylase, ornithine decarboxylase, and lysine decarboxylase.
2. From Orange to Purple
3. Two methods A. Glucose-non fermenting Organisms B. Glucose-Fermenting Organisms
4. **Positive Results:** Alkaline (purple) color change compared with the control tube. **Negative Results:** No color change or acid (yellow) color in test and control tube. Growth in the control tube.

Lesson/Activity continued:

Start by getting out your notebook, lab journal, or a blank piece of paper and read over the article from Microbiology Info.com Citrate Utilization Test- Principle, Media, Procedure and Result. Once you have done this answer the following questions about the test.

1. In the Principle of Citrate Utilization Test, the shift in pH turns bromothymol blue indicator in the medium from green to what.
2. What goes into the Simmon's Citrate Agar for this test?
3. What is the procedure of citrate utilization test?

Answers:

1. Blue
2. Sodium Chloride, Sodium Citrate (dehydrate), Ammonium Dihydrogen Phosphate, Dipotassium Phosphate, Magnesium Sulfate (heptahydrate), Bromothymol Blue, Agar.
3. a. Streak the slant back and forth with a light inoculum picked from the center of a well-isolated colony.
   b. Incubated aerobically at 35 to 37 C for up to 4-7 days.
   C. Observe a color change from green to blue along the slant.

Practice:

Time for some good old fashion research… Get out your notebook, lab journal, or blank piece of paper. From the list below pick out a Biomedical Test and do some research. Find out how the test works, explain what goes on in running the test, and what you hope to find.

VP Test	Nitrate Reduction	Lysine Decarboxylase Test	Arabinose Test	Gelatin Hydrolysis	Glucose Fermentation Test	Lactose Fermentation Test
Indole Test	Urease Test	Oxidase Test	H2S Test	Motility Test	Pigmentation	Catalase Test

Answers:

Answers will vary

Additional Practice:

Click on the links below to get additional practice and check your understanding!

Test Prep Review Biochemistry Practice Questions

Differential (biochemical) Test Questions

Additional Resources to Explore:

Flesh-Eating Bacteria Survivor Aimee Copeland Speaks Out

Answers:

Test provide answers

After surviving Bacteria infection video shows state of the art prosthetics