CREST AWARDS

GOLD AWARD

INVESTIGATING VITAMIN SUPPLEMENTS

70H Typically 70 hours of project work
Recommended for 16-18 year olds

Practical project

Investigate how quickly vitamins and minerals enter the bloodstream.

#chemistry
#health
#medicine

HOW TO RUN CREST USING THIS ACTIVITY

Entering your project without a teacher or facilitator? No problem! You can enter your work yourself by following this link: **www.crestawards.org/sign-in**

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub: **www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs**

To use their project to achieve a CREST Gold Award your students will need to:

- **Develop and lead the project**
- **Complete a minimum of 70 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Write a project report or portfolio of evidence**
- **Reflect on their work during the project using a student profile form**

Preparation

Ready to get going with CREST? Sign up for a CREST account here: **www.crestawards.org/sign-in**

Create a new Gold Award project with the name(s) of the student(s) and the title of their project. If you don't have all these details, you can fill them in later!

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Run the project

Encourage your students to use the Gold student guide to plan and carry out their project. Each student involved in the project should complete their own profile form.

You don't want all their good work to go to waste, so be sure they keep a record of all their amazing progress. Keeping a regular project diary will save them precious time when writing their final project report.

The students should spend at least 70 hours on the project in total.

Remember to consider safety and risks!

Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. At the end of the project, each student should complete a Gold profile form and communicate their project. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Students working in a group can either submit a joint report or separate reports, but they must each complete a profile form.

Use the CREST criteria on the profile form to help the students check that they have included everything in their report.

Enter your project for a CREST Gold Award

Hard work deserves a reward! Celebrate and certify your student's achievements by entering their project for a CREST Gold Award. Simply:

Log in to your CREST account at **www.crestawards.org/sign-in**

Select your project and upload the profile form per student, project report and other evidence, such as pictures and diagrams.

Finally, complete the delivery and payment details for assessment and to order your snazzy certificates.

Congratulations on submitting for CREST Gold!

What next?

Is university on the horizon for your students? They can use their project to help demonstrate their newly found STEM skills and knowledge in UCAS personal statements.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see **www.crestawards.org**

STUDENT BRIEF

GOLD AWARD

Investigating vitamin supplements

For this project, you will do some experiments to find out how quickly different vitamins and minerals enter the bloodstream.

Getting started

You should start by deciding which supplements to test. Iron tablets or multi-vitamin tablets are two suggestions. Iron in the form of iron(II) ions can be detected and analysed relatively easily. Vitamins are a little harder. Ascorbic acid (vitamin C) is perhaps the easiest to test for.

To work out how quickly minerals and vitamins get into the bloodstream requires quite a complex series of experiments. You'll have to design these, but to get you on the right track here are some suggestions:

- You could use Visking tubing to model a cell membrane. The relative times taken for the vitamins and minerals to pass through this will be similar to the those it takes for the vitamins and minerals to get into your bloodstream.
- How will you detect the vitamins and minerals when they pass through the tubing?
- Will you measure the decrease in concentration on one side of the membrane or the increase in concentration on the other side?

Think about how to record your findings. What are the implications of what you discovered? Were there any problems with your experiment?

Things to think about

What is the effect of:

- using whole tablets, or ones that have been powdered;
- different temperatures;
- stirring;
- changing the pH of the solution?

Useful resources

You will probably need to link up with a local university to use some of its analytical equipment. In many cases, you will be trying to identify very small quantities of minerals (or, more precisely, metal ions), and your school or college equipment is unlikely to be sensitive enough for the job.

You may also want to contact an analytical chemist from a company that produces vitamin and mineral supplements. They should be able to tell you how the purity of the supplements is analysed. A local university may be able to help.

STUDENT BRIEF

GOLD AWARD

Health and safety

Science project work is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

Make sure you have carried out a risk assessment for your experiments. Remember, schools may not have the same facilities as industrial laboratories.

Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.