Energy in Foods

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## Introduction

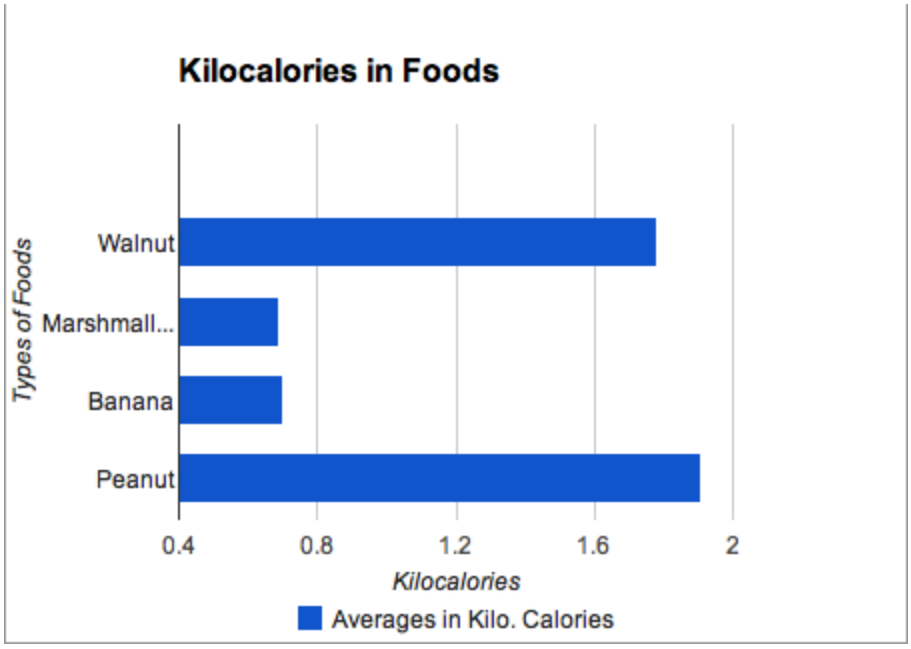
My experiment was designed to test the different amounts of energy stored in different types of foods. I predicted the marshmallow and peanut would produce the most energy. My rationale was based on that fact that marshmallows have a high sugar content, and sugar creates energy. Just like how a kid eats too much candy (or sugar) and has too much energy. I also thought peanuts would produce a lot of energy due to their high protein content. I believed, if a food has a high sugar content, or protein content, then it will provide more energy for the consumer.

## Method

(See lab instructions)

## Results

| Groups | Walnut | Marshmallow | Banana | Peanut |
|---|---|---|---|---|
| **Kodie/Val** | **1.54 KC/g** | **0.074 KC/g** | **0.761 KC/g** | **0.867 KC/g** |
| **Amber/Sarah** | **1.8 KC/g** | **1.3 KC/g** | **0.57 KC/g** | **2.3 KC/g** |
| **Liz/Brittany** | **1.76 KC/g** | **0.44 KC/g** | **0.892 KC/g** | **2.42 KC/g** |
| **Ann/Amber** | **1.76 KC/g** | **0.93 KC/g** | **0.57 KC/g** | **1.90 KC/g** |
| **Katelyn/Shaley** | **2.02 KC/g** | **0.71 KC/g** | **0.73 KC/g** | **2.04 KC/g** |




**Discussion**

My results were proven wrong from my experiment. I predicted that the marshmallows and peanuts would have the most energy, but actually walnuts had the most energy because they had the highest amount of kilocalories with 26, then next being peanuts with only 6. But what is a calorie and what does it do? "A calorie is a unit of energy. Often used to describe how much energy your body gets from eating or drinking a certain food or drink" (Measuring Calories in Food (n.d.)). But if calories create energy, why are people counting calories and trying to take in less? "Calories aren't bad for you. Your body needs calories for energy. But eating too many calories - and not burning enough of them off through physical activity - leads to weight gain" (Measuring Calories in Food (n.d.)). Walnuts have a lot of calories and are still considered a healthy food. Why do walnuts have so many more calories than the rest of the foods and why are these calories okay?

Walnuts actually have a high amount of fat. "About 80% of the calories come from fat. Much of the fat, though, is "good" monounsaturated and polyunsaturated fat, not the "bad"

saturated variety in meat and dairy products — or worse yet, dreaded trans fat" (*The FamilyHealth Guide (n.d.)*). So if nuts have a high "good" fat content, why are peanuts not as good for you? "Walnuts, stand out as the only nut with an appreciable amount of alpha-linolenic acid, the only type of omega-3 fat you'll find in a plant-based food" (*The FamilyHealth Guide (n.d.)*). Peanuts still do provide an adamant amount of energy, but walnuts just contain more fat, which creates more calories, which creates more energy. To understand why food creates energy, you first must understand metabolism.

"Metabolism is the process by which your body converts what you eat and drink into energy. During this complex biochemical process, calories in food and beverages are combined with oxygen to release the energy your body needs to function" (2011). Calories are used to create the energy your body needs, but too many extra calories your body can't use is not a good thing. Another thing to think about when deciding which food had the most energy is in carbohydrates. "Your body uses carbohydrates (carbs) to make glucose which is the fuel that gives you energy and helps keep everything going." (2012). There are also "good" and "bad" carbohydrates. "Good" carbs is used to describe foods that have more fiber and complex carbohydrates. Complex carbohydrates are carbohydrates that take longer to break down into glucose; such as vegetables, fruits, whole grains and beans. Books use "bad" carbs to talk about foods with refined carbohydrates (i.e., meaning they're made from white flour and added sugars" (2012). Marshmallows have added sugars, which means these are the "bad" type of carbohydrates that can cause extra sugars our body doesn't need., which is another reason why marshmallows had the least amount of kilocalories. This is why my hypothesis, if a food has a high sugar content, or protein content, then it will provide more energy for the consumer, was proven wrong. High sugar contents and all carbohydrates do not create more energy. Also peanuts have a higher protein content than walnuts, but because of the "good" fats found in

walnuts, walnuts have more calories, making more energy.

I could improve my experimental design by keeping the same distance from the food to the bottom of the can each time. I feel like the results of every groups experiment would be closer together if we would have all burned our food the same distance away from the can. Because each group conducted the experiment a little bit differently, some results were varied. For example, my group conducted the experiment and got 0.074 kilocalories per gram for marshmallows and another group got 1.3 kilocalories per gram. This large variance is due to holding the marshmallow away from the can at different lengths. Another error that could have improved the experiment was the very sooty cans, which could have affected the water temperature and the change of water temperature through the experiment. New scientific questions I ask myself is why does the food pyramid say we need more meats and grains? What do those certain foods create a healthier diet for us? Another question I ask myself is how do certain foods naturally get certain contents in them to make them good for us? Like how do fruits contain vitamins inside them and other foods do not? All of these questions make you consider what you eat and wonder how healthy your diet is. What will you eat today?

References

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