

Caloric Content of Food

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1.

Table 1: Classic Lays

	Mass of food (g)	Original Temp (°C)	Final Temp (°C)	Caloric Content (Cal/g)
1	1.02	26	35	0.44
2	1.23	35	44	0.37

Table 2: Sour Cream Lays

	Mass of food (g)	Original Temp (°C)	Final Temp (°C)	Caloric Content (Cal/g)
1	0.95	44	54	0.53
2	0.84	54	58	0.24

Table 3: Cheeto

	Mass of food (g)	Original Temp (°C)	Final Temp (°C)	Caloric Content (Cal/g)
1	0.94	55	67	0.64
2	1.06	34	44	0.47

Caloric content of Classic Lays trial 1 = $\frac{(50\text{g})(35^\circ\text{C}-26^\circ\text{C})}{(1.02\text{g})(1000)} = 0.44 \text{ Cal/g}$

2. Energy released by combustion does not violate the law of conservation of energy because the energy stored in the chemical bonds is lower after the reaction occurs.
3. Pasta and grapes are made of carbohydrates. A typical carbohydrate contains four Calories per gram.
4. Complex carbohydrates are chains of sugar molecules and simple carbohydrates are a single sugar molecule or a pair of sugar molecules joined together. Simple carbohydrates are easier for our body to break down and as a result are worse for us to eat and can increase the risk of developing diabetes.
5. Butter and avocados contain a lot of fat. Typical fats contain nine Calories per gram.

6. Saturated fats have only single bonds between carbons in the chain and unsaturated fats contain at least one double bond between carbons in the chain. Butter has saturated fats and avocados have unsaturated fats. Saturated fats are considered worse for us to eat.
7. Chicken and eggs contain lots of protein. Proteins typically contain four Calories per gram.
8. Our Cal/g results were much lower than the listed results because there were lots of sources of error. One such source was the calorimeter could not have perfectly captured the heat. We also should have replaced the water more frequently so that the water that was being heated was not so much hotter than the room. The food also did not completely burn and would have needed a hotter flame to burn to completion.
9. I would need to run 1.0 miles to burn off the calories from 250 g of classic lays based on our measurements. This clearly indicates that there was a lot of error in our data because it is intuitively obvious that it takes more than one mile to burn the calories from 250 grams of potato chips.
10. If I had to pick one of these to bring to a Red Sox game, I'd bring sour cream and onion lays chips. However, I don't usually eat any of these and I also don't usually go to baseball games.