Avogadro's lab

The Global Experiment

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Stephen Ashworth *invites you to join in with the Royal Society of Chemistry's Global Experiment*

Chemistry Week this year runs from the 16–23 November and promises to be bursting full of activities and events around the theme of health. One way you can join in is to take part in the Global Experiment – the Royal Society of Chemistry is asking people all over the world to measure the amount of vitamin C in a range of fruit and vegetables and compare their results online. You could also make a video of your experiment and upload that too.

You can do this on your own or find out if your teacher will organise this with your class.

There are five steps:

1. Download all the documents you need from the website
2. Calibrate your iodine solution
3. Prepare your samples
4. Carry out your tests
5. Upload and share your results online

Download the documents

The Global Experiment is based on our investigation of vitamin C in orange juice in the last issue of *The Mole*, but on a much bigger scale.

- Check out the July issue of Avogadro's lab **http://rsc.li/16e54Gi** (this will remind you about the chemistry behind the experiment).
- Go the Global Experiment website and download the instructions: **http://rsc.li/global-experiment**

Calibrate your iodine solution

So your results can be easily compared with others, you need to know how much of your iodine solution is needed to oxidise a known amount of vitamin C. This is called calibration and can be done using a soluble vitamin C tablet, where the mass of vitamin C is shown on the packaging.

Follow the calibration instructions to find out how many milligrams of vitamin C react with one drop of iodine solution. You are now ready to measure the vitamin C content of a range of fruit and vegetables.

Prepare your samples

We suggest choosing from this list, as we will collect these results online, but feel free to try some of your own.

Vegetables	*Fruits*
Broccoli	Apple
Cabbage	Kiwi
Cauliflower	Orange
Potato	Pink grapefruit
Red pepper	Red tomato

Test your samples

Follow the method given in the instructions to test your samples to find out how much vitamin C each one contains. You could also try testing cooked samples and comparing these vitamin C levels with the raw ones. You could also try comparing fresh samples with older ones to find out if the vitamin C content of a juice is affected by oxygen in the atmosphere when it is left to stand, for example overnight.

Upload and compare your results

Now you can upload your results to the Global Experiment website. Click the 'submit your experiment data' button and follow the instructions on-screen to upload your data.

When you have uploaded your results you can compare them with the data from all the other participants.

You can organise this data to find out all sorts of information, such as what contains the most vitamin C, does it make a difference if the samples are freshly made or old, where in the world do fruit and veg with the highest vitamin C content come from?

You can also export the data to a spreadsheet and find out lots more information.

Other things to try

If you have time, why stop at just testing raw and cooked samples? You could try to find out if vitamin C is extracted into cooking water. Have fun experimenting!

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Chemistry Week

Chemistry Week this year takes place from 16-23 November. Events and activities will be taking place all around the country. Details on what's going on and how you can get involved will be posted on **http://rsc.li/1du3vYJ**

Watch the video

See Stephen Ashworth explaining exactly how to carry out the tests on the Global Experiment website: **http://rsc.li/17lXVAx**

Did you know?

Much of the processed food we buy has been enriched with vitamins. How does fresh orange juice compare with a processed juice drink? Does the preparation for canning or bottling reduce the vitamin C content of produce?