

# From the Lab to Grocery Stores

Soy bread on the market in central Ohio

By Martha Filippic

When food scientist Yael Vodovotz first began investigating the benefits of adding soy -- lots of soy -- to bread, she wasn't really looking at the health benefits. She wanted to know if soy would help bread from becoming stale so quickly.

"And it does," said Vodovotz, assistant professor of food science and technology and co-editor of the textbook "Bread Staling" (CRC Press, 2000). "But then you have to ask, what do you do with it?"

With the help of undergraduate student Cory Ballard, colleagues and graduate students, she found out. The result is the first bread with enough soy protein per serving to carry the U.S. Food and Drug Administration's soy-related "heart-healthy food" label. "Healthyheart" breads, years in development in Ohio State's food science labs, became available to the public at The Andersons' two stores in Columbus in June.

"When we met with the bakery buyers for the store, they accepted it as soon as they tasted it," said Vodovotz, assistant professor of food science and technology. Last year, Vodovotz and Ballard formed a new company, Bavoy Inc., to market the high-protein bread to commercial bakeries for sales in retail outlets. The company has offices in Ohio State's Business Technology Center, and Ohio State University owns 10 percent of the firm.

Ballard, an older, non-traditional student who earned his bachelor's of science degree in food science on June 13, is now CEO of the early-phase start-up firm. He said it has been exciting to take a product from concept to reality.

"Getting Healthyheart bread on grocery store shelves is a big leap," he said. "We went from a concept, to the lab, to a bread machine, to a pilot plant, to a test market with a commercial baking facility. That's a milestone."

Along the way, the product and business plan garnered praise from many

best-documented health benefits focus on blood lipids and risk of heart disease. The FDA-approved health claim on the new bread reads, "Diets low in saturated fat and cholesterol that include 25 grams of soy protein a day may reduce the risk of heart disease. One slice of Healthyheart bread provides 6.25 grams of soy protein." That's about three times the amount of protein than in conventional wheat breads, Vodovotz said.

While soy protein's benefits regarding heart disease have been well-established, Vodovotz, her students and colleagues are conducting a wide range of research examining other soy properties, particularly on soy isoflavones and their potential cancer-fighting effects.

Pure isoflavones, plant chemicals with weak estrogen-like activity, have been shown to inhibit the growth of tumors in the lab. The Ohio State research includes:

- An examination of the stability and bioaccessibility of isoflavones from soy bread. From the study, the researchers believe isoflavone-rich foods that also contain fat and protein (such as Healthyheart bread) may be more easily absorbed by the human body than isoflavone supplements would be.
- Study of the isoflavones and antioxidant activity in different cultivars of soybeans grown in Ohio. Researchers identified five cultivars with higher isoflavone content and/or antioxidant activity. Using those types of soybeans in soy-based foods could boost the health benefits of foods like the new soy bread even more.

• The identification of specific kinds of isoflavones in Healthyheart soy bread and their effect on human cancer cells. At high enough concentrations, the isoflavones appear to have a significant effect at reducing the proliferation of human prostate cancer cells, at least in the lab, said Steve Schwartz, professor of food science and head of the Hoess Endowed Chair



Photography by Jodi Miller

*Yael Vodovotz is all smiles now that her soy bread is available to central Ohio consumers.*

soy's effect on preventing bone loss, Vodovotz said. Subjects for the trial have been recruited and will participate in Michigan; urine samples will be sent to Ohio State labs for testing.

Another clinical trial, in partnership with Steve Clinton of the Ohio State University Comprehensive Cancer Center, is scheduled to begin in January to test the effect of both soy bread and a powdered soy beverage on human subjects. "While potential anti-cancer effects of soy hold a some promise, we still have more questions than answers," Clinton said. "This trial should help us fill in some of the critical gaps in our knowledge, particularly regarding breast and prostate cancer."

In the meantime, consumers who frequent The Andersons stores can enjoy Healthyheart original, cinnamon-raisin and multigrain breads.

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By Martha Filipic

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Along the way, the product and business plan garnered praise from many corners, from earning the Innovator of the Year Award from the Ohio Agricultural Research and Development Center to taking third place in the Fisher College of Business's Deloitte & Touche Business Plan Competition, both in 2003.

### Research Behind Healthyhearth

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- The identification of specific kinds of isoflavones in Healthyhearth soy bread and their effect on human cancer cells. At high enough concentrations, the isoflavones appear to have a significant effect at reducing the proliferation of human prostate cancer cells, at least in the lab, said Steve Schwartz, professor of food science and holder of the Haas Endowed Chair. Josh Bomser, assistant professor of food science who participated in evaluating the anticancer effects of the soy bread, found differences in the type of isoflavones in the crumbs part of the bread and the crust. The team hopes to investigate this further.

In addition, in cooperation with the University of Michigan, the soy bread is being used in a three-month clinical trial to test

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The research has been funded in part by Ohio State's Ohio Agricultural Research and Development Center, part of the College of Food, Agricultural, and Environmental Sciences. Commercialization of the product was partially funded by the Food of the Future Award, a competitive research grant of \$40,000 for one year from the Ohio Governor's Technology Action Fund.

# Milk Prices Sour

By Suzanne Steel

Dairy prices that whipped to record highs this spring will sour to more normal levels by summer's end, reports an Ohio State University Extension dairy economist.

Class III May futures prices peaked

from household budgets, there is less disposable income and that means less trips to the local pizza shop or ice cream parlor. We're not driving fuel-efficient vehicles and futures market traders are not expecting a quick fix for the high cost of oil and



Illustration by Kyle Parke