

Name: _____

Meat Safety and Preservation Handout

Lesson 1: Preparation of Jerkies

Lesson 1 Part 1. Cultural Connection and Background

Define the following vocabulary words:

Vocabulary Word	Definition
Preservation	
Food Safety	

1. List common causes of food deterioration:
2. List common methods your family or food manufacturers use to preserve food:

Lesson 1 Part 2. Preparation of Jerkies

Procedure for jerky product from ground meat WITHOUT nitrite (cure) addition:

1. Weigh, into the bowl provided, ½ pound (226.8 g) of ground beef. Weigh 7.7 g of the spice mix into the bowl provided. (reminder: do NOT add the nitrite cure addition).
2. Spread the dry mix over the ground meat in the bowl then mix using a spatula or hands (make sure you are wearing lab gloves) until the dry mix is thoroughly mixed into meat.
3. To make meat strips, place the meat mixture into the jerky gun and squeeze the trigger to make thin strips of meat. The meat strips should be placed directly onto the dehydrator tray.
4. Using tap and a Sharpie, label the tape and attach the edge of the tray to identify the treatment.
5. Place the tray containing product into the dehydrator. To prevent a significant drop in temperature, place the tray in the dehydrator as quickly as possible. Ask instructor for help.
6. Clean up lab area, bowls, and utensils.

Procedure for jerky product from ground meat WITH nitrite (cure) addition:

1. Weigh, into the bowl provided, ½ pound (226.8 g) of the ground beef. Weigh 7.7 g of the spice mix and 3.85 g of the cure (or whole packet) into the bowl provided.
2. Spread the dry mix and cure over the ground meat in the bowl then mix using a spatula or hands (make sure you are wearing lab gloves) until the dry mix is thoroughly mixed into meat.
3. To make meat strips, place the meat mixture into the jerky gun and squeeze the trigger to make thin strips of meat. The meat strips should be placed directly onto the dehydrator tray.
4. Using tape and a Sharpie, label the tape and attach the edge of the tray to identify the treatment.
5. Place the tray containing product into the dehydrator. To prevent a significant drop in temperature, place the tray in the dehydrator as quickly as possible. Ask instructor for help.
6. Clean up lab area, bowls, and utensils.

Follow-Up Questions:

1. Predict what jerky (jerky with no cure or jerky with cure) will preserve better and why?

Lesson 2. Evaluate the impact of salt on preservation.

Part 1. Data Collection of Different Jerky Samples

Directions: Use the four jerky samples on your lab station to collect data in the data table below. Use the procedure to help you correctly collect the data for each data table.

Procedure for collecting data of two jerky samples:

1. Look at Jerky A sample 1 and Jerky B sample 1. Make observations and write them down in data table 1.
2. Look at Jerky A sample 2 and Jerky B sample 2. In data table 2, write down your observations, number of different types of colonies, and number of colonies.
3. Analyze and interpret the data with the following up questions.

Data Table 1. Observations of Jerky Samples 1.

Sample	Observations of Jerky (color, texture, microorganism growth, etc.)
Jerky A Sample 1	
Jerky B Sample 2	

Data Table 2. Observations of Jerky Samples 2.

Sample	Observations of Jerky (color of colonies, size of colonies, etc.)	Number of Different Types of Colonies	Number of Colonies
Jerky A Sample 1			
Jerky B Sample 2			

Follow-Up Question:

1. Which jerky sample (A or B) had nitrites added to it and explain your answer.

Part 2. Analyzing and Interpreting Data

Read the article from BCA Chemistry subtitle “Curing” and answer the follow-up questions with your partners: <https://bcachemistry.wordpress.com/2014/05/27/the-chemistry-behind-food-preservation/>

Article Follow-Up Questions:

1. What is the chemical used in “salting” preservation of foods?
2. How does that chemical preserve the food? Use words like osmosis and oxidation process in your answer.

Lab Follow-Up Questions:

1. After analyzing your data tables above, write out a CER Explanation (Claim, Evidence, Reasoning). Use data evidence to support your reasoning. You can use the article from The National Center of Home Food Preservation subtitle 2.1 Salting/Curing to help with your reasoning:
https://nchfp.uga.edu/publications/nchfp/lit_rev/cure_smoke_cure.html

Claim: Jerky A contains nitrites to help limit microbial growth by plasmolysis.

Evidence:

Reasoning: