



Standard Laboratory Operating Procedure #378 Cooking Right

Laboratory: Biotechnology Academy **Location:** Ag Biotech
SOP prepared by: Bev Wolfe & Rachel Sanders **Last Revision:** 9 August 2013

General: This laboratory is to determine the effect of temperature on bacterial growth.

Safety: PPE—lab coat, safety glasses

Materials:

Hamburger	Five (5) TSA plates
Sterile cotton swabs	Alcohol wipes
Meat thermometers	Non-stick cooking spray

Procedure:

1. Label the bottom of your TSA plates as follows: Control, Raw, 120⁰ F, 140⁰ F, and 160⁰ F.
2. Remove a small section of the raw hamburger and swab the inside surface with a sterile cotton swab. Using the cotton swab “inoculate” the TSA plate labeled “Raw” by rolling the swab over the surface of the agar. Discard the swab and the raw hamburger.
3. Using a top loading balance weigh out 100 g of hamburger. Make a patty 1.3 cm thick.
4. Repeat step 2 two more times (you want 3 patties that are 100 g and 1.3 cm thick).
5. Spray the skillet with non-stick spray to keep burgers from sticking. Turn the burner on a medium high heat.
6. Cook one hamburger to 120⁰ F. Don't push down with the spatula—it squeezes the juices out.
7. Lift the patty out of the pan with a spatula and place it on a clean paper plate to take the temperature.
8. Take the temperature by inserting the thermometer through the side into the center of the burger. Temperatures should be taken within 15 seconds to get an accurate reading, because the hamburger continues to cook even though it's removed from the heat source.
9. If the temperature hasn't reached 120⁰ F, return the burger to the pan.
10. If the burger has reached 120⁰ F, break the hamburger open and swab the inside surface of the burger with a sterile cotton swab. Use the swab to inoculate the 120⁰F TSA plate.
11. Repeat for the 140⁰ F and 160⁰ F hamburgers.
12. Incubate all plates (the Control plate has nothing on it) upside down in a 37⁰ C incubator 24-48 hours.
13. After incubation count the number of bacterial colonies on each plate.