

Cranberry (*Vaccinium macrocarpon*)

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While some complementary and alternative techniques have been studied scientifically, high-quality data regarding safety, effectiveness, and mechanism of action are limited or controversial for most therapies. Whenever possible, it is recommended that practitioners be licensed by a recognized professional organization that adheres to clearly published standards. In addition, before starting a new technique or engaging a practitioner, it is recommended that patients speak with their primary healthcare provider(s). Potential benefits, risks (including financial costs), and alternatives should be carefully considered. The below monograph is designed to provide historical background and an overview of clinically-oriented research, and neither advocates for or against the use of a particular therapy.

Related Terms:

- American cranberry, Arandano Americano, Arandano trepador, bear berry, black cranberry, bog cranberry, Ericaceae (family), European cranberry, grosse moosebeere, isokarpalo, Kranbeere, Kronsbeere, large cranberry, low cranberry, marsh apple, moosebeere, mossberry, mountain cranberry, *Oxycoccus hagerupii*, *Oxycoccus macrocarpus*, *Oxycoccus microcarpus*, *Oxycoccus palustris*, *Oxycoccus quadripetalus*, pikkukarpalo, preisselbeere, ronce d'Amerique, trailing swamp cranberry, Tsuru-kokemomo, *Vaccinium edule*, *Vaccinium erythrocarpum*, *Vaccinium hageruppi*, *Vaccinium microcarpum*, *Vaccinium occycoccus*, *Vaccinium plaustre*, *Vaccinium vitis*.

BACKGROUND

- There is some human evidence supporting the use of cranberry juice and cranberry supplements to prevent urinary tract infection (UTI), although most available studies are of poor quality. There are no clear dosing guidelines, but given the safety of cranberry, it may be reasonable to recommend the use of moderate amounts of cranberry juice cocktail to prevent UTI in non-chronically ill individuals.
- Cranberry has not been shown effective as a treatment for documented UTI. Although cranberry may be used as an adjunct therapy in some cases, given the proven efficacy of antibiotics, cranberry should not be considered a first line treatment.
- Cranberry has been investigated for numerous other medicinal uses, and promising areas of investigation include prevention of *H. pylori* infection, which causes gastrointestinal ulcers and dental plaque.

SCIENTIFIC EVIDENCE

Uses	Grade*
<i>These uses have been tested in humans or animals. Safety and effectiveness have not always been proven. Some of these conditions are potentially serious, and should be evaluated by a qualified healthcare provider.</i>	
H. pylori infection	
Based on early research, cranberry may reduce the ability of <i>Helicobacter pylori</i> bacteria to live in the stomach and cause ulcers. Further research is needed to	B

<p>bacteria to live in the stomach and cause ulcers. Further research is needed to confirm these results.</p>	
<p>Urinary tract infection (prevention)</p> <p>There are multiple studies of cranberry (juice or capsules) for the prevention of urinary tract infections in healthy women, pregnant women, individuals with spinal cord injuries, and nursing home residents. While no single study convincingly demonstrates the ability of cranberry to prevent UTIs, the sum total of favorable evidence combined with laboratory research tends to support this use. It is not clear what dose is best.</p> <p>Cranberry seems to work by preventing bacteria from sticking to cells that line the bladder. Contrary to prior belief, urine acidification does not appear to play a role. Notably, many studies have been sponsored by the cranberry product manufacturer Ocean Spray®. Additional research is needed in this area before a strong recommendation can be made.</p>	<p><u>B</u></p>
<p>Achlorhydria and B12 absorption</p> <p>Preliminary research suggests that cranberry juice may increase vitamin B12 absorption in patients taking drugs that reduce stomach acid (antacids), such as proton pump inhibitors like lansoprazole (Prevacid®). However, this effect may be due to the acidity of the juice rather than an active component of cranberry itself. Further study is needed before a recommendation can be made.</p>	<p><u>C</u></p>
<p>Antibacterial</p> <p>Study results of cranberry as an antibacterial show conflicting results. Further study is needed before a conclusion can be drawn.</p>	<p><u>C</u></p>
<p>Antioxidant</p> <p>Based on laboratory study, cranberry may have antioxidant properties. However, human study is lacking. Further study is needed before a recommendation can be made.</p>	<p><u>C</u></p>
<p>Antiviral and antifungal</p> <p>Limited laboratory research has examined the antiviral and antifungal activity of cranberry. There is a lack of reliable human studies supporting the use of cranberry in this area.</p>	<p><u>C</u></p>
<p>Cancer prevention</p> <p>Based on a small amount of laboratory research, cranberry has been suggested for</p>	

