Cranberry Health News

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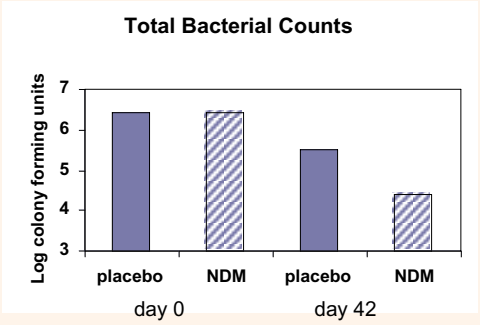
In This Issue

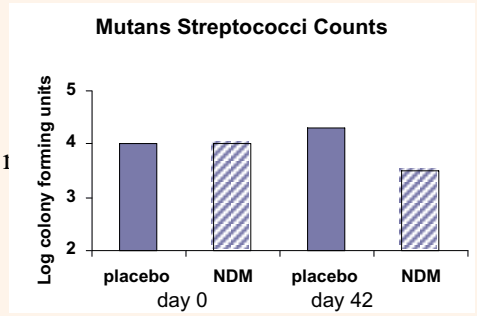
Cranberry Antiadhesion Properties Good for Oral Health

Recently published studies suggest that the same bacteria-blocking agents that make cranberry an effective weapon against urinary tract infections (UTIs) may also be beneficial in guarding against harmful oral bacteria. In one study, published in *FEMS Microbiology Letters*, Weiss et al investigated the effect of non-dialyzable material (NDM) obtained from cranberries on salivary bacterial counts in healthy subjects[1].

In this two-cell, double-blind clinical trial, 60 subjects were randomly assigned to the experimental group or the placebo group and asked to use an NDM mouthwash twice daily for 42 days while maintaining their regular hygiene habits. Researchers established baseline measurements for total salivary bacteria and mutans streptococci and compared those with measurements taken on day 42 of the study.



The bacterial counts in the whole saliva of subjects using NDM mouthwash showed a marked reduction in both mutans streptococci and total bacteria between day 0 and day 42 of the study as compared with that in the placebo mouthwash group.



The researchers also examined the effect of NDM on sucrose-dependent adhesion of mutans streptococci to saliva-coated hyrdoxyapatite. NDM inhibited adhesion in a dose-dependent r (90%) at 130 _g ml^{-1}. The adhesion of streptococci to the pellide on tooth surfaces appears to be the first step in plaque formation.

Two other recently published studies appear to confirm that cranberry constituents have an inhibitory effect on oral bacterial adhesion and may help prevent biofilm formation on teeth[2,3]. While additional research is warranted, cumulative studies suggest that continuous use of cranberry-containing mouthwashes may be an effective weapon against harmful oral bacteria and ultimately the onset of periodontal disease.

References for this article appear on page three.

Fruit & Veggies Still Superior to Supplements

Many Americans struggle to get their five servings of fruits and vegetables each day and then try to fill the void with dietary supplements. While there appear to be benefits associated with some supplements, research suggests that whole foods are still a far better delivery system for essential nutrients.[1]

In a recent study, participants were divided into two groups and placed on the same basic diet with the primary difference being one group consumed six servings of fruits and vegetables per day while the other group received a vitamin and mineral supplement in place of the fruits and vegetables. After 25 days on the diet, the group consuming fruits and vegetables showed significantly less oxidative damage than the supplement-only group.[2]

Plant-based foods are a vital source of protective phytonutrients. Fruits and vegetables are often rich in various forms of antioxidants such as flavonoids and phenolic compounds. Cranberries ranked among the highest in polyphenol content in a group of 10 commonly eaten foods.

References appear on page 3.

Inhibiting Effects of Cranberry Compounds on Cancer Cell Growth

Many of the studies investigating the chemopreventive properties of cranberries focus on isolating and identifying specific biologically active components, such as phenolic compounds. Researchers at the Center for Human Nutrition, University of California, took interest in examining the biological effects of standardized total cranberry extracts versus single purified compounds. In a study published in the *Journal of Agricultural and Food Chemistry*, Seeram et al evaluated the human cancer cell antiproliferative activities of total cranberry extracts (TCE) and examined the synergistic effects that result from combinations of cranberry compounds.

Researchers analyzed and quantified the TCE, then separated it into fractions enriched in sugars, organic acids, total polyphenols, proanthocyanidins and anthocyanins. Using a luminescent ATP cell viability assay, the antiproliferative effects of TCE versus all fractions were evaluated against human oral, colon and prostate cancer cell lines.

Of the oral cancer cell lines, TCE inhibited the mouth epidermal carcinoma cells (60 percent) and to a lesser extent the tongue epithelial cells (eight percent). The fraction containing total polyphenols significantly enhanced the antiproliferative activities compared to the other fractions.

