Rooting for Fruit

Researchers hunt for a medicine chest in the fruit bowl

BY DAVID SCHARDT

Want to improve your memory? Try a bowl of berries. Troubled by urinary tract infections? Pour yourself a cranberry drink. Prostate problems? Open a bottle of pomegranate juice.

In some cases, there’s decent, or at least promising, evidence that you can use your fruit bowl as a medicine chest. In others, there’s not much at all—just clever marketers cleaning up by taking advantage of consumers who are trying to protect their health “naturally.”

Here’s how to separate the pulp from the pits.

Cranberries

“The proanthocyanidins in cranberries can prevent bacteria from sticking to the surfaces of cells,” says Amy Howell of Rutgers University.

Cranberries’ anti-adhesion effect explains why they seem to be able to prevent urinary tract infections (UTIs), says Howell, who is a researcher at the university’s Marucci Center for Blueberry and Cranberry Research in Chatsworth, New Jersey. (The center is funded by the U.S. Department of Agriculture, the National Institutes of Health, the State of New Jersey, and the cranberry industry.)

“In about half the cases of UTIs, the infection is caused by P-type E. coli bacteria, which have little hairy tips called fimbriae,” explains Howell. “The bacteria use their fimbriae to attach themselves to the bladder so that they can multiply and cause an infection.”

When cranberries’ proanthocyanidins are broken down in the body, the compounds they form can bind to the fimbriae, which prevents the E. coli from adhering to the bladder wall, says Howell. “So you can avoid infections by stopping the bacteria from sticking to cells in the bladder, and instead just wash them out in the urine.

“The proanthocyanidins in cranberry are very unusual,” she adds, “and are not like the ones found in other foods like grapes and chocolate.”

Last year, a review of 10 studies on more than 1,000 people concluded that consuming cranberry drinks—typically 10 oz. a day—or taking cranberry pills for 12 months reduced UTIs by a third compared with a placebo in women with recurrent infections.

But once the bacteria stick to the bladder wall and start multiplying, patients need antibiotics, says Howell. “That’s why it’s important for women who have recurrent UTIs to keep consuming cranberries even when they don’t have an infection.”

There is little chance that the bacteria will develop resistance to cranberries, as they can with antibiotics, adds Howell.

“When you consume cranberries, the bacteria are not killed, so you’re not wiping out most of the susceptible ones and leaving the surviving antibiotic-resistant bacteria to flourish.”

WANT TO TRY IT? To lower the risk of recurring urinary tract infections, “drinking one to two glasses of cranberry juice cocktail a day is really all you need,” says Howell.

Cranberry juice is toostringent to drink straight. Some companies sell a “cocktail” that’s 27 percent cranberry juice and 73 percent water plus a sweetener like sucrose, high fructose corn syrup, or a sugar substitute.

Cranberry juice mixed with other juices works just as well, says Howell, as long as it contains at least as much cranberry juice as the cocktail.

But some companies combine cranberry juice with other juices and...sugars, so the blend can end up with very little cranberry juice.

Minute Maid Cranberry Apple Raspberry Blend, for example, is only 25 percent juice...and it has more pear than cranberry, apple, or raspberry juice. Unfortunately, if a juice—even 100% juice—is a blend of cranberry plus other juices, there’s no way to tell what percentage is cranberry unless the company discloses it on the label.

Ocean Spray sells Light Cranberry Juice Cocktail, which knocks the 120 calories in an 8 oz. glass of regular Cranberry Juice Cocktail down to 40. But some flavors contain the questionable artificial sweetener acesulfame-potassium in addition to safe Splenda. Check the label.

Based on test-tube studies, Howell says that other forms of cranberry—dried, for example—seem to work as well as juice.

“The anti-adhesion factor survives pretty well through the dehydration process, and we see a similar effect in the urine of people who’ve consumed juice versus dried cranberries,” she notes. In fact, “we’ve found that almost any form of cranberry, even cranberry sauce, can prevent the bacteria from adhering.”

The exception: cranberry pills. “With many products, you don’t know how much proanthocyanidin is in them or whether they’re rendered inactive by improper storage or processing,” says Howell.

Pomegranate

Prostate

“I’m off to save prostates,” says the POM Wonderful bottle in the ad on the company’s Web site.

In a 2006 study at the University of California, Los Angeles, the rise in PSA levels in 38 of 46 men with prostate cancer slowed substantially when they drank eight ounces of pomegranate juice every day for three years. (PSA, or prostate specific antigen, is a protein produced by the prostate.)
Rising PSA levels can be a sign of a growing tumor.

The men had been treated for cancer that was confined to the prostate or had begun to spread. Before they started drinking pomegranate juice, the men's PSA levels were doubling, on average, every 15 months. After 33 months of drinking the juice, their PSA levels were on a trajectory to double every 55 months.

