

The bread bet

Ohio State University fortifies bread with soy.

by Lauren Kindle, Associate Editor

Food scientists at Ohio State University in Columbus have come up with a recipe that would create the first bread providing 6.25 grams of soy protein, enough for the standard claim. The recipe would be among the first soy bread creations.

Yael Vodovotz, assistant professor in Ohio State's food science and technology department, leads the research team. "I did my Ph.D. on the subject of bread staling, looking at bread as a basic material and how it changes in accordance with certain variables like moisture, time and polymer construction," she says. "And then I decided to continue looking at how soy could affect the physical properties of bread."

Vodovotz explains that in the 1970s, the University of Illinois, Urbana-Champaign conducted initial research on incorporating soy isolates as well as soy concentrate into bread. However, this initial research met with challenges.

"They ran into problems regarding loaf volume because when soy is added to bread, often the bread loaf shrinks. There were also problems maintaining certain texture properties—the bread became gummy and dense. Ohio State has, we believe, overcome those challenges," she says.

Critical assistance in this endeavor came from Cory Ballard, undergraduate, baker and senior food technologist for research, consulting and food manufacturing firm Chef Con, LLC., Delaware, Ohio.

And although the university is hesitant to divulge too many secrets to its recipe, Vodovotz did tell WELLNESS FOODS that

those challenges were overcome by adjusting the actual soy ingredients and the order of addition of those ingredients.

"Some of the ingredients in the bread are hydroscopic (water loving)," she says. "Hence, how much water you use and in what order you add other ingredients to the bakery mix becomes critical."

Despite some evidence that mainstream consumers are not yet inclined to follow a diet rich in soy, the bread bet has won over consumers. Seventy percent of tasters, including Columbus area kids and William E. Kirwan, OSU president, said they enjoyed the bread more than traditional wheat bread. Because of these results, there are thoughts of introducing the soy bread in school lunches.

Vodovotz is not alone in her endeavors. In fact, she is collaborating with two other researchers on possible directions for the bread. One of those researchers, Josh Bomser, assistant professor of food science at OSU, is looking at the extraction of isoflavones from the bread and linking this to the impact isoflavones have on prostate cancer cells.

Mark Failla in the Department of Nutrition is also collaborating on soy breads. In this case, the effect of isoflavones on intestinal cells is being investigated. The question remains as to how much the isoflavones are absorbed through the intestine and how the properties of those isoflavones are changed during the digestion process.

"These facets of the research," explains Vodovotz, "are just beginning, so the



results are still to come.”

Frozen dough properties of the bread are also being investigated. If the soy fortification turns out to be compatible with these properties, this will prove good news for food manufacturers. Certainly, the shelf life of the product could be extended.

The university is negotiating with bakeries that could handle mass production of the bread. At present, though, the research needs—what else?—more money.

“We have approached the Ohio Soybean Council and intend to pursue the United Soybean Board,” Vodovotz says. “There may not be too many opportunities left for soy. It has, by some accounts, worn itself out. But bread—bread is such a common food, one that everyone at some time or other incorporates into their diet. There are no heavy aftertastes to consider, only something very basic that has the potential to enhance heart health and maybe even fight cancer.”