



Cranberry Health News

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LEADING RESEARCHERS PROVIDE OVERVIEW OF CRANBERRY'S HEALTH BENEFITS:

*Educational session presented at the Institute of Food Technologists 2007
Annual Meeting & Food Expo*

In July 2007, the Cranberry Institute sponsored its first-ever scientific session at the Institute of Food Technologists (IFT) Annual Meeting & Food Expo, held in Chicago, IL. The premier organization and tradeshow for food scientists, IFT 2007 attracted almost 24,000 attendees from more than 75 countries to digest the latest developments in food science and technology. The session, titled "An Overview of the Research Supporting the Health Benefits of Cranberries, Including Clinical and Mechanistic Findings," was moderated by Cranberry Institute Science Advisor, Martin Starr, Ph.D., and featured a panel of leaders in the area of cranberry research. It was the only symposium focused solely on the research of a single fruit or vegetable. Below is a summary of their presentations:

Amy Howell, Ph.D., Rutgers University

*Cranberry proanthocyanidins (PACs) and their role in preventing bacterial
adhesion and urinary tract infections (UTIs)*

Cranberry juice consumption has been shown clinically to prevent UTIs; earlier, the effect was thought to be due to acidification of the urine. However, it's now known that specific compounds in cranberry called PACs act to inhibit bacterial adherence to the uroepithelium, preventing subsequent colonization and UTIs. Dr. Howell reviewed the role of cranberry PACs in preventing bacterial adhesion, current research on identifying the urinary metabolites following cranberry ingestion and determination of a unique metabolite that can be utilized as a compliance marker in clinical trials. Dr. Howell is one of the researchers currently funded by the National Center for Complementary and Alternative Medicine to study cranberry's health benefits.

Rui Hai Liu, M.D., Ph.D., Cornell University

Role of cranberries in the prevention of breast and other cancers

Cranberry extracts have been shown to exhibit potent antioxidant activity, inhibit LDL oxidation and have anti-bacterial and anticancer activities. The phytochemicals present in cranberries, especially phenolics and flavonoids, appear responsible for these health benefits. Bioactivity-guided fractionation of cranberries was used to determine the chemical identity of bioactive constituents. Antiproliferative and antioxidant activities were evaluated. Dr. Liu's results suggest that cranberry phytochemical extracts possess the ability to suppress the proliferation of human breast cancer MCF-7 cells, and he attributes this suppression at least partially to the initiation of apoptosis (cell death) and cell cycle G1 phase arrest.

Steven Lipson, Ph.D., St. Francis College

Investigations into the effects of cranberry juice beverage on in vitro inhibition and in vivo infectivity of reovirus-induced gastroenteritis in athymic mice

Studies in Dr. Lipson's laboratory examined the inhibitory effects imparted by cranberry juice, purified cranberry extracts (e.g., PACs), and Concord grape juice on the infectivity and growth of bacterial and animal viruses. Cranberry, and to a lesser extent grape juice drink, affected antiviral inhibitory activity *in vitro*. To further investigate the practical aspects of these findings, Dr. Lipson expanded investigations into the mouse model. The bovine reovirus, an agent of gastroenteritis in mammals, was used as an animal model system. The resulting tests showed for the first time an ameliorating and inhibitory effect imparted by a commercially available cranberry juice drink upon intestinal viral disease in an animal model. Importantly, these findings establish a rationale to suggest a potential health benefit to human beings.



The presented cranberry research has been funded by the Cranberry Institute and other industry organizations, such as the Wisconsin Cranberry Board, Canadian Cranberry Growers Coalition, and Ocean Spray.

Daniel Grenier, Ph.D., Laval University

Potential of cranberry constituents for periodontal health benefits

Recently, Dr. Grenier's laboratory found clear evidence supporting the potential benefits of cranberry constituents for periodontal health. Cranberry PACs exhibited very promising properties with respect to bacteria that cause periodontitis, as well as to the host inflammatory response and the enzymes that degrade the external cells of the gums. Cranberry constituents may potentially inhibit film formation and attachment of *Porphyromonas gingivalis*, a major agent of chronic periodontitis.

Jess Reed, Ph.D., University of Wisconsin

An overview of cranberry proanthocyanins, COX-2 inhibition, inflammation, antioxidant levels, and consequent health benefits

Chronic inflammation is associated with atherosclerosis and cardiovascular disease, several cancers (including colorectal, prostate and skin), arthritis and Alzheimer's disease. The expression COX-2 and iNOS and their association with pain and fever suggest that COX-2 and iNOS have a role in these diseases. In Dr. Reed's studies, cranberry polyphenols significantly attenuated the LPS induced increase in COX-2 and iNOS expression in mouse lung tissue by 45 and 46 percent respectively when fed at one percent of the diet. These results indicated that cranberry PACs have anti-inflammatory activity both *in vitro* and *in vivo*.

