

Amy B. Howell, Ph.D.

Dr. Amy B. Howell is an associate research scientist at the Marucci Center for Blueberry and Cranberry Research at Rutgers University, where she works on isolating natural products from cranberries and blueberries that benefit health. Since 1993, Dr. Howell has been engaged in research aimed at identifying the active compounds in cranberries that prevent urinary tract infections and determining their role in maintenance of urinary tract health. Dr. Howell and her team isolated specific compounds from cranberry fruit, called condensed tannins or proanthocyanidins, which were found to be capable of preventing *E. coli* bacteria from attaching to cells from the urinary tract. This work was published in *The New England Journal of Medicine* in 1998. In a subsequent publication in *The Journal of the American Medical Association*, she reported on cranberry's potential role in preventing antibiotic resistant bacteria from colonizing the urinary tract. Her work on identification of the unique molecular structures of the beneficial cranberry tannins has been published in both *Phytochemistry* and the *Journal of Natural Products*. Other projects include studying the pharmacokinetics and bioavailability of the cranberry tannins in an effort to determine site(s) of action and dose-response. Recently, Dr. Howell received funding from NIH/NCCAM to determine the bioactive urinary metabolites following cranberry ingestion and to serve as a co-investigator on two clinical trials involving the use of cranberry for prevention of urinary tract infections. She has presented her research findings at numerous professional meetings in the U.S. and internationally.

Education

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Pomona College, Claremont, CA	B.A.	1982	Philosophy
University of Colorado, Boulder, CO	B.S.	1986	Biology
Cal Poly, San Luis Obispo, CA	M.S.	1992	Agriculture
University of California, Riverside, CA	Ph.D.	1992	Plant Pathology
Philadelphia College of Pharmacy, PA		1993-1994	Phytochemistry
Rutgers, The State University of New Jersey		1993-1997	Nutraceutical Studies

Positions and Employment

1988-1992	Graduate Research Assistant, Department of Plant Pathology, University of California, Riverside, CA
1992-1993	Laboratory Assistant, Department of Botany, University of Kansas, Lawrence, KS
1993	Copy Editor, Editorial and Publishing Services, Allen Press, Inc., Lawrence, KS
1993-1997	Post-Doctoral Fellow, Marucci Center for Blueberry Cranberry Research and Extension, Rutgers University, Chatsworth, NJ
1997-present	Associate Research Scientist, Marucci Center for Blueberry Cranberry Research and Extension, Rutgers University, Chatsworth, NJ

Other Experience and Professional Memberships

1993-1994	Post-doctoral Training, Department of Pharmacognosy and Medicinal Chemistry, Philadelphia College of Pharmacy and Science, Philadelphia, PA
1998-present	Natural Products Advisory Board Member, Pharmaceutical Information Associates
1998-present	Member, American Chemical Society
1998-present	Reviewer, Journal of Agricultural and Food Chemistry
2000-present	Scientific Expert: International Food Information Council (IFIC), Food Safety and Nutrition
2001	Mentor, Adventis Biotechnology Challenge

2002-present Reviewer, Journal of Applied Nutrition
2002-present Public Board Member, United States Highbush Blueberry Council
2003-present Media Speakers Bureau Member, Cranberry Marketing Committee
2003-2 Instructor, Pinelands Short Course, Burlington County College
2004-present Scientific Advisory Board Member, Tharos, Inc.
2007-present Reviewer, FEMS Immunology and Medical Microbiology
2008-present Reviewer, Journal of Medicinal Food

Honors

1989-1991 University of California Graduate Research Fellowship
1990 Miller Plant Science Award for Excellence in Cooperative Extension Research
2009 Duke Galletta Award for Research and Service to the U.S. Highbush Blueberry Council

Patents

6,608,102 Plant proanthocyanidin extract effective at inhibiting adherence of bacteria with P-type fimbriae to surfaces
6,720,353 Plant proanthocyanidin extract effective at inhibiting adherence of bacteria with p-type fimbriae to surfaces

Selected Peer-reviewed Publications (in chronological order)

