

## Project Plan

**Purpose:** How does the method that I use to cook a hamburger determine how much fat will remain in the hamburger after cooking?

**Hypothesis:** I think that certain methods of cooking hamburger will result in more fat being left in the hamburger. The following methods are listed in order of my prediction of the percentage of fat they will contain after cooking (from most to least): frying, broiling, microwaving, boiling, and grilling.

### **Equipment needed:**

<u>Equipment</u>	<u>Method of Obtainment</u>
20 lbs. Hamburger - NOT LEAN	A&P grocery (meat department)
Amana microwave (1000W)	Personal
Hot Point 2000 electric oven / stove	Personal
“Jenair” refrigerator	Personal
Sunbeam “Grillmaster” propane grill	Personal
Revereware 20 in. pan	Personal
Revereware 15 in. pot	Personal
2.5 in circular Tupperware container	Personal
Amana broiling pan	Personal
Reynolds wrap aluminum foil	A&P
2 quart plastic zip-lock freezer baggies	Personal
Plastic microwavable plate	Personal
Fork	Personal
Knife	Personal
Spatula	Personal
Bahause Kitchen scale	borrowed from neighbor (Mr. Coleman)
Fat / Protein tester Kit	Mr. Smith
Glass alcohol thermometer	Mr. Smith
Kitchen thermometer	Mr. Smith
Brawny Paper towels	A&P

### **Planned Procedure:**

I will purchase 20 pounds of ground hamburger (not lean) from the A&P grocery in Juneau, Alaska. I will divide the meat up into 1/4 lb. hamburgers using a kitchen scale. There will be the same number of patties used for each cooking method. I will shape the hamburgers into similar circular shaped patties using a circular Tupperware container. The patties will be frozen in my freezer for storage and then thawed in the refrigerator to 38° F 12 hours before use. I will use a glass thermometer to check the temperature of the refrigerator. I will take the meat out of the refrigerator 5 minutes before I cook it.

For each cooking method I will cook each patty, one at a time. I will cook each patty until the center is no longer pink. I will check for this color by cooking one extra hamburger and using it as a color guide. I will also record the temperature of the center of each patty at this time to assure uniform “doneness.”

To microwave, I will place the patty in the center of the microwavable dish on the rotating platform in the microwave. I will put the microwave on high, and cook it at 1 minute intervals until it is done.

To grill, I will place the hamburger in the center of the grill rack and set the grill on high. I will flip the hamburger at 1 minute intervals, and NOT press on the hamburger. I will remove the hamburger when done.

To boil, I will place the hamburger in a pot of 2 cups of boiling water. I will flip the hamburger at 1 minute intervals. I will remove the hamburger when done.

To broil, I will set my oven to broil and preheat the oven for 5 minutes. I will place the hamburger in the middle of the broiling tray and flip the hamburger at 1 minute intervals. I will remove the hamburger when done.

I will collect all fat that is recoverable from each hamburger and save on pre-weighed paper towels in the refrigerator at 38<sup>o</sup> F. I will weigh each patty after cooking. I will store all cooked hamburgers in ziplock plastic baggies in the refrigerator at 38<sup>o</sup> F. I will use the Fat / Protein tester to determine relative amounts of fat in each hamburger before and after cooking using the protocol provided with the fat tester (a photocopy of which is attached to this plan).

I plan on cooking at least 20 hamburgers for each cooking method. I will average the percentage of fat lost from all of the hamburger cooked with a given method and then graph those averages as a bar graph to compare the average fat loss for each method. I will use a t-test to test the significance of my averages.