

Grain Science, Nutrition Researchers to Study Effect of Starch On Human Health

Kansas State University researchers have received a three-year, \$450,486 grant from the U.S. Department of Agriculture to study the relationships between the digestion of starch and its effect on human health, particularly diet-related disorders such as obesity, diabetes and cardiovascular disease.

The team includes Yong-Cheng Shi, a professor of grain science and industry and project leader, who will help develop novel starch ingredients that control digestibility. Conducting human clinical studies and preparing bread for sensory evaluation will be the role of food, nutrition, dietetics and health department faculty members Sara Rosenkranz, assistant professor, and Mark Haub, professor and department head.

"As a major component in cereal grain foods, starch plays an important role in controlling the structure, texture and stability of these foods, and is the most important source of food energy," Shi said. "Even so, information about the metabolic qualities of starchy foods is scarce."

Starch is thought to be the most important carbohydrate in the human diet and is present in thousands of everyday foods.

Kansas State University already has been very active in developing starch-based ingredients for functional and nutritional applications, as well as studying the structure and digestibility of starches. Shi said that researchers hope to determine the link between the structure of starch and the glycemic response in humans, or the effect that food has on blood sugar levels.

"The results generated from this study will help us design starch products with slowly digestible and resistant starch properties," Shi said. "These products may be used to formulate low- or reduced-glycemic food products."

Gaining a better understanding of the crystalline structure of starch also is important, he said.

"That will allow us to better design cereal grain foods for improved shelf life and storage stability," Shi said. "The results from the human trials will provide insight into the glucose and insulin response to products with high-resistant starch content."

The researchers have already developed a patent-pending process to make starch

products with controlled digestibility, and their work on the new project could lead to more breakthroughs in understanding the effects of starch on human health.

"The work proposed will advance knowledge in fundamental as well as applied science that is important to the food industry, and the information gained will be useful in the commercialization of the new findings," Shi said