Anti-diabetic effects of functional foods

Issue
Diabetes mellitus is a chronic disease which severely affects the health of individuals, specifically glucose metabolism and absorption in the body. Currently reports by the CDC cites just over 8% of the U.S. population or nearly 26 million people are diagnosed with diabetes mellitus, a figure that has doubled within the last 10 years and is expected to continue along with obesity. Pre-diabetes is the state in which individuals have higher blood glucose level than normal but not high enough for a diagnosis of diabetes. About 35% of U.S. adults aged 20 years or older had pre-diabetes in 2005-2008. Studies have shown that about 11% of people with prediabetes developed type 2 diabetes each year. Glucose and insulin metabolism is important for individuals with pre-diabetes or diabetes.

Action
We have investigated which bioactive components or fractions in functional foods control blood glucose and insulin responses in humans. Grain sorghum contains the functional starch fractions, slowly digestible starch and resistant starch. Our preliminary work has shown that consumption of grain sorghum muffins reduced postprandial blood glucose levels in healthy subjects. We are conducting the human study to assess the anti-diabetic effects of consuming the grain sorghum products in persons with pre-diabetes. Soybean seed coats, a co-product of soybean processing, are a good source of fiber and minerals. Dietary fiber has many health benefits including positive effects on controlling blood glucose and lipids. A human study is designed to evaluate fibers from soybean seed coat on postprandial blood glucose and insulin responses.

Impact
The market for functional foods and natural extracts as a health beneficial product with nutrition value is rapidly expanding. These research projects will provide valuable information of the health-promoting starch fractions in grain sorghum and potential new use of co-products of soybean seed coat. Furthermore, these works will enhance commercial interests and benefit to state economics (both soybean and grain sorghum growers and processing industry in Arkansas).

PI: Sun-Ok Lee
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