PRESENCE OF VITAMIN C IN FOODS AND ITS VARIATIONS WITH TIME AND TEMPERATURE

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INTRODUCTION

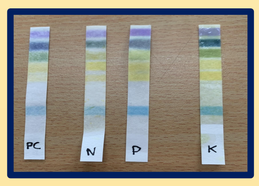
The ascorbic acid, usually called 'vitamin C', is a water-soluble vitamin, with a consistency similar to a yellowish dust. It is an essential nutrient for every living being, which is created internally, by human beings and some other species.

First and foremost, this project is based on the quantity of vitamin C (ascorbic acid) that is found in various foodstuffs; and how the content of vitamin C varies with time and temperature (on heating and freezing).

MATERIALS

-Permanent marker: used to mark test tubes
-Water: used for cleaning and for making chemical solutions (vitamin pill).
-Laboratory rack
-Test tubes
-Betadine
-Fruit juices
-Starch (cornstarch)
-pH strips
-Dropper
-Lighter

Picture 1. Test tubes



Picture 2. pH strips

Picture 3. Laboratory rack

OBJECTIVES

The targets of this project have been the following:

-To estimate the quantity of ascorbic acid contained within the juice of different citrus fruits, in this case: orange, lemon and kiwi juice.
-To study whether there is a variation in the content of ascorbic acid in relation with time and temperature.
-To know the value of pH of the foodstuffs analysed.
-To become aware of the importance of knowing the composition of the consumed foods in order to achieve a balanced and healthy diet.
-To value mathematical knowledge as a basic tool in the scientific method.

METHODS

FIRST SESSION 1st contact with the experiment.

Theory was scarcely studied. Albeit foodstuffs and materials were prepared, the procedure was not consolidated.
Nonetheless, investigators did study different ways of fulfilling the task and took several notes regarding teacher's indications.
The first session was undoubtedly a acknowledgement of the project and the method of investigation.
To disolve a vitamin C pill(500 g) in 500ml of water, following the proportions given in the indications.
This is required when starting the experiment. Finally, the solution was frozen.

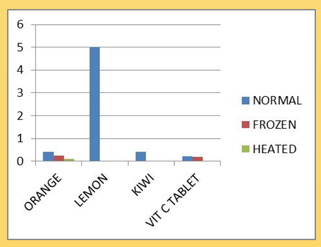
SECOND SESSION 1st experimentation.

Preparation the necessary juices conscientiously; laboratory materials were already prepared for use. To continue by taking the previously frozen solution and making the very first guiding solution, that would serve as a control of the measurement of vitamin C in the rest of the experiment.
Subsequently, juices were poured into test tubes, and labelled with each juice. Additionally, the starch was added and with so, the betadine, drop by drop so as to measure the vitamine C carefully.
pH was also measured, using pH strips that showed a colour according to its measure.
Lastly, all data was compiled and studied afterwards.
To finish the class, everything was cleaned and removed.

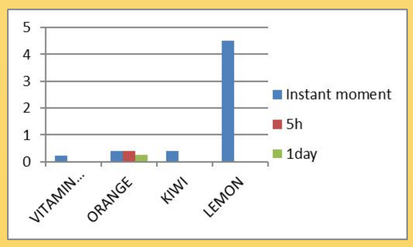
THIRD SESSION Repetition of the experimentation.

To ensure the results and data extracted from the project were accurate, the experiment needed to be repeated. This time, although in a cleaner and more precise way, the procedure and working stayed exactly the same.
Only a few pieces of data happened to be different and therefore more believable.
Again, everything was picked up at the end of the class, and materials were again put in their correct place.

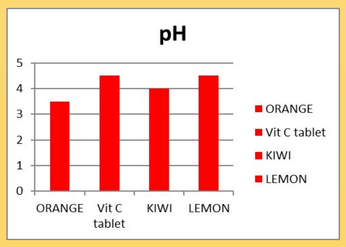
RESULTS



VITAMIN C - TEMPERATURE



VITAMIN - TIME



pH - ALIMENTS

CONCLUSIONS

- Lemon had the most remarkable contain of vitamin C concentration when recently cut.
- Levels of pH were very similar among all fruits manipulated withing fruits, and the vitamin C tablet + water solution
- When freezing the Vitamin C preparations, either in the control tablet or the orange juice, ascorbic acid concentrations keep virtually unalterable; whilst highly reduced at being boiled

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