

Cranberries



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By David

Want to avoid a urinary tract infection? Try cranberry juice. That's what people have been doing for more than 100 years.

Yet four years ago, an international network of scientists known as the Cochrane Collaboration found that "the small number of poor quality trials gives no reliable evidence of the effectiveness of cranberry juice and other cranberry products."¹

Not any more.

Cranberry Flip

"Quite a lot has happened in cranberry research since then, and the Cochrane group has revised their conclusions," says researcher Amy Howell of Rutgers University's Blueberry and Cranberry Research and Extension Center in Chatsworth, New Jersey. (The centre is funded by the U.S. Department of Agriculture, the State of New Jersey, and cranberry-juice producer Ocean Spray.)

"New, better-designed clinical trials in Canada and Finland have confirmed the benefit of cranberries in preventing UTIs," Howell says.

In the Canadian study, 100 women who had at least two urinary tract infections during the past year were given either cranberry pills (the researchers were fuzzy on how much) or three cups of cranberry juice every day. During the next year, they were half as likely to suffer a UTI as 50 similar women who were given placebo drinks or pills.²

In the Finnish study, 50 young women who had previously been treated for a urinary tract infection were given about four tablespoons of a mixture of cranberry and lingonberry juice concentrate every day (lingonberries, which are in the cranberry family, are popular in Scandinavia). During the following six months, they were half as likely to suffer a UTI as 50 similar women who were given either nothing or a beverage with no juice concentrate.³

In clinical trials, "it's been pretty consistent that about 50 per cent of the people are helped by cranberry juice," concludes Howell.

That's why the Cochrane Collaboration now says that "cranberry juice may de-

crease the number of symptomatic UTIs over a 12 month period in women."⁴

Flushing Away *E. coli*

How can cranberries ward off urinary tract infections?

"In about half the cases of UTIs, the *E. coli* responsible have special little hairy tips called P fimbria," says Howell. "The bacteria use their fimbria to attach themselves to the bladder so that they can multiply and cause an infection."

That's where cranberries—which contain a group of chemicals called proanthocyanidins—come in.

"The particular proanthocyanidins in cranberries can bind to the P fimbria of the *E. coli* and prevent the bacteria from adhering to the bladder wall," says Howell. "It kind of gums up the *E. coli*, so that they get flushed out in the urine instead of causing an infection."

And because cranberries remove, rather than kill, the infection-causing bacteria, "there's less of a chance for the *E. coli* to become resistant, as they have to some of the antibiotics commonly used to treat UTIs."

But once the bacteria stick to the bladder wall and start multiplying, cranberries can't help and it's time to bring on the antibiotics.

"There is no evidence that drinking or eating cranberry products can cure a UTI

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once the bacteria have caused an infection," says researcher Kalpana Gupta of Yale University in Connecticut.

"That's why it's important for women who have recurrent UTIs to keep taking cranberries even when they don't have an infection," says Howell.

Anything Goes

Does it matter how you get your cranberries? "We've found that almost any kind

Cranberries to prevent urinary tract infection, strawberries to lower your blood pressure like you'll be running marathons at 100 miles every day. Perhaps.

While berries are packed with nutrients and fiber, the evidence that any of this protection comes from animal or test tube studies that translate to benefits for humans.

Here's the evidence for two berries—one with a tart taste that's not quite ready for prime time.

can prevent the bacteria from adhering," says Howell, "even the cranberry sauce from a Thanksgiving dinner."

Even so, "your best bet is to drink two glasses of a cranberry beverage, one in the morning and one before you go to bed." The second glass may prove to be important, says Howell, because preliminary studies show that cranberries' effects wear off after about 10 hours.

It's possible that less than a full glass twice a day would also work, but so far, no one has done a study to find the lowest effective dose.

What to drink? "One hundred per cent cranberry juice is too astringent, and it's not necessary," says Howell. Cranberry juice cocktail, which is about 25 per cent cranberry juice and 75 per cent sugar water, "works just as well as cranberry juice sweetened with other fruit juices." Ditto for white cranberry juice beverages.

(White cranberries are harvested before they develop their characteristic reddish colour.)

Just keep in mind that a 250 mL glass of cranberry juice or cocktail has around 140 calories. "Light" cranberry juice cocktails, which replace sugar with the safe artificial sweetener Splenda (sometimes also with acesulfame-potassium, which may not be safe), have only 40 calories a glass.

"The light versions work just as well," says Howell.

As for cranberry pills, "it's hit-or-miss," she says. The pills most likely to contain the active ingredients are made of powdered whole cranberries rather than an extract. The label should say something like "made from whole berries." 🍓

¹ *Cochrane Database Syst. Rev.* (3): CD001321, 2001.

² *Canadian Journal of Urology* 9: 1558, 2002.

³ *BMJ* 322: 1571, 2001.

