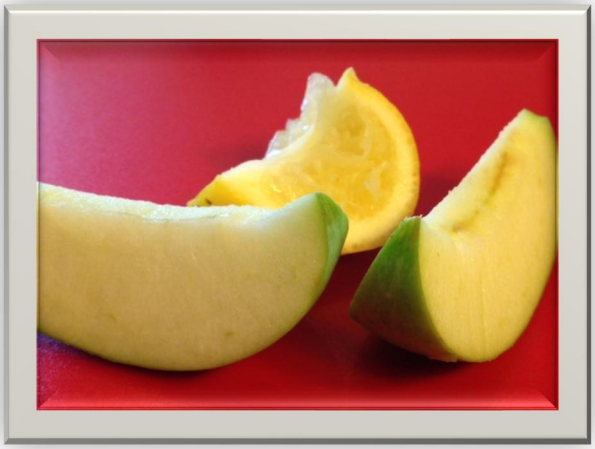
VITAMIN C EXPERIMENT

To do an experiment properly, you should follow the same steps every time. It is called the Scientific Method. So we followed these steps.

1. Observation:

We observed that apples turn brown if we bite into them and then leave them.



but if we rub them with lemon juice they don't go brown.

2. Research:

After looking in a lot of different places on the internet, this is what we found out.

Browning is caused by a reaction with oxygen. This is called oxidation. Lemons have a substance that stops the apple from oxidising. It is called Ascorbic Acid or more commonly known as Vitamin C.

3. Question:

Why do we need Vitamin C?

4. Research (again): The results of our research

Vitamin C is important for our body

It is an antioxidant

It prevents cell damage

- Vitamin C helps you get rid of chemicals that damage your cells and DNA. It's considered an antioxidant: It neutralizes "free radicals" in your body created by pollution, cigarette smoke, sunlight, radiation, and simply turning food into energy. That could help keep many parts of your body working better for longer and protect you from diseases.

It builds skin, bones, muscles, and more

- Your body would fall apart without the protein collagen. Collagen fibres twist around each other to form scaffolding for your bones, cartilage, skin, and muscles (including your heart). They're also in ligaments, tendons and blood vessels. You need collagen to grow new skin and make scar tissue when you get cut and to keep your skin from getting wrinkles. And your body can't make collagen without vitamin C.

It does a lot more things, but we will study these things later.

5. More questions:

How much vitamin C do we need?

Age	RDI – recommended daily intake
All	
1-3 yr	35 mg/day
4-8 yr	35 mg/day
Boys	

Age	RDI – recommended daily intake
9-13 yr	40 mg/day
14-18 yr	40 mg/day
Girls	
9-13 yr	40 mg/day
14-18 yr	40 mg/day
Men	
19-30 yr	45 mg/day
31-50 yr	45 mg/day
51-70 yr	45 mg/day
>70 yr	45 mg/day
Women	
19-30 yr	45 mg/day
31-50 yr	45 mg/day
51-70 yr	45 mg/day
>70 yr	45 mg/day

Where can we get Vitamin C from?

Everyone says it is “Oranges” but we wanted to find out ourselves. Can we do an experiment to find out which food has the most vitamin C?

Which foods have more Vitamin C?

It was time to make a hypothesis that we could test. A hypothesis is an idea or explanation for something that is based on what we know but we need to see if really is correct or not.

OUR HYPOTHESIS:

Citrus fruits contain more Vitamin C than other foods.

EXPERIMENT

We wanted to test whether Citrus fruits contained more vitamin C than other foods.

We did a test to comparative test for different foods.

To do this we used a solution of a very strong oxidant to see how much of our chosen fruit we needed to neutralise its browning power. We used an iodine [image] and water solution.

We add drops juice made from the different foods: the iodine and water solution loses its brown oxidised colour and goes clear (transparent).

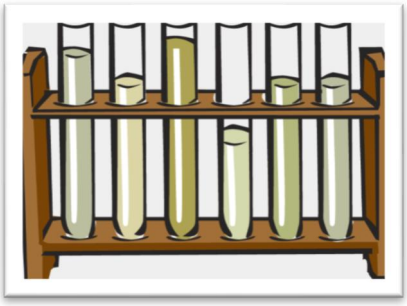
If the fruit has a high concentration of Vitamin C we do not need many drops and if the fruit has a low concentration we will need more.

MATERIALS

Iodine and water solution

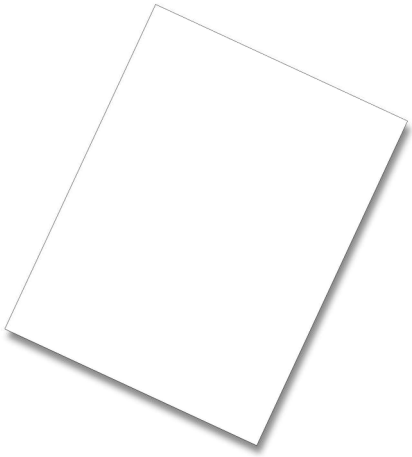
Syringe

Test tubes



Pipette

White background



Liquidised fruit samples of: orange, lemon, lime, strawberry, red pepper, carrot, pineapple, apple, asparagus, papaya.

DESCRIPTION OF SCIENTIFIC VARIABLES

CONTROL VARIABLES (the things we must not change) – test tubes with the same quantity of iodine and water solution.

One was used as the control, so we can compare the samples we added to juice to.

INDEPENDENT VARIABLES (the things we change) – We added different juices.

DEPENDENT VARIABLES (the things we observe or the differences we see) – The number of drops needed to turn the brown liquid clear.

STEPS

1. First, we prepared the fruit juices using a hand blender making sure to thoroughly clean the blender when changing from one fruit to another.
2. Using the syringe, we poured the same quantity of control solution into the test tubes [image].
3. We selected one of the juices and started counting the drops necessary to make the iodine and water solution turn clear.

4. We compared the now clear solution with the brown control sample and we wrote down the number of drops needed in a chart.

GO BACK TO THE HYPOTHESIS – Accept or Reject. In this case we must partially reject the hypothesis

CONCLUSIONS – based on an analysis of the results, we can see that citrus fruits have a high concentration of vitamin C but there are other foods that have even more.

REPORT

REAL LIFE APPLICATIONS AND FUTURE ACTIONS AT HOME AND AT SCHOOL –

Change eating habits

Tell other classes in the school about our discoveries and show them how they can carry out the same experiment

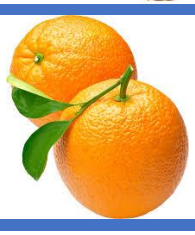
Test more foods.

Compare the quantity of vitamin C in fruit that has been left in the sun or in the fridge.

Ripe or unripe – which has more vitamin C?

Arriving at one goal is the starting point to another – John Dewey "Democracy and Education" 1916

DATA COLLECTED

Food		Drops we added to make the liquid turn clear
Papaya		4
Red Peppers		5
Strawberries		7
Pineapple		9
Oranges		10
Kiwi		8
Grapefruit		12

Tomatoes		16
Lemons and Limes		10
Asparagus		17
Carrots		24
Banana		28
Apple		16
Pear		20