"Speaking as a nutrition scientist interested in the health benefits of colorful fruits and vegetables, I am very pleased to see researchers delving into the emerging scientific studies on cranberry's beneficial effects," states David Heber, MD, PhD, FACP, FACN, who serves as a Scientific Advisory Board member to the Cranberry Institute, and is the founding Chief of the Division of Clinical Nutrition in the Department of Medicine and the Founding Director of the UCLA Center for Human Nutrition, as well as a Professor of Medicine and Public Health at UCLA.



TOP FIVE CRANBERRY MYTHS

Martin Starr, Ph.D., dispels myths about cranberry's health benefits

Health professionals ranging in specialties from pediatrics to urology and endocrinology often recommend cranberries to patients as an essential part of daily prevention of urinary tract infections (UTIs). However, some myths prevail about how cranberries perform this preventative mechanism, as well as what other benefits cranberry may provide. Martin Starr, Ph.D., Science Advisor to the Cranberry Institute, offers these insights to help separate fact from fiction.

MYTH: Cranberries prevent UTIs by acidifying the urine

It's that bacteria-blocking activity that makes cranberries so effective for helping prevent UTIs and other bacteria-related conditions, potentially including periodontal disease and stomach ulcers. While cranberries may have some impact on the acidity of urine, the evidence is NOT statistically significant. The reason why cranberries are so effective in the prevention of UTIs is due to their flavonoid content. These flavonoids, known as proanthocyanidins (PACs), have a unique chemical structure believed to be responsible for their antiadhesion properties.

For more information on cranberry's antiadhesion properties, please visit:
http://www.cranberryinstitute.org/news/CI_Antiadhesion_Fact_Sheet.pdf

MYTH: Cranberry products (juice, pills, dried cranberries) are effective for curing UTIs

In regard to UTIs, cranberry products should be recommended to patients as a preventative measure only and NOT a curative one. For example, consuming 8 to 10 ounces (about one cup) of 27 percent cranberry juice daily is enough to help prevent the adhesion of infection-causing bacteria – such as *E. coli* – from the urinary tract wall. Cranberry products, including dried cranberries, cranberry juice concentrate, and cranberry pills, are also effective tools for prevention when consumed daily. If the patient already has an infection, antibiotic medication should be considered.

MYTH: Cranberry juice should to be avoided to prevent interaction with warfarin

Early non-scientific anecdotes in the United Kingdom suggested that an interaction between cranberry beverages and warfarin might exist. However, a study led by Dr. Zhaoping Li of University of California, Los Angeles, and published in the December 2006 issue of the *Journal of the American Dietetic Association* found that there was NOT a significant interaction between the daily consumption of 250 mL cranberry juice and warfarin. As a general practice for all patients on warfarin, prothrombin time as assessed by the international normalized ratio (INR) should be monitored, but it does not seem necessary to eliminate daily cranberry juice consumption of 250mL.

For more information on Dr. Li's study, please visit:
<http://www.cranberryinstitute.org/news/CranberrySummer07Newsletter.pdf>

MYTH: White cranberry juice is less effective than red cranberry juice for preventing UTIs

White cranberry juice – commonly known for its delicate flavor – contains the same beneficial compounds found in red cranberry juice. Harvested one month before the red color of the cranberry develops, white cranberry juice has a lower pigment content and acidity level than the traditional red berry, but NOT a dissimilar level of proanthocyanins (PACs). These are the compounds responsible for cranberry's antiadhesion properties, and are inherent in the cranberry regardless of color. Commercially available red or white cranberry juice products may vary in their juice content, as indicated on their labeling.

MYTH: All cranberry beverages, including cranberry juice cocktail, contain 100 percent cranberry juice

Many cranberry juice products commonly available to consumers, including cranberry juice cocktail, contain 27 percent cranberry juice, NOT 100 percent. Twenty-seven percent is the level shown to be preferred in taste evaluations. A range of light products (which contain low calorie sweeteners) or 100 percent juice products (which blends cranberry with other naturally sweeter fruit juices such as grape or raspberry) are available. Additionally, pure cranberry juice (known as 100 percent cranberry juice) or cranberry juice concentrates are available in health food stores and can be blended to taste or used for cooking.

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