Based on a small amount of laboratory research, cranberry has been proposed for cancer prevention. Study is needed in humans before a strong recommendation can be made.	
<p>Dental plaque</p> <p>Because of its activity against some bacteria, cranberry juice has been proposed as helpful for mouth care. However, many commercial cranberry juice products are high in sugar and may not be suitable for this purpose. There is not enough research in this area to make a clear recommendation.</p>	<u>C</u>
<p>Kidney stones</p> <p>Based on preliminary research, it is not clear if drinking cranberry juice increases or decreases the risk of kidney stone formation. Cranberry juice is reported to decrease urine levels of calcium, increase levels of urine magnesium and potassium, and increase urine levels of oxalate.</p>	<u>C</u>
<p>Memory improvement</p> <p>Preliminary study results show that cranberry juice may increase overall ability to remember. Further well-designed clinical trials are needed to confirm these results.</p>	<u>C</u>
<p>Radiation therapy side effects (prostate cancer)</p> <p>There is preliminary evidence that cranberry is not effective in preventing urinary symptoms related to pelvic radiation therapy in patients with prostate cancer.</p>	<u>C</u>
<p>Reduction of odor from incontinence/bladder catheterization</p> <p>There is preliminary evidence that cranberry juice may reduce urine odor from incontinence or bladder catheterization. Further study is needed before a firm recommendation can be made.</p>	<u>C</u>
<p>Urinary tract infection (treatment)</p> <p>There is a lack of well-designed human studies of cranberry for the treatment of urinary tract infections. Laboratory research suggests that cranberry may not be an effective treatment when used alone, although it may be helpful as an adjunct to other therapies such as antibiotics.</p>	<u>C</u>
<p>Urine acidification</p> <p>In large quantities, cranberry juice may lower urine pH, making it more acidic.</p>	<u>C</u>

Contrary to prior opinion, urine acidification does not appear to be the way that cranberry prevents urinary tract infections. More research is needed in this area.	
Urostomy care It is proposed that skin irritation at urostomy sites may be related to urine pH. Cranberry juice can lower urine pH and has been tested for this purpose. Further study is needed before a recommendation can be made.	C
Chronic urinary tract infection prophylaxis: children with neurogenic bladder There is preliminary evidence that cranberry is not effective in preventing urinary tract infections in children with neurogenic bladder.	D
* Key to grades: A: Strong scientific evidence for this use; B: Good scientific evidence for this use; C: Unclear scientific evidence for this use; D: Fair scientific evidence against this use (it may not work); F: Strong scientific evidence against this use (it likely does not work).	

TRADITION/THEORY

The below uses are based on tradition, scientific theories, or limited research. They often have not been thoroughly tested in humans, and safety and effectiveness have not always been proven. Some of these conditions are potentially serious, and should be evaluated by a qualified healthcare provider. There may be other proposed uses that are not listed below.

- Alzheimer's disease, anorexia, anti-inflammatory, antiparasitic, blood disorders, blood thinner, cancer treatment, heart disorders, decontamination (of meats), gum disease, hardening of the arteries, improving urine flow, gall bladder inflammation, gall bladder stones, high cholesterol, influenza, ischemic stroke, liver disorders, neurodegenerative diseases, rheumatoid arthritis, scurvy, stomach ailments, urinary tract inflammation, vomiting, wound care.

DOSING

The below doses are based on scientific research, publications, traditional use, or expert opinion. Many herbs and supplements have not been thoroughly tested, and safety and effectiveness may not be proven. Brands may be made differently, with variable ingredients, even within the same brand. The below doses may not apply to all products. You should read product labels, and discuss doses with a qualified healthcare provider before starting therapy.

Adults (18 years and older)

- For urinary tract infection prevention, the recommended doses range from 90 to 480 milliliters (3 to 16 ounces) of cranberry cocktail twice daily, or 15 to 30 milliliters of unsweetened 100% cranberry juice daily. 300 milliliters per day (10 ounces) of commercially available cranberry cocktail (Ocean Spray®) has been used in well-designed research.
- Other forms of cranberry used include capsules, concentrate, and tinctures. Between one and six 300 to 400 milligram capsules of hard gelatin concentrated cranberry juice extract, twice daily by mouth, given with water one hour before meals or two hours after meals has been used. One and a half ounces of frozen juice concentrate twice daily by mouth has been used,

as well as 4 to 5 milliliters of cranberry tincture three times daily by mouth. One study suggests that 500 milliliters of cranberry juice with 1,500 milliliters of water was sufficient in helping prevent the formation of oxalate kidney stones.