⁴ *Cochrane Database Syst. Rev.* (2): CD001321, 2004.

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tions, blueberries to protect against Alzheimer's, ure, black raspberries to ward off cancer. Sounds you could just manage to eat a big bowl of berries

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solid human research and one



Blueberries Outsmart Alzheimer's," shouted the headline in *Prevention* magazine last year.

"If you had to pick one food to ensure your lowest rates of dementia as you get older, blueberries are the thing," proclaims Stephen Pratt, co-author of the best-selling book *SuperFoods: Fourteen Foods That Will Change Your Life*.

Maybe if you're a rodent.

"There clearly are antioxidants, and perhaps some other chemicals, in blueberries that can do good things to nerve cells in animals," points out Mark Mattson, Chief of the Laboratory of Neurosciences at the U.S. National Institute on Aging in Maryland.

Teaching Old Rats New Tricks

Researchers Jim Joseph and Barbara Shukitt-Hale have been feeding fruits and vegetables to laboratory animals since 1998 at the Jean Mayer U.S. Department of Agriculture Human Nutrition Research Center on Aging at Tufts University in Boston, Massachusetts.

"We looked at spatial learning and memory in older rats using a well-known water maze test," says Shukitt-Hale. In the experiment, rats swimming in a pool need to learn and remember where an underwater platform is located so that they can stand on it.

"For a person, it might be comparable to remembering where you left your car in the parking lot or figuring out how to get home from somewhere new," she explains.

The researchers took 19-month-old male rats (equivalent to about 65-year-old humans) and added blueberries, spinach, or strawberries to their diets for two months, until the rats were the equivalent of 75- or 80-year-olds.¹

Photos: PunchStock.

Blueberries

"After eating any of the three foods, the rats found the underwater platform more quickly than the control rats, who got only regular rat chow," says Shukitt-Hale.

Then they tested the motor coordination of older rats, first by making them balance on a stationary, horizontal rod and later by making them remain upright on a rotating, slowly accelerating rod.

For people, this might be like trying to walk on an uneven surface, like icy pavement during winter. "Think of it as taking your grandchildren to the park and trying to hang on the monkey bars with them," says Joseph.

The elderly rats who ate blueberries for two months were able to cling to the rods significantly longer than the rats who ate strawberries, spinach, or the rat chow.

"If someone has Alzheimer's, blueberries are not going to cure them."



"This is the first study to show that a particular food—blueberries—can reverse some of the cognitive and motor declines that come with normal aging in animals," says Joseph.

What makes blueberries different from strawberries or spinach? "We think their anthocyanins—the pigments that make the berries blue-purple—help brain cells communicate better with each other," says Joseph.

Shoestring Blueberries

The little research on blueberries in humans isn't what you'd call rigorous. Several amateur investigators in the Danbury, Connecticut, area have been testing blueberries on the reaction speed and memory of older volunteers since 2000 (see www.blueberrystudy.com).

"We've found slight improvements in those who eat a cup of blueberries every day," says Rolf Martin. But on a shoestring budget, Martin can't afford to recruit enough people or develop a look-

alike but blueberry-free placebo. So it's impossible to know whether the results mean anything.

"The limitations of these studies prevents us from concluding that blueberries are having any effect," says Bruce Kristal of the Weill Medical College of Cornell University in New York City, who nonetheless says that the Connecticut research is "worth pursuing."

"There may be some small benefit if you eat a lot of blueberries during your adult life," says the U.S. National Institute on Aging's Mark Mattson. "But that's based on animal studies. In humans we just don't know."

What about blueberries and Alzheimer's?

Here again, the evidence is in animals. Tufts researchers Joseph and Shukitt-Hale found that mice bred to develop an

Alzheimer's-like disease could negotiate a maze better in their old age if they had been fed blueberries every day through adulthood.² But it's not clear what that means for people.

"I've been in the neurodegenerative disorder field for quite a while," says Mattson. "In no case has something that's worked with dramatic effects in animals had a similar beneficial effect in people with Alzheimer's or Parkinson's or in those who have suffered a stroke."

"If someone has Alzheimer's, blueberries are not going to cure them. There's no evidence that there would be any benefit."

How Blue?

Joseph and Shukitt-Hale fed their rats and mice the equivalent of one-half to one cup of blueberries a day. "We used frozen berries, but our studies show that fresh or frozen, wild or domesticated all have the same benefits," says Joseph.

If you want to eat more blueberries, just skip the blueberry pie and the big blueberry muffins in the gourmet coffee shop. Heating blueberries speeds up the degradation of their anthocyanins.

"I don't think there's much left in a muffin or a pie by the time you eat it," Joseph says. 🍷

¹ *Journal of Neuroscience* 19: 8114, 1999.

² *Nutritional Neurosciences* 6: 153, 2003.