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Researcher: fiber can be tasty

K-State News Service

Trying to get more fiber in your diet? Munching on cookies or tortillas probably doesn't come to mind. But a Kansas State University researcher is experimenting with ways to add fiber to the foods we love without changing what we like about our favorite snacks.

Sajid Alavi is an assistant professor of grain science and industry at K-State's College of Agriculture. His expertise is in extrusion processing, which is used to make products from cheese puffs to pet food. Alavi is researching how this process can be used to make fiber-enriched flour taste like the kind used in most cookies and tortillas so that manufacturers can make a more healthful snacking alternative that consumers want to eat.

Alavi notes the increasing problem of obesity and how it can lead to diabetes, cardiovascular disease and other ailments.

"That's where there's a big push for whole grains and fiber," he said. "There's interest in making healthier foods."

Funded by a one-year, \$30,000 grant from the Kansas Wheat Commission, Alavi and researchers created flour enriched with varying levels of bran. They mixed the bran-enriched wheat flour with water using a standing mixer like the one cooks may use at home, and they let the dough sit overnight. The hydrated flour was then sent through a machine called an extrusion processor. The processor uses a series of rotating screws and heated barrels to precook the flour before it is pushed out of the end. After ropes of the dough come out, they are taken to a drying oven or a freeze dryer, the latter of which Alavi said produced higher-quality flour. Then the dried ropes were ground back into flour, ready to use for baking.

"The more fiber you add, the

more the dough quality deteriorates," Alavi said. "We're hoping this process will increase some of the properties of the flour. The foods might have a better physical quality."

The researchers worked with the bakery science lab at K-State's department of grain science and industry to produce cookies and tortillas made with bran-enriched flour that had been precooked using extrusion processing, and those that had bran-enriched flour that wasn't precooked. The team then worked with K-State's sensory analysis team to conduct taste tests. Subjects were offered vouchers for K-State's Call Hall ice cream in exchange for tasting and comparing the regular snacks and their bran-enriched counterparts.

The snackers reported liking cookies and tortillas made with enriched bran, whether precooked or not. However, the precooked flour did have an increased level of soluble dietary fiber—the kind the body can absorb readily.

Alavi said researchers didn't necessarily get better properties with extruded flour. In the future, he said researchers could look at extruding the bran separately from the flour.

Alavi said snack food producers may be able to use this pre-cooking method to add fruits and vegetables to snack foods.

"With fruit- and vegetable-based snacks, it's still hard to process the dough, so you really don't see those kinds of products out there," he said.

The research was carried out by Alavi's graduate student, Hyma Gajula, a master's student in grain science. Other K-Staters contributing to the research include Koushik Adhikari, assistant professor of human nutrition; Tom Herald, professor of food science; and Ron Madl, director of K-State's Bioprocessing and Industrial Value Added Program.