

Food Science Experiment

Topic Title: Maillard Reaction and the Color of Meat

Length of project: 1 hour

Research. What does society know. Look it up!

Maillard reaction is a chemical reaction between amino acids and sugars that gives browned meat its distinctive flavor and smell. There are different colors of meat; red meat, white meat and dark meat. This color is due to the species of animal, amount of myoglobin present, age, muscle fiber types or how it has been processed.

Words to search: meat color and Maillard reaction edu

Situation. Try something different or document a problem that has now arrived.

Cooking foods by different methods can cause meat to look, smell and taste different.

Hypotheses. Guess what may happen.

Using _____ (cooking method) for pork chops can cause the meat to turn _____ color.

Using _____ (cooking method) for pork chops can cause the meat to smell _____.

Using _____ (cooking method) for pork chops can cause the meat to have a _____ texture.

Equipment. What you need.

Gather

- 3 Pork Chops or other meat
- Pot of Water
- BBQ Grill
- Fry Pan
- 3 Paper Plates

Methods. Set up a procedure/protocol to test your hypothesis.

- Gather food and equipment
- Label each plate with the treatment to be used.
 - Boiled
 - Pan fried
 - Grilled
- Boil 1 pork chop in water until cooked
- Pan fry 1 pork chop to 160 degrees

- Grill 1 pork chop to 160 degrees
- Place each pork chop on the labeled plate.
- Record results of smell, color and taste: flavor, juiciness and texture

Experiment. Conduct the experiment.

Conduct the experiment to test how each cooking treatment affects the texture, flavor, color and smell of the food.

Change one factor and re-do the experiment

Option 1: Use other meat sources Beef Steak, Lamb Chop, Chicken

Option 2: Use another cooking method you have

Redo the experiment.

Results/Observations. What happened?

Record what happened to each piece of meat. What did each of the treatments do? Was the color different? Do they smell different? Do they taste different? Is the texture different?

Conclusion. Apply what you found out.

How could you use this knowledge?

Why would you change the cooking method?