A shocking (and hot!) tip for preserving produce

April 5 2013, by W. Wayt Gibbs

This undated publicity photo illustration shows a strawberry dropped into warm water as it is heat-shocked. Food scientists have discovered a remarkably effective way to extend the life of fresh-cut fruits and vegetables by days or even a week. It doesn't involve the chlorine solutions, irradiation or peroxide baths sometimes used by produce packagers. This method, called heat-shocking, is 100 percent organic and uses just one ingredient that every cook has handy, hot

water. (AP Photo/Modernist Cuisine, LLC, Chris Hoover)

Nothing is more frustrating than finding the perfect cucumber or head of lettuce at the farmers market, paying top-dollar for it, and then... tossing it out a week later when it has gone moldy or slimy in the refrigerator.

No doubt one reason so many of us eat too many convenience foods and too few fruits and vegetables is that it can be hard to get our busy schedules in sync with the produce we bring home with the best of intentions.

Food scientists, however, have discovered a remarkably effective way to extend the life of fresh-cut fruits and vegetables by days or even a week. It doesn't involve the chlorine solutions, irradiation or peroxide baths sometimes used by produce packagers. And it's easily done in any home by anyone.

This method, called heat-shocking, is 100 percent organic and uses just one ingredient that every cook has handy—hot water.

You may already be familiar with a related technique called blanching, a cooking method in which food is briefly dunked in boiling or very hot water. Blanching can extend the shelf life of broccoli and other plant foods, and it effectively reduces contamination by germs on the surface of the food. But blanching usually ruptures the cell walls of plants, causing color and nutrients to leach out. It also robs delicate produce of its raw taste.

Heat-shocking works differently. When the water is warm but not scalding—temperatures ranging from 105 F to 140 F (about 40 C to 60 C) work well for most fruits and vegetables—a brief plunge won't

rupture the cells. Rather, the right amount of heat alters the biochemistry of the tissue in ways that, for many kinds of produce, firm the flesh, delay browning and fading, slow wilting, and increase mold resistance.

A long list of scientific studies published during the past 15 years report success using heat-shocking to firm potatoes, tomatoes, carrots, and strawberries; to preserve the color of asparagus, broccoli, green beans, kiwi fruits, celery, and lettuce; to fend off overripe flavors in cantaloupe and other melons; and to generally add to the longevity of grapes, plums, bean sprouts and peaches, among others.

The optimum time and temperature combination for the quick dip seems to depend on many factors, but the procedure is quite simple. Just let the water run from your tap until it gets hot, then fill a large pot of water about two-thirds full, and use a thermometer to measure the temperature. It will probably be between 105 F and 140 F; if not, a few minutes on the stove should do the trick. Submerge the produce and hold it there for several minutes (the hotter the water, the less time is needed), then drain, dry and refrigerate as you normally would.

Researchers still are working out the details of how heat-shocking works, but it appears to change the food in several ways at once. Many of the fruits and vegetables you bring home from the store are still alive and respiring; the quick heat treatment tends to slow the rate at which they respire and produce ethylene, a gas that plays a crucial role in the ripening of many kinds of produce. In leafy greens, the shock of the hot water also seems to turn down production of enzymes that cause browning around wounded leaves, and to turn up the production of heat-shock proteins, which can have preservative effects.

For the home cook, the inner workings don't really matter. The bottom line is that soaking your produce in hot water for a few minutes after you unpack it makes it cheaper and more nutritious because more fruits and

veggies will end up in your family rather than in the trash.

—

HEAT-SHOCKING GUIDELINES

The optimal time and temperature for heat-shocking fruits and vegetables varies in response to many factors—in particular, whether they were already treated before purchase. Use these as general guidelines.

— Asparagus: 2 to 3 minutes at 131 F (55 C)

— Broccoli: 7 to 8 minutes at 117 F (47 C)

— Cantaloupe (whole): 60 minutes at 122 F (50 C)

— Celery: 90 seconds at 122 F (50 C)

— Grapes: 8 minutes at 113 F (45 C)

— Kiwi fruit: 15 to 20 minutes at 104 F (40 C)

— Lettuce: 1 to 2 minutes at 122 F (50 C)

— Oranges (whole): 40 to 45 minutes at 113 F (45 C)

— Peaches (whole): 40 minutes at 104 F (40 C)