Children (younger than 18 years)

- There is not enough scientific evidence to recommend cranberry supplementation in children (beyond amounts found in a normal balanced diet).

SAFETY

The U.S. Food and Drug Administration does not strictly regulate herbs and supplements. There is no guarantee of strength, purity or safety of products, and effects may vary. You should always read product labels. If you have a medical condition, or are taking other drugs, herbs, or supplements, you should speak with a qualified healthcare provider before starting a new therapy. Consult a healthcare provider immediately if you experience side effects.

Allergies

- Cranberry should be avoided by people with an allergy/hypersensitivity to *Vaccinium* species (cranberries and blueberries). People who are allergic to aspirin should avoid drinking large quantities of cranberry juice.

Side Effects and Warnings

- Patients with diabetes or glucose intolerance may want to drink sugar-free cranberry juice to avoid a high sugar intake. High doses of cranberry may cause stomach distress and diarrhea, or may increase the risk of kidney stones in people with a history of oxalate stones. Some commercially available products are high in calories. On average, six ounces of cranberry juice contains approximately 100 calories. One study showed the possibility for occurrence of vaginal yeast infections in those women who often consume cranberry juice, although this has not been proven. Use cautiously if taking anticoagulants (blood thinners) such as warfarin, medications that affect the liver, or aspirin.

Pregnancy and Breastfeeding

- Safety has not been determined in pregnancy and breastfeeding, although cranberry juice is believed to be safe in amounts commonly found in foods. Many tinctures contain high levels of alcohol and should be avoided during pregnancy.

INTERACTIONS

Most herbs and supplements have not been thoroughly tested for interactions with other herbs, supplements, drugs, or foods. The interactions listed below are based on reports in scientific publications, laboratory experiments, or traditional use. You should always read product labels. If you have a medical condition, or are taking other drugs, herbs, or supplements, you should speak with a qualified healthcare provider before starting a new therapy.

Interactions with Drugs

- In theory, due to its acidic pH, cranberry juice may counteract antacids. Cranberry juice theoretically may increase the effects of antibiotics in the urinary tract and increase the excretion of some drugs in the urine. Cranberry juice may increase absorption of vitamin B12 in patients using proton pump inhibitors such as esomeprazole (Nexium®).
- Some cranberry tinctures may have high alcohol content and may lead to vomiting if used with the drug disulfiram (Antabuse®) or metronidazole (Flagyl®).

- Although controversial, some studies have shown that taking the prescription blood thinner warfarin (Coumadin®) and cranberry products at the same time can elevate the INR, which could increase the risk of bleeding.
- Alzheimer's drugs, anthelmintics (expel worms), antidiabetic, antifungals, antiulcer, cholesterol-lowering drugs, antineoplastics (anticancer agents), antiprotozoals, antiviral agents, clarithromycin, drugs broken down by the liver, gastrointestinal drugs, diuretics, salicylates like aspirin, and drugs eliminated by the kidneys may interact with cranberry.

Interactions with Herbs and Dietary Supplements

- In theory, cranberry juice may increase the excretion of some herbs or supplements in the urine.
- Theoretically cranberry products may increase the risk of bleeding in people taking other herbs or supplements like garlic or danshen.
- Inhibition of *H. pylori* bacteria, which may lead to gastrointestinal ulcers, may be increased when oregano and cranberry are taken together.
- Alzheimer's herbs and supplements, antacids, herbs and supplements that alter blood sugar, antiulcer agents, antibacterials, antifungals, cholesterol-lowering herbs and supplements, antineoplastics, antioxidants, antiparasitics, antivirals, herbs and supplements broken down by the liver, gastrointestinal herbs and supplements, diuretics, lingonberry, salicylate-containing herbs like willow bark, urine-acidifying herbs and supplements, and vitamin B12 may interact with cranberry.

AUTHOR INFORMATION

- This information is based on a systematic review of scientific literature edited and peer-reviewed by contributors to the Natural Standard Research Collaboration (www.naturalstandard.com).

REFERENCES

Natural Standard developed the above evidence-based information based on a thorough systematic review of the available scientific articles. For comprehensive information about alternative and complementary therapies on the professional level, go to www.naturalstandard.com. Selected references are listed below.

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