1. Howell, A.B., Vorsa, N., Der Marderosian, A., Foo, L.Y. 1998. Inhibition of adherence of P-fimbriated *Escherichia coli* to uroepithelial-cell surfaces by proanthocyanidin extracts from cranberries. *The New England Journal of Medicine* 339 (15):1085-1086.
2. Foo, L.Y., Lu, Y., Howell, A.B., Vorsa, N. 2000. A-type proanthocyanidin trimers from cranberry that inhibit adherence of uropathogenic P-fimbriated *Escherichia coli*. *Journal of Natural Products* 63(9):1225-1228.
3. Foo, L.Y., Lu, Y., Howell, A.B., Vorsa, N. 2000. The structure of cranberry proanthocyanidins which inhibit adherence of uropathogenic P-fimbriated *Escherichia coli* in vitro. *Phytochemistry* 54(2):173-181.
4. Kalt, W., Howell, A., Forney, C.F., McDonald, J. 2000. Horticultural factors affecting antioxidant capacity of blueberries and other small fruit. *HortTechnology* 35:572.
5. Howell, A.B., Leahy, M., Kurowska, E., Guthrie, N. 2001. *In vivo* evidence that cranberry proanthocyanidins inhibit adherence of p-fimbriated *E. coli* bacteria to uroepithelial cells. *Federation of American Societies for Experimental Biology Journal* 15:A284.
6. Howell, A.B. 2002. Cranberry Therapeutics and Safety Profile – Cranberry Fruit, *Vaccinium macrocarpon*: Standards of Analysis, Quality Control and Therapeutic Monograph, *American Herbal Pharmacopoeia and Therapeutic Compendium*.
7. Vorsa, N., Polashock, J., Howell, A., Cunningham, D., Roderick, R. 2002. Evaluation of fruit chemistry in cranberry germplasm: potential for breeding varieties with enhanced health constituents. *Acta Horticulturae* 574:215-218.
8. Howell, A.B. 2002. Urinary tract infections: health benefits of cranberries. *Hospital Healthcare Europe* 2002-2003:C30-C33.
9. Howell, A.B. 2002. Cranberry proanthocyanidins and the maintenance of urinary tract health. *Critical Reviews in Food Science and Nutrition* 42 (Suppl.):273-278.
10. Howell, A.B., Foxman, B. 2002. Cranberry juice and adhesion of antibiotic-resistant uropathogens. *Journal of the American Medical Association* 287(23):3082.
11. Vorsa, N., Howell, A.B., Foo, L.Y., Lu, Y. Structure and genetic variation of cranberry proanthocyanidins that inhibit adherence of uropathogenic P-fimbriated *E. coli*. In Shahidi F, editor. Food factors in health promotion and disease prevention. Columbus, OH: ACS Books; 2003, pp. 298–311.

12. Schmidt, B.M., Howell, A.B., McEniry, B., Knight, C.T., Seigler, D., Erdman, J.W., Jr., Lila, M.A. 2004. Effective separation of potent antiproliferation and antiadhesion components from wild blueberry (*Vaccinium angustifolium* Ait.) fruits. *J. Agric. Food Chem.* 52(21); 6433-6442.
13. Gupta, K., Howell, A.B., Stamm, W.E., Wobbe, C.L., Stapleton, A.E. 2004. Inhibition of *E. coli* adherence to bladder epithelial cells by human urine collected after ingestion of cranberry juice cocktail is dose dependent. (abstr. 432) *Infectious Disease Society of America Annual Meeting*, Boston.
14. Howell, A.B., Reed, J.D., Krueger, C.D., Winterbottom, R., Cunningham, D.G., Leahy, M. 2005. A-type cranberry proanthocyanidins and uropathogenic bacterial anti-adhesion activity. *Phytochemistry* 66; 2281-2291.
15. Nolan, B., Hess, M., Howell, A., Martin, J., Wagner, G., Fisher, H. 2005 High vitamin E and selenium elevate, whereas diphenyl-para-phenylenediamine plus caffeine lowers liver fat in alcohol-fed rats. *Nutrition Research* 25; 701-709.
16. Greenberg, J., Newmann, S., Howell, A. 2005. Consumption of sweetened dried cranberries versus unsweetened raisins for inhibition of uropathogenic *Escherichia coli* adhesion in human urine: A pilot study. *Journal of Alternative and Complementary Medicine* 11(5):875-878.
17. Rozenberg, O., Howell, A., Aviram, M. 2006. Pomegranate juice sugar fraction decreases, while white grape juice sugar fraction increases macrophage oxidative state. *Atherosclerosis* 188:68-76.
18. Howell, A.B. 2006. Cranberry capsule ingestion and bacterial anti-adhesion activity of urine. *The FASEB Journal*, 20, LB454.
19. Gupta, K., Chou, M.Y., Howell, A., Wobbe, C., Grady, R., Roberts, P., Stapleton, A.E. 2007. Cranberry products inhibit adherence of uropathogenic *Escherichia coli* to primary cultured bladder and vaginal epithelial cells. *Journal of Urology* 177(6):2357-2360.
20. Howell, A.B. 2007. Bioactive compounds in cranberries and their role in prevention of urinary tract infections. *Molecular Nutrition and Food Research* 51:732-737.
21. Kalt, W., MacKinnon, S., McDonald, J., Vinqvist, M., Craft, C., Monro, S., Howell, A. 2007. Selected bioactivities of *Vaccinium* berries and other fruit crops in relation to their phenolic content. *J Sci Food Agric* 87:2279-2285.
22. Kresty, L.A., Howell, A.B., Baird, M. 2008. Cranberry proanthocyanidins inhibit acid-induced cell proliferation in human esophageal adenocarcinoma cells, *Journal of Agriculture and Food Chemistry* 58:676-680.
23. Howell, A.B. 2009 Update on health benefits of cranberry and blueberry. *Acta Hort. (ISHS)* 810:779-785.
24. Reed, J.D., Howell, A.B. 2009. Biological activity of cranberry proanthocyanidins: Effects on oxidation, microbial adherence, inflammation, and health. *Product Quality & Clinical Pharmacognosy* (in press).
25. La, V.D., Howell, A.B., Grenier, D. 2009. Cranberry proanthocyanidins inhibit MMP production and activity. *Journal of Dental Research* (in press).