As you know, vegetables not only taste good, but they are good for you. Many vegetables are a great source of vitamin C. Vitamin C is a water-soluble antioxidant that plays an important role in protecting the body from infection and disease. Humans do not make vitamin C on their own, so we must get it from dietary sources. Potatoes, like the ones shown in Figure 1, below, are one good source of vitamin C. Does cooking them affect how much vitamin C they have? In other words, if you boil a potato, is some of the vitamin C lost to the water that the potato is boiled in? In this cooking and food science project, you can investigate this and determine whether boiling a potato for a longer amount of time makes it lose more vitamin C or not. To quantify the amount of vitamin C, you will need to do some titrating.

Figure 1. Potatoes, like these large Russet potatoes, naturally have vitamin C.

**Titration** is a chemical technique used to determine the unknown concentration of a chemical in a solution. For information on how to titrate, consult the references in the **Bibliography** and the science fair project idea [Which Orange Juice Has the Most Vitamin C?](http://www.sciencebuddies.org/science-fair-projects/project_ideas/Chem_p044.shtml#procedure) for that science project idea, instead of using orange juice, use liquid that potatoes have been boiled in for different amounts of time. To get a good vitamin C yield, you will want to boil the potatoes in as little water as possible (by filling a pot with a layer of potatoes and just barely submerging them all in water). To take your vitamin C measurements, you could take water samples after the potatoes have boiled for 10 minutes, 30 minutes, and 60 minutes, or you could try different time points. Let the liquid cool to room temperature before titrating it. You may also want to further dilute the Lugol's iodine solution to have more accurate readings (since potatoes have less vitamin C than orange juice). For more information about doing a titration, visit the Science Buddies webpage [Titration Tutorial: Tips & Tricks for Titrating](http://www.sciencebuddies.org/science-fair-projects/project_ideas/Chem_p044.shtml#procedure).

So how do you think cooking potatoes will affect how much vitamin C is left in them? Try this science project and do some titrations to find out for yourself!

**Bibliography**

The following websites describe how to titrate vitamin C from vegetables. The third website details how another student went about determining the vitamin C levels in cooked potatoes, and her results.

Related Links

- Science Fair Project Guide
- Other Ideas Like This
- Cooking & Food Science Project Ideas
- My Favorites
- Chemistry Safety Guide
- Titration Tutorial: Tips & Tricks for Titrating

If you like this project, you might enjoy exploring these related careers:

### Dietitian or Nutritionist

Dietitians and nutritionists are professionals who help people make healthy food choices and better understand how to feed their bodies. Ever wondered who plans the school lunch, food for patients at a hospital, or the meals for athletes at the Olympics? The answer is dietitians and nutritionists! A dietitian or nutritionist's job is to supervise the planning and preparation of meals to ensure that people—like students, patients, and athletes—are getting the right foods to make them as healthy and as strong as possible. Some dietitians and nutritionists also work to educate people about good food choices so they can cook and eat their own healthy meals. Read more

### Food Science Technician

Good taste, texture, quality, and safety are all very important in the food industry. Food science technicians test and catalog the physical and chemical properties of food to help ensure these aspects. Read more

### Biochemist

Growing, aging, digesting—all of these are examples of chemical processes performed by living organisms. Biochemists study how these types of chemical actions happen in cells and tissues, and monitor what effects new substances, like food additives and medicines, have on living organisms. Read more

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If you have purchased a kit for this project from Science Buddies, we are pleased to answer any question not addressed by the FAQs on our site. Please email us at help@sciencebuddies.org after you have checked the Frequently Asked Questions for this PI at http://www.sciencebuddies.org/science-fair-projects/project_ideas/FoodSci_p024.shtml#help

In your email, please follow these instructions:

1. What is your Science Buddies kit order number?
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   Examples

   **Good Question** I'm trying to do Experimental Procedure step #5, "Scrape the insulation from the wire . . ." How do I know when I've scraped enough?

   **Good Question** I'm at Experimental Procedure step #7, "Move the magnet back and forth . . ." and the LED is not lighting up.

   **Bad Question** I don't understand the instructions. Help!

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