

Cranberries: the colour of health

Cranberries and urinary tract health

Cranberry preparations have been used to treat urinary tract infections (UTI's) and other illnesses for centuries. More recent medical research has revealed the chemical and physiological effects cranberries have on the urinary tract and just how drinking cranberry juice may help prevent and cure urinary tract infections.

Cranberries contain proanthocyanidins (PACs) or condensed tannins. It is these unique compounds that are pivotal in the prevention of UTI's. PACs inhibit the adhesion of infection-causing bacteria^{1,2} such as *Escherichia coli*, to the urinary tract epithelium and hence prevent the subsequent reproduction required for infection.

This property of the cranberry is referred to as "anti-adhesion". While many fruits contain similar compounds, thus far only the PACs of cranberries have been shown to exhibit this effect.

Cranberries and dental health

The same "anti-adhesion" properties of cranberries noted above may help reverse and inhibit certain oral bacteria responsible for plaque and periodontal disease.

Dental plaque is composed primarily of oral bacteria that have attached themselves to the tooth and gum surfaces, and to each other (coaggregation). This biofilm may be comprised of hundreds of species and can be resistant to saliva and mechanical brushing which would otherwise remove these bacteria. Plaque, as is well-known, is a major cause of periodontal disease.

A study published in the *Journal of the American Dental Association* reported that a unique cranberry juice component, a high-molecular-weight nondialysable material (NDM), has the ability to reverse and inhibit the co-aggregation of certain oral bacteria responsible for dental plaque and periodontal disease *in vitro*.³

Cranberries and heart health

Cranberries contain a high amount of antioxidants that may protect against heart disease.

Flavonoids, found in abundance in cranberries, have been shown to function as potent antioxidants and may reduce the risk of atherosclerosis. Ongoing research continues to suggest that cranberries may offer a natural defence against atherosclerosis.⁴⁻⁶

Atherosclerosis, in the simplest terms, is the accumulation of low density lipoprotein (LDL), or "bad cholesterol", in arteries resulting in restricted blood flow. In the advance stages of the disease, blood flow may decrease severely or cease completely resulting in angina (chest pain), a thrombosis (blood clot) and/or myocardial infarction (heart attack). Atherosclerosis is a primary cause of cardiovascular disease.

What is an antioxidant?

Antioxidants are compounds that neutralize free radicals when they are formed. The human body is capable of producing antioxidants naturally, but under conditions of

stress this antioxidant production can be severely impaired. Fruits and vegetables, including cranberries, provide an excellent source of additional antioxidants.

What is a free radical?

Normally the molecules that make up our body have an even number of electrons orbiting around a nucleus. A free radical is any molecule with an odd number of electrons. These "unstable" molecules attempt to "stabilize" themselves by capturing an electron from another molecule. The cells in the body where this process is occurring can become injured. The cell may malfunction or even become malignant.

How are free radicals produced in the body?

The body produces free radicals through normal metabolic pathways (i.e. extracting energy from the food we eat). Exposure to the sun's ultraviolet radiation, tobacco smoke, and exposure to certain naturally occurring chemicals can also be sources of free radical production. In short, we are exposed to potential sources of free radical production every day of our lives.

Cranberries and cancer

An anti-cancer compound in cranberries has been found to inhibit metastasis, the process of cancer cells breaking away and dispersing throughout the rest of the body. Application of the compound in laboratory model systems showed a reduction in tumor cell development by 50 percent, inhibiting growth in lung, colon and leukaemia cells.⁷

Cranberries and ulcers

Cranberries may help prevent peptic ulcers by inhibiting bacterial adhesion to the gastric mucus and stomach epithelium.

Peptic ulcers are increasingly being attributed to infection by *Helicobacter pylori* bacteria, as opposed to stress and/or stomach acidity. A high-molecular-weight nondialysable constituent of cranberry juice has been shown to inhibit the adhesion of *H. pylori* to human gastric mucus *in vitro*.⁸ These preliminary results suggest that cranberries may be beneficial in the prevention of peptic ulcers through the inhibition of *H. pylori* adhesion to gastric mucus and stomach epithelium.

In addition to ulcers, *H. pylori* infection has been linked to gastric adenocarcinomas (stomach cancer), non-ulcer dyspepsia (acid reflux disease), and gastritis (inflammation of the stomach).

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