"The pomegranate juice seemed to stabilize their cancer rather than kill it," says lead researcher Allan Pantuck.

But the study had no control group—similar men who drank a look-alike but inactive placebo beverage—so it's possible that the rise in PSA scores would have slowed without the pomegranate juice.

This April, the UCLA researchers announced that men in the study who continued to drink pomegranate juice every day for up to six years continued to show an increase in their PSA doubling time.

Cardiovascular Disease

In mice that are genetically prone to clogged arteries, three months of drinking pomegranate juice reduced the area of their atherosclerotic lesions by 44 percent compared with mice who were given a placebo beverage.³

"Pomegranate juice basically Roto-Rootered out the mice's arteries," says berry expert Amy Howell.

But only one small study has tested the juice on human arteries. In 2004, Israeli researchers gave 10 men and women with clogged carotid arteries—which supply the brain with oxygen-rich blood—three tablespoons of pomegranate juice concentrate (equal to about eight ounces of pomegranate juice) every day.

After a year, the thickness of their carotid artery walls had decreased by 35 percent—a sign that their atherosclerosis was receding. Over the same period, the researchers found a 9 percent increase in the thickness of the artery walls of nine similar patients who got no juice.⁴

Want to try it? Buying pomegranate juice is trickier than you might think. Only a quarter of the companies that market it are selling the authentic product, says Navindra Seeram, a natural products chemist in the College of Pharmacy at the University of Rhode Island in Kingston.

He and his colleagues recently analyzed 45 beverages from 23 companies. All the products claimed to be 100% pomegranate juice. But just six of the 23 manufacturers were selling unadulterated juice.⁵

"What some companies are doing is crazy," says Seeram. They add cheaper apple, grape, and/or pear juice to stretch their more expensive pomegranate juice. Or they sweeten it with sugar to mask the astrigent taste of low-grade juice that includes too much of the fruit’s peel. Or they add some deeply colored fruit juice like blackcurrant, to simulate the color of pomegranate. None of that is disclosed on the labels.

Seeram wouldn't reveal the names of all the pomegranate juices that he analyzed, but did say that POM Wonderful, Knudsen, Langers, and L&A were among the brands that passed. (POM Wonderful commissioned and helped fund his study.)

Whole Fruit vs. Juice

Most experts agree that if fruit protects your health, fresh or frozen is better than juice. Why?

To shield their seeds from predators and the environment, "plants put a lot of potent natural compounds into the outermost layer of their fruit," says medicinal plants expert Navindra Seeram of the University of Rhode Island. So when the skins and peels are removed in processing, out go those protectors.

"Juices generally retain less than 50 percent of the bioactive compounds found in the whole fruit," says Luke Howard, who studies fruit processing at the University of Arkansas. In some studies, it's as little as 20 percent.

"Once you start to process a fruit, losses are inevitable," Howard explains. Oxygen can destroy some of the phytochemicals, and enzymes are released that can convert compounds into larger or smaller molecules that the body can't absorb or metabolize.

That's especially true of tropical fruits. "With some, like açai, as soon as you pick them, if they're not handled properly they start to completely disintegrate on the spot, and in 24 hours they're just mush and have very little bioactivity left," says Rutgers University berry expert Amy Howell. "What you buy may have nothing left of the antioxidant activity that was there when they picked the fruit."

More phytochemicals are lost when the skin, seeds, and pulp are removed or filtered out. "For example, only about 20 to 25 percent of the proanthocyanidins in the whole blueberry survive in the juice," says Howard. Blueberry purées do better, he notes. They retain about 40 percent—and canned blueberries hold on to 65 to 80 percent—of their proanthocyanidins.

The losses continue during storage. "That's really a big killer of bioactivity," says Howell. For example, "after six months of storage at room temperature, only about 10 percent of the proanthocyanidins remain in blueberry juice." If the fruit is quickly frozen or freeze-dried, though, fewer compounds are lost, she adds.

There are other reasons to stick to fresh or frozen fruit. An 8 oz. glass of most juices packs 100 to 140 calories. And the calories from liquids don't curb your appetite like the calories from solid foods do, so you won't compensate by eating less later. If you're not careful, the calories—and the pounds—can quickly pile up.

You're better off with fresh or frozen fruit than juice.
Berries

Cancer

“We’re finding that certain berries seem to be able to inhibit the growth of cancer cells,” says researcher Gary Stoner of the Ohio State University Comprehensive Cancer Center in Columbus. When Stoner’s research team recently fed black raspberries—and gave rectal suppositories made from black raspberries—to 14 patients who were genetically prone to precancerous colon polyps, “we found that the combination led to about a 50 percent regression of their polyps after nine months.”

