

INVESTIGATING FOOD-BORNE ILLNESSES

OBJECTIVES/RATIONALE

Microorganisms are used in the food industry; however, food contaminated with certain organisms may cause food poisoning. The student will research and describe the infectious process as it relates to food microbiology.

TEKS 121.14 (c) 3B, 5A

TAKS ELA 1, 4
Science 1, 4

National Science Education Standards A9-12; C9-12; F9-12

National Health Care Skills Standards .01, .09

National Curriculum Standards for School Mathematics S1; S3

KEY POINTS

- I. Microorganisms are used to process the following foods:
 - a. cheese
 - b. yogurt
 - c. pickles
 - d. wine
- II. The methods of food preservation, handling, and storage are critical to the prevention of food poisoning.
- III. The causative agents of food-borne illnesses include bacteria and their toxins.
- IV. Symptoms associated with the different types of food-borne illnesses must be recognized for proper diagnosis and treatment.

ACTIVITIES

- I. Create a chart illustrating the different types of food borne illness to include:
 - A. Causative agent
 - B. Types of food commonly contaminated
 - C. Incubation period
 - D. Symptoms
 - E. TreatmentsDescribe factors involved, such as the type of food, food storage, etc. that may precipitate each type of food-borne illness and the diagnostic measures employed to determine the etiological agent.
- II. Complete the **Food-Borne Illnesses Worksheet**.
- III. Invite a representative from the local health department to conduct a “food-handlers’ workshop on the proper handling, storage, preparation, preservation, and disposal of food products.

MATERIALS/RESOURCES

Posters

Markers

“Applied Food Microbiology” , Star Publishing Co., 1997 G. Roland Vela, chapters 6 - 9.

Worksheets

CDC- Food handling video

ASSESSMENT

Completion of **Food-Borne Illnesses Worksheet**

ACCOMMODATIONS

For reinforcement, the student will research and report how various foods are preserved, prepared, and stored in third world countries. Include influence of culture.

For enrichment, the student will develop a skit emphasizing proper techniques for preservation, preparation, and storage of food.

REFLECTIONS

FOODBORNE DISEASES

1. List 7 commonly used food preservatives and list examples of foods they are used to preserve:
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.

2. Some chemicals used as food preservatives that may be hazardous to our health include:

3. What are some factors that make some foods more sensitive to microbial growth?

4. The most common food-poisoning is caused by the organism _____.

5. List 7 microorganisms that can cause food poisoning:

6. Staphylococcus produces an _____ that is relatively _____.

7. An organism normally found in human intestines that can cause food poisoning is _____ but its growth is usually limited by intestinal _____.

8. The most severe type of food poisoning is that caused by _____.

9. A food source of infant botulism is _____.

10. List 5 common symptoms of food poisoning:

11. How is food poisoning different from food infection?

12. Salmonellosis is caused by the organism _____.
13. Food poisoning by some organisms is more common in the _____ months.
14. E. coli food poisoning is caused by the strain _____. Two serious consequences of this is _____ and _____.
15. List 4 methods of food preservation:
16. Travelers to developing countries have a high incidence of enteric infections due to contaminated _____. The three microorganisms which are the causative agents are _____, _____, & _____.
17. Campylobacter can grow in a reduced oxygen tension which makes it a _____.
18. The two species of Campylobacter implicated in food poisoning is _____ & _____.
19. Listeriosis is caused by the microorganism _____. It is unique in that it can grow at _____ temperatures which is _____ Celsius or _____ degrees Fahrenheit.
20. The mortality rate for botulism is _____% and for listeriosis it is _____%.
21. The microorganism that has been implicated as a source of peptic ulcer disease is _____ which can be treated with the use of _____.
22. Hepatitis A virus is transmitted by _____ while Hepatitis B is primarily transmitted by _____, _____, or _____.
23. Hepatitis C is spread by _____ & _____.
24. Serious complications from hepatitis include _____ & _____.
25. Two other strains of the hepatitis virus are _____ & _____.

26. Several foods that can be sources of many types of food-poisoning include meat, and dairy products, and produce. However, certain microorganisms are almost associated with certain foods. Match the following foods with the most likely pathogen:

- | | |
|------------------------------|--------------------------|
| 1. canned vegetables & sushi | a. E. coli |
| 2. creamy salad dressings | b. Salmonella |
| 3. ground beef | c. Campylobacter |
| 4. processed meat | d. Listeria |
| 5. uncooked eggs/turkey | e. Staphylococcus |
| 6. poultry/shellfish | f. Clostridium botulinum |