

Salty Science

This experiment will test a wide variety of common salts for iodine content. There are several types of salt that have iodine added to them. This experiment will determine if salts contain any trace of iodine naturally or if all iodine found in salt is added.

This experiment's Independent Variable will be the different types of salt that will be tested. Iodized salt, non-iodized salt, popcorn salt, kosher salt, rock salt, and sea salt. The Dependent Variable will be the amount of iodine found in each salt test. This will be considered a binomial response – is iodine present or not. The experiment will have several Controlled Variables which will be using the same type of supplies for each experiment; cups, spoons, dropper and also the iodine testing solution.

This experiment was done to understand which types of salt contain the vitally essential micronutrient iodine.

The procedure that was used in this experiment was as follows:

1. Place 4 TBSP of salt in a large plastic cup
2. Add 1 Cup distilled water and stir for 1 minute with a clean, disposable plastic spoon. (Not all of the salt will dissolve but any iodide present will)
3. Add 1 TBSP white vinegar
4. Add 1 TBSP of 3% hydrogen peroxide
5. Add ½ TSP starch solution
6. Stir the mixture well with the spoon and let it stand for 10 minutes
7. Repeat steps 1-6 on each different salt
8. Repeat iodine test twice on each salt
9. Observe and record results after 10 minutes, 2 hours and 10 hours

The Results:

Non-Iodized Salt –

1st Test –

10 Minute Observation - Solution remained white and cloudy.

2 Hour Observation – Solution remained cloudy – remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat cloudy – remaining salt on bottom of cup.

Non-Iodized Salt – Contains no iodine

Iodized Salt –

1st Test –

10 Minute Observation - Solution changed quickly to a blue-purple color.

2 Hour Observation – Solution remained a very light shade of the blue-purple color the remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat blue-purple but color is beginning to really fade - remaining salt on bottom of cup.

Iodized Salt – Contains iodine

Popcorn Salt –

1st Test –

10 Minute Observation - Solution remained white and cloudy.

2 Hour Observation – Solution remained cloudy – remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat cloudy – remaining salt on bottom of cup.

Popcorn Salt – Contains no iodine

Sea Salt –

1st Test –

10 Minute Observation - Solution remained white and cloudy.

2 Hour Observation – Solution remained cloudy – remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat cloudy – remaining salt on bottom of cup.

Sea Salt – Contains no iodine

Kosher Salt -

1st Test –

10 Minute Observation - Solution remained white and cloudy.

2 Hour Observation – Solution remained cloudy – remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat cloudy – remaining salt on bottom of cup.

Kosher Salt – Contains no iodine

“Lite” Salt -

1st Test –

10 Minute Observation - Solution changed quickly to a blue-purple color.

2 Hour Observation – Solution remained a very light shade of the blue-purple color the remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat blue-purple but color is beginning to really fade - remaining salt on bottom of cup.

“Lite Salt – Contains iodine

Pink Himalayan Salt –

1st Test –

10 Minute Observation - Solution remained white and cloudy.

2 Hour Observation – Solution remained cloudy – remaining salt settled on bottom of cup.

10 Hour Observation – Solution remained somewhat cloudy – remaining salt on bottom of cup.

Pink Himalayan Salt – Contains no iodine

Why is iodine so important? Iodine is a micronutrient. A micronutrient is a type of nutrient that a person needs in small amounts. Iodine is very important for a person's thyroid to function normally. Your thyroid is located in the front of your neck. It stores and produces hormones that affect the function of about every organ in your body. If your body does not have enough iodine it becomes iodine deficient. If this occurs it can cause minor to serious health concerns and problems. This includes goiter, which is a visible swelling of the thyroid, serious birth defects like cretinism, and brain damage. In fact, iodine deficiency is the most common cause of preventable mental retardation.

Iodine deficiency is completely preventable by making sure people get enough iodine in their diets, which is why iodine began being added to table salt. Iodine is rare in most people's diets but it was found if they use a small amount of iodized salt people would get the small dose of iodine people needed of this micronutrient. Small amounts of iodine are found in some sea foods, milk, boiled eggs and baked potatoes. Since the 1980's, when iodine began being added to table salt it has become an effective way to combat iodine deficiency.

The Hypothesis for this experiment is that the salt that is labeled "iodized" will definitely contain the highest level of iodine. The salts that are not labeled iodized will not contain traces of iodine.

The hypothesis for this experiment was proven to be correct. The iodized salt did contain the most iodine when tested with the starch solution. The color changed from a cloudy white color to a blue-purple color proving the theory that iodine is present. A surprising result was also observed when the testing solution for "lite" salt also changed to a blue-purple color, also confirming the presence of iodine in "lite" salt. All of the other variety of salts that were tested did not change the color of the testing solution. This confirmed the hypothesis theory that only iodized salt contained iodine.

Works Cited

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