And after patients with precancerous lesions called leukoplakia in their mouths applied a black raspberry gel directly to their sores at least four times a day for six weeks, “we found that about three-fifths of the lesions became less precancerous,” Stoner reports.6

(Neither of the two pilot studies was designed to compare berries to look-alike but inactive non-berry preparations.)

Blueberries, on the other hand, don’t seem to work as well in animal studies, says Stoner, “probably because they have very low levels of ellagitannin, the anthocyanin in blackberries and black raspberries that we think is important to inhibiting the abnormal growth of cells.” But progress in humans has been slow, he acknowledges, “because the anthocyanins in berries are not terribly well absorbed from the GI tract.” (That’s why cancer patients were given a suppository or a gel.)

Stoner’s bottom line: “It’s hard to say that if you eat so many berries every week, you’re not likely to get this or that disease.” Still, he adds, “I think we can legitimately say that people should eat berries a few times a week.”

Memory

Researchers Jim Joseph and Barbara Shukitt-Hale add different kinds of berries to the diet of 19-month-old male rats, who are roughly equivalent to 65-year-old humans. “Control” rats receive the same basic diet, but with extra corn starch instead of added fruit. After two months, when the rats are the equivalent of 75- or 80-year-old humans, they’re put in a pool where they need to learn and remember where a hidden platform is located so that they can rest on it. “For a person, this might be comparable to remembering where you left your car in the parking lot or figuring out how to get home from somewhere new,” explains Shukitt-Hale, who works with Joseph at the Jean Mayer U.S. Department of Agriculture Human Nutrition Research Center on Aging at Tufts University in Boston.

The two researchers also have the lab rats balance on a stationary horizontal rod, and then on a rod that starts to rotate faster and faster. For humans, that might be like trying to walk on an uneven surface—or icy pavement during winter, for example—says Joseph. “Pretty much every berry we have studied—blueberries, strawberries, blackberries, and cranberries—has improved learning, memory, and balance in our aging rats,” says Shukitt-Hale. “The rats fed berries find the hidden platform more quickly, and they can cling to the rods longer than similar rats who don’t eat berries.”

Shukitt-Hale and Joseph believe that phytochemicals in the berries may protect signals as they pass from brain cell to brain cell…at least in lab rats.

“We’re just starting to plan studies in humans,” says Shukitt-Hale. A pilot study—it used Concord grape juice, not berries—produced promising results last year. Robert Krikorian of the University of Cincinnati reported that 12 adults with early memory decline were better able to remember a list of words after they drank two to three cups of grape juice every day for 12 weeks than they could after drinking the same amount of a placebo beverage designed to look and taste like grape juice. Krikorian didn’t say how much the adults’ memories improved. The research, which was funded by grape juice giant Welch’s, hasn’t been published.

Want to try it? “You’re better off consuming the whole berry, fresh or frozen, if you can,” says Luke Howard, a phytonutrient expert and professor of food science at the University of Arkansas in Fayetteville. “Nothing is lost during freezing,” adds berry researcher Shukitt-Hale.

“If fresh or frozen isn’t available, I certainly wouldn’t want to tell someone not to consume a fruit juice or purée,” says Howard. “But it won’t have nearly the same antioxidant value as the natural package.” Does that matter to your brain? It’s too early to tell.

(The nonprofit Environmental Working Group has ranked the 47 most commonly eaten fruits and vegetables according to their pesticide residues. Strawberries are No. 6 in the “Dirty Dozen”—the 12 worst. They’re topped only by peaches, apples, bell peppers, celery, and nectarines. Buy organic versions if you can. Raspberries rank 20th out of 47 and cranberries rank 30th. The group didn’t look at other berries.)

“The Bottom Line

- Cranberries. Drinking cranberry juice beverages or eating cranberries regularly can lower the odds of getting a urinary tract infection in women who get recurrent infections.

- Pomegranate. So far, only two small studies in people suggest that it might slow the progression of prostate cancer and cardiovascular disease.

- Berries. They help with memory and counter some of the effects of aging in animals, but research in humans is just beginning.

- Açai, goji, mangosteen, and noni. Are they better for you than—or even as good as—other, less expensive fruits and juices? There’s little or no research.

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“Super” Fruits

Yesterday, noni and mangosteen were hot. Today, it’s açai and goji berries. Tomorrow…who knows which obscure tropical fruit juice will be touted on the Internet and TV talk shows and sold for $20 or $30 a quart or more?

“People are spending huge amounts of money on these fruits, but many of the touted health benefits are based on test-tube studies, not human clinical trials,” says Rutgers fruit researcher Amy Howell. (See “Web Self-Defense,” Nutrition Action, April 2009, p. 9.)

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