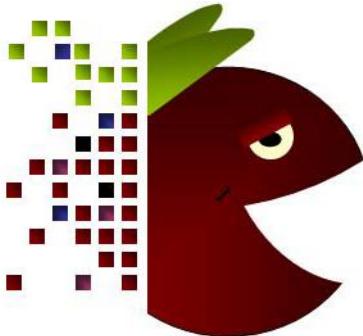




DECAS BOTANICAL SYNERGIES

DECAS BOTANICAL SYNERGIES' PACRAN® WHOLE CRANBERRY POWDER is the world's first clinically supported and proanthocyanidin (PAC) standardized cranberry powder. PACran® is a proprietary blend of PAC-rich cranberries standardized to a minimum 1.5% PACs measured via the HPLC analytical method.



Cranberries are widely known for their unique "anti-adhesion" activity that protects the body from harmful bacteria that cause urinary tract infections. This anti-adhesion activity is primarily due to a natural compound in the fruit called PACs. According to the United States Department of Agriculture (USDA) Database for the Proanthocyanidin Content of Selected Foods, Cranberry PACs contain a unique A-type structure, while most other plants contain only the more common B-type PACs. It is cranberry's A-type PACs that are responsible for the anti-adhesion mechanism of action.

More than 10 million Americans experience urinary tract infections each year and many turn to cranberry-based products for relief. PACran® is an all natural fruit source that is high in bacterial anti-adhesion properties and represents a convenient low-calorie alternative to cranberry juice.

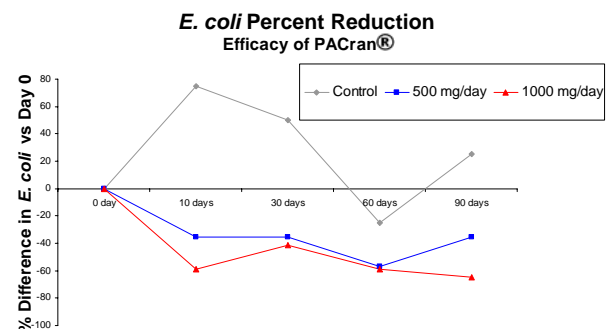
A BRAND YOU CAN TRUST

PACran® is a quality GRAS approved product with uniform color, content, and flow. The PACran® logo is available via a royalty-free licensing agreement. Use of the PACran trademark differentiates the product from other supplements or end products, and assures consumers that the product is supported by scientific research, and is processed in a GMP manufacturing facility.

BENEFICIAL ATTRIBUTES	MARKET APPLICATIONS
<ul style="list-style-type: none"> Clinically shown to support urinary tract health Standardized to 1.5% proanthocyanidins Low in calories, high in phytonutrients 100% cranberry rich in flavonoids An excellent source of antioxidants 	<ul style="list-style-type: none"> Nutritional supplements Cranberry-enriched sports and health beverages Fortified nutrition bars Healthy snacks Health-care applications

PACRAN® CLINICAL TRIAL

PACran® was evaluated as a preventative measure for Urinary Tract Infections (UTI) in a 90-day double-blind, untreated group controlled clinical trial in 57 women volunteers from 18 to 40 years of age, with or without the symptoms of UTI. The volunteers were randomly selected and grouped into three groups including an untreated control group. The present study included two treatment groups; a low dose (500 mg daily) and a high dose (1,000 mg daily). Occurrence of UTI during the course of the study was confirmed by the presence of *E. coli* in the culture of urine samples. At the end of the 90-day treatment period, presence of *E. coli* was reduced at a highly significant level ($p < 0.0001$) and at a significant ($p < 0.05$) level in the high dose and low dose treated group, respectively.



Decas Botanical Synergies (DBS), a division of Decas Cranberry Products, Inc., is a developer, manufacturer, and marketer of proprietary value-added fruit derived ingredients for the dietary supplement, functional foods, animal feed and

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EXPERIENCE THE DECAS DIFFERENCE

nutrition, personal care and cosmetics, and oral health industries. Specializing in cranberries, DBS' Fruitaceutical™ products are rich in natural bioflavonoid complexes, which provide manufacturers with powerful antioxidant, antimicrobial, and nutritional properties, and a natural colorant for a broad variety of applications. DBS' powders, extracts, and oils offer cost-effective and natural options to enhance the taste, color, function, and nutritional content of products.

REFERENCES

- Avorn, J., et al., Reduction of bacteriuria and pyuria after ingestion of cranberry juice. *JAMA*, 1994; 271(10):751-754.
- Howell AB, et al., Inhibition of adherence of P-fimbriated *Escherichia coli* to uroepithelial-cell surfaces by proanthocyanidin extracts from cranberries. *N Engl J Med*. 1998; 339:1085-1086.
- Howell AB, et al., Cranberry juice and adhesion of antibiotic-resistant uropathogens, *JAMA*, 2002; 287(23):3082-3083.
- Lee, YL, Does cranberry juice have antibacterial activity? *JAMA*, 2000; 283(4):1691.
- National Institutes of Health, *Urinary Tract Infections in Adults*, 1999.
- Reed, J., Cranberry flavonoids, atherosclerosis and cardiovascular health, *Critical Reviews in Food Science & Nutrition*, 2002; 42(Suppl.):301-316.
- Stothers, L., A randomized trail to evaluate effectiveness and cost effectiveness of naturopathic cranberry products as prophylaxis against urinary tract infection in women, *The Canadian Journal of Urology*, 2002, June; 9(3): 1558 – 1562.
- Sun, J., Liu, R., et al., Antioxidant and antiproliferative activities of common fruits, *J of Agricultural and Food Chem*, Sept. 24, 2002.
- Swartz, J., et al., Properties of Cranberry Juice, *Applied Microbiology*, 1968, Oct.; 16(10):1524-1527.
- Wang, H., et al., Oxygen radical absorbing capacity of anthocyanins, *J Agricultural & Food Chem*, 1997; 45:304-309.
- Weiss, E., et al., Inhibiting interspecies coaggregation of plaque bacteria with a cranberry juice constituent. *J Am Dent Assoc.*, 1998, Dec; 129(12):1719-1723.
- Wilson, T., et al., Cranberry extract inhibits low density lipoprotein oxidation. *Life Sciences*, 1998; 62(24):381-386.
- Youdim, K., et al., Potential role of dietary flavonoids in reducing microvascular endothelium vulnerability to oxidative and inflammatory insults, *J Nutr Biochem*, 2002, May;13(5):282-288.