For the colon cancer cells, the TCE demonstrated specific antiproliferative effects against the more progressive and metastatic cells. Once again, of all the fractions, the total polyphenols demonstrated the greatest antiproliferative activity against specific cell lines. Because of increasing evidence suggesting an association between cancer and COX enzymes, researchers postulated that TCE might have a specific mechanistic action related to the inhibition of COX enzymes.

What are COX enzymes?

Cyclooxygenase (COX) enzymes produce prostaglandins, which perform a number of hormone-like tasks.

Prostaglandins alter the activities of the cells near and around their place of origin. They also cause inflammation, regulate blood flow to some organs and transport molecules across cell membranes.

A number of cancers appear to overexpress the COX-2 enzyme. Inhibition of those enzymes seems to have an anti-proliferative effect on certain types of cancer cells.

Among the prostate cancer cell lines, the more progressive cell line was most sensitive to TCE. While all fractions tested inhibited the proliferation of prostate cancer cells, total polyphenols was the most active.

In each of the three types of cancer cells studied, total polyphenols was the most active fraction of all cell lines. There were also synergistic antiproliferative effects resulting from the combination of anthocyanins, proanthocyanidins and flavonol glycosides compared to individual purified compounds. Researchers concluded that the enhanced antiproliferative activity of total polyphenols compared to TCE and its individual photochemicals suggests synergistic or additive interactions.

Reference: Seeram, N. et al. J Agric Food Chem. 2004, May 5;52(9): 2512-7.

Calendar of Events

American Dietetic Association 2004 Food & Nutrition Conference & Expo, October 2-5, 2004, Anaheim, CA.
http://www.eatright.org/Public/ConferencesAndEvents/96_18095.cfm

2004 National Clinical Conference
American College of Nurse Practitioners
October 20-24, 2004, Philadelphia, PA.
http://expo.jspargo.com/acnp04/

Nutrition Week 2005
January 30 – February 2, 2005, Orlando, FL.
http://www.ascn.org

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References for cranberry and oral health

1 Weiss, E.I. et al. *FEMS Microbiol* Lett. 2004, Mar 12; 232(1):89-92.
2 Yamaka, A. et al. *Oral Microbiol Immunol.* 2004, June; 19(3):150-4.
3 Steinberg, D. et al. *J Antimicrob Chemother.* 2004, Jul;54(1):86-9.

References for fruits and vegetables superior to supplements

1 *Circulation.* 2004;110:637-641.
2 "The best way to get antioxidants." Karen Collins, RD, *MSNBC,* July 23, 2004.

Top 10 Cancer-Fighting Foods

From the National Foundation of Cancer Research

1. **Peppers** are a great source of cancer fighting vitamin C, vitamin A, folic acid and potassium. Red-hot capsaicin, which lends a kick to chili peppers, may offer protection against lung cancer by blocking damage to your genes from the carcinogens in food and cigarette smoke.
2. **Crucifers** including cabbage, broccoli, cauliflower, collards, kale, brussels sprouts, bok choy, mustard greens, radishes, rutabaga, turnips and watercress, all include powerful phytochemicals that help stave off cancer by stimulating protective enzymes, which block carcinogens from entering cells and suppress tumor growth. These foods help guard against bladder cancer.
3. **Berries:** Cranberries, blueberries, raspberries and strawberries contain vitamin C and folic acid and are high in fiber and potassium. Berries also contain phytochemicals and are strong antioxidants.
4. **Citrus fruits** are rich in limonene, which seems to stimulate the immune system to fight cancer cells.
5. **Tomatoes:** Lycopenes are found in tomato-based pasta sauce, tomato paste, ketchup and salsa and contain powerful antioxidant properties. Lycopene has an apparent ability to reduce the risk of prostate and certain other cancers, and it plays a key role in the body's defense against aging and many degenerative diseases. Heating tomatoes is the key to breaking down the fibrous material inside tomatoes and releasing the lycopene.
6. **Olive oil:** Extra virgin olive oil, which is mechanically pressed without any heat or chemical alteration, is one of the healthiest types of fat and includes phytochemicals with antioxidants and vitamin E. Olive oil may help prevent breast and colon cancer.
7. **Apples,** especially the peel, contain cancer-fighting phytochemicals and have been proven to inhibit the growth of both colon and liver cancer cells.
8. **Pumpkins, sweet potatoes** and **acorn squash** are all described as virtual battalions of cancer-fighting carotenoids, particularly beta carotene.
9. **Garlic, onions, leeks** and **shallots** block carcinogens with organosulfides, the chemicals that give these vegetables their pungent odor.
10. **Beans, nuts,** and **whole-grain breads** and **cereals** can shield you from pancreatic and stomach cancer. They boast plenty of fiber to speed waste out of the body, giving harmful substances less time to damage the cells lining your digestive system.