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[www.cranberryinstitute.org](http://www.cranberryinstitute.org)

## CRANBERRY JUICE MAKES INTESTINAL VIRUSES INACTIVE

Results of a recent study, presented at the 105<sup>th</sup> General Meeting of the American Society of Microbiology, suggest that cranberry juice may have naturally-occurring anti-viral activity. Researchers from St. Francis College in Brooklyn, New York, presented findings from an investigation designed to explore the occurrence and mechanism of cranberry juice cocktail on two mammalian enteric pathogens from the family Reoviridae.

The family Reoviridae is divided into nine genera, four of which can infect humans and animals. The researchers used intestinal monkey rotavirus SA-11 and a pool of goat intestinal reoviruses as model intestinal virus systems. Cellular inoculation with undiluted cranberry juice cocktail reduced reovirus infectivity and produced a marked loss of rotavirus penetration, suggesting that the anti-viral components in cranberry juice may interfere in the early stages of the viral replication cycle.

Researchers used a variety of methods to measure time, dose and loss of viral infectivity comparing cranberry juice (CJ) against a control of phosphate buffered saline (PBS). They also examined the possible effect of pH.

- **Time:** CJ produced an almost instantaneous loss of reovirus infectivity.
- **Dose:** Dose response experiments showed a reovirus inactivation at a CJ dilution of  $\leq 1:16$ .
- **Infectivity loss:** CJ reduced reovirus infectivity to levels below the sensitivity of the infectivity assay.
- **pH:** Researchers ruled out low pH as the mechanism by which CJ reduces infectivity by control comparisons and concluded that one or more of the anti-viral components in CJ are responsible for the total loss of infectivity.

Viruses cause 30 to 40 percent of infectious diarrhea cases in the United States and viral gastroenteritis is the second most common illness, after upper respiratory infections. Rotaviruses cause enteric disease with symptoms characterized by diarrhea, vomiting, abdominal discomfort and fever. The virus affects mainly infants and young children and is responsible for 50 percent of hospitalizations of children with diarrhea. The naturally-occurring anti-viral components of cranberry juice may be useful in preventing or treating these intestinal viral infections.

**Reference:** Cohen, P. et al. Mechanism(s) of Inactivation by the American Cranberry of Mammalian Enteric Viruses. 105<sup>th</sup> General Meeting, American Society for Microbiology, 2005.



## Fruits and Veggies Linked to Higher Scores on Cognitive Tests

Fruit and vegetables may ward off age-related brain conditions such as Alzheimer's disease, says James Joseph, Chief Scientist at the U.S. Department of Agriculture's neuroscience laboratory and a researcher at Tufts University in Boston.

"What might be beneficial for your heart also might help your brain," says Joseph.

"New research indicates a solid correlation between higher intake of fruits and vegetables by older adults and their scores on tests of cognitive ability."

Dark blue, red, green, orange and yellow fruits and vegetables are particularly high in polyphenolic compounds. These act as antioxidants, reducing the damage caused by highly reactive molecules called free radicals.

Laboratory measurements have shown blueberries, blackberries, cranberries and strawberries are the most powerful fruit antioxidants, while kale and spinach are the super-power veggies.

*Source: Adapted from Macleans Magazine (Canada) with files from The Medical Post, June 21, 2005.*

## PILOT STUDY SUGGESTS A LINK BETWEEN CRANBERRY JUICE CONSUMPTION AND MEMORY

As our aging population continues to grow and the average life expectancy increases, declining cognitive function and memory impairment have become major concerns. In 2002, the proportion of people with moderate or severe memory impairment ranged from approximately five percent among people age 65-69 to 32 percent among people age 85 and over. With those numbers on the rise, researchers are interested in identifying natural and synthetic compounds that can slow the process of mental aging.

In a recently published study in the *Journal of Alternative and Complementary Medicine*, researchers from Virginia Polytechnic Institute and State University examined the efficacy of cranberry juice on the neuropsychologic functioning of cognitively intact older adults. In this first-of-its-kind, double-blind, placebo-controlled clinical trial, 50 participants,  $\geq 60$  years of age, were randomly assigned to receive either 32 ounces per day of cranberry juice cocktail (CJC) or placebo for six weeks. Researchers administered a series of neuropsychological tests at baseline and again at the end of the six-week trial.



