



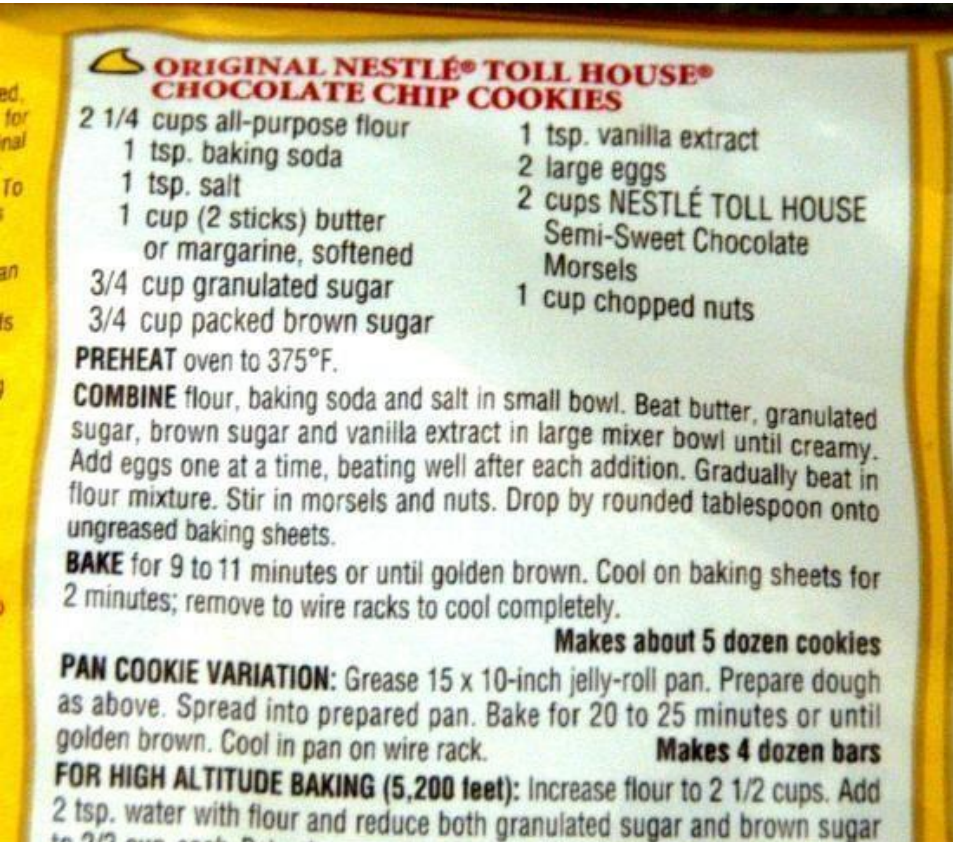
The Chemistry of Baking Cookies

Chocolate chip cookies!

Chocolate cookies can be found in almost every supermarket, restaurant, ice cream shop and family home, but have you ever noticed how not all chocolate chip cookies are the same?



A look at the ingredients



- Flour
- Baking soda
- Salt
- Butter
- Sugar
- Brown sugar
- Vanilla extract
- Eggs

The Chemistry of cookies

<https://www.youtube.com/watch?v=n6wpNhyreDE&t=2s>

This Ted ed video explains what is happening to cookies in the oven step by step. It explains the chemical and physical reactions that happen while the dough is being cooked into a cookie.



The role of baking soda in cookies

Baking soda = Sodium Bicarbonate = NaHCO_3

When the temperature of the oven reaches 212 fahrenheit, the baking soda reacts to the acids (ex: the acid in the sugars) in the dough, and produces carbon dioxide.

When the Carbon dioxide is released through the cookie, it leaves behind air pockets in the cookie,

Hypothesis

Increasing the amount of baking soda in a cookie will make the cookie more flakey on the outside and make the cookie cook faster.

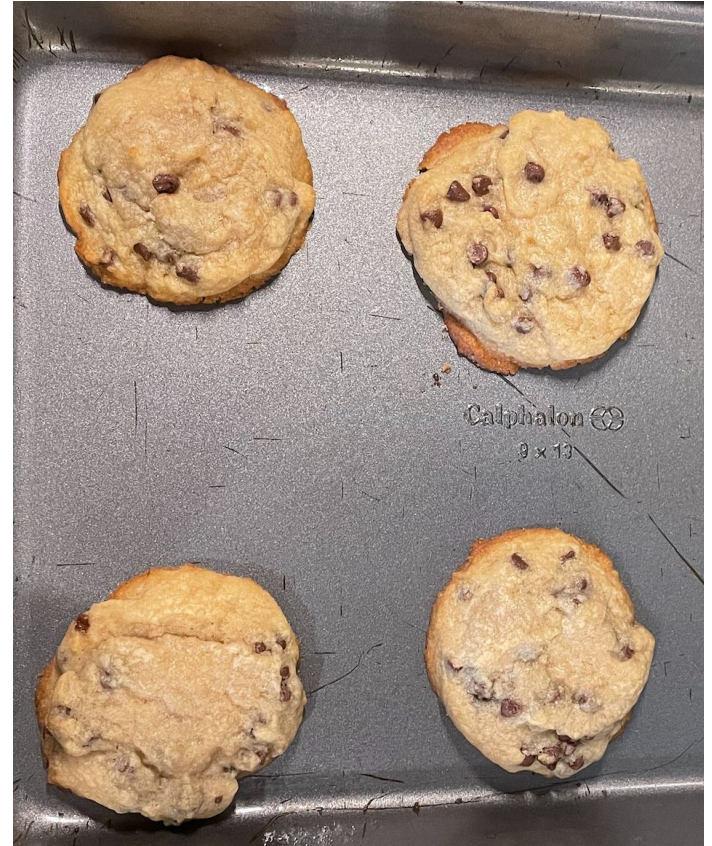
Experiment

To test my hypothesis, I will make three batches of cookies and cook them all for eight minutes. Batch one will have no baking soda Batch two will have one teaspoon of baking soda and the third batch will have three teaspoons on baking soda. Each cookie was scooped to be the same size and stayed in the oven for eight minutes.

Observations of the cookies

Batch one: no baking soda

- Cooked slower
- Stayed almost in their original form (balls of dough)
- Only browned on the ends
- Were very moist and condensed on the inside



Observations of the cookies

Batch two: one teaspoon of baking soda

- Cooked quickly, by about 6 out of the eight minutes they were pretty much done
- The cookie spread out and got thin as it cooked
- Got browned and toasted throughout the top
- Was moist and flakey



Observations of the cookies

Batch three: two teaspoons of baking soda

- Cooked very fast
- At 6 minutes these cookies were done, and the last two minutes really browned and toasted them at the top
- These cookies spread out a lot and got very thin
- They were less moist, very flakey, and almost brittle



Conclusions of observations

As the baking soda increased...

- The time to cook decreased - the cookies with more baking soda got crispier and darker in color faster
- the size of the cookie increased - seen in the bottom picture, the cookies spread out and got thinner and wider



The taste..

- Batch one - cookie dough
- Batch two - a bit saltier compared to batch one, with normal cookie flavor
- Batch three: very salty