Efficacy measures consisted of participants' raw scores on a variety of standardized neuropsychologic tests as well as a follow-up self report questionnaire. The analyses revealed no significant interactions between the cranberry and placebo groups across all of the neuropsychologic tests and measures utilized in the study. However, researchers noted a nonsignificant trend on the subjective, self-report questionnaire in which more than twice as many participants in the cranberry group rated their overall abilities to remember by treatment end as "improved" as compared to placebo controls.

While the results of this pilot study are considered directional and not statistically significant, this was a short-term study and the first of its kind. Given the public health implications of impaired memory in the aging population, larger follow-up clinical trials are definitely warranted.

**Reference:** Crews, W.D, Jr., et al. A double-blinded, placebo-controlled, randomized trial of the neuropsychologic efficacy of cranberry juice in a sample of cognitively intact older adults: pilot study findings. *J. of Alt. and Comp. Med.* Apr 2005; Vol. 11, No. 2: 305-309.



## Calendar of Events

**National Conference of Gerontological Nurse Practitioners**, September 28 – October 2, 2005, Cleveland, OH. For more information, visit [www.ncgnp.org](http://www.ncgnp.org)

**National Association of Nurse Practitioners in Women's Health**, September 28-30, 2005, Naples, FL. For more information, visit [www.npwh.org](http://www.npwh.org)

**American Dental Association**, October 6-9, 2005, Philadelphia, PA. For more information, visit [www.ada.org](http://www.ada.org)

**American Dietetic Association – Visit the Cranberry Institute booth**, October 22-25, 2005, St. Louis, MO. For more information, visit [www.eatright.org](http://www.eatright.org)

**American Academy of Physician's Assistants – Visit the Cranberry Marketing Committee booth**, May 27-June 1, 2006, San Francisco, CA. For more information, visit [www.aapa.org](http://www.aapa.org)

**American Association of Nurse Practitioners – Visit the Cranberry Marketing Committee booth**, June 20-25, 2006, Grapevine, TX. For more information, visit [www.aanp.org](http://www.aanp.org)

## UNIQUE CHEMICAL STRUCTURE SETS CRANBERRY APART FROM THE REST

It is well established in the scientific literature that cranberry's ability to maintain urinary tract health is not due to acidity, as once believed, but rather to distinct flavonoids in cranberries known as proanthocyanidins (PACs). These special flavonoids help prevent urinary tract infections (UTIs) by blocking uropathogenic bacteria from adhering to the epithelium and proliferating to cause infection. While a variety of foods are rich in PACs, such as grapes, apples, green tea and chocolate, not all exert the same bacteria-blocking effects of cranberry.

Researchers from the Marucci Center for Blueberry Cranberry Research at Rutgers University looked at specific differences in the molecular structure of common PAC-containing foods with respect to prevention of bacterial adhesion associated with UTIs. The PACs present in cranberries have an uncommon A-type intermolecular linkage that appears to impart the anti-adhesion activity. Other commercial sources of PACs exhibiting all B-type linkages had not previously been screened for this activity.

The goals of this study were to compare the in vitro anti-adhesion activity of A-linked PACs from cranberry juice cocktail with the anti-adhesion activities of B-linked PACs from commercial grape and apple juices, green tea and dark chocolate, and determine if anti-adhesion activity is detectable in human urine following consumption of single servings of each commercial food product.

The isolated A-type PACs from cranberry juice cocktail elicited in vitro anti-adhesion activity at 60µg/ml, the B-type PACs from grape exhibited minor activity at 1200µg/ml, while other B-type PACs were not active. Anti-adhesion activity in human urine was detected following cranberry juice cocktail consumption, but not after consumption of the non-cranberry food products. Results suggest that presence of the A-type linkage in cranberry PACs may enhance both in vitro and urinary bacterial anti-adhesion activities and aid in maintaining urinary tract health.

**Reference:** Howell AB, Reed JD, Krueger CG, Winterbottom R, Cunningham DG, Leahy M. A-type cranberry proanthocyanidins and uropathogenic bacterial anti-adhesion activity. *Phytochemistry*. 2005 Jul 28; [Epub ahead of print]

### Also in the news..... CRANBERRY RESEARCH EARNS PRAISE FROM THE CENTER FOR SCIENCE IN THE PUBLIC INTEREST

In CSPI's June 2005 edition of the *Nutrition Action Health Letter*, cranberries receive the nod of approval for UTI prevention based on scientific evidence that includes a number of clinical trials. To view the article in its entirety, visit [www.cspinet.org/nah/06\\_05/berrygood.pdf](http://www.cspinet.org/nah/06_05/berrygood.pdf).