People with impaired glucose tolerance can show cognitive dysfunction

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People with impaired glucose tolerance—the precursor to Type 2 diabetes—often show impaired cognitive function that may be alleviated through a diet designed specifically for their condition, according to a panel discussion at the 2013 Institute of Food Technologists (IFT) Annual Meeting & Expo.

Impaired glucose tolerance is a pre-diabetic state of hyperglycemia that is associated with insulin resistance and a higher risk of cardiovascular disease. It can precede Type 2 diabetes by several years, and some lifestyle changes, such as getting to a normal weight and increasing exercise, can help pre-diabetic people avoid that progression completely.

Louise Dye, Ph.D., professor of nutrition and behavior in the Human Appetite Research Unit at the Institute of Psychological Sciences, University of Leeds, presented research in which she examined 31 previous studies regarding cognitive performance under various dietary conditions. She found that the impaired glucose tolerance group showed difficulties in 12 of 27 cognitive test outcomes, including word recognition, visual verbal learning test, visual spatial learning test, psychomotor test and Corsi block-tapping. The impaired glucose tolerance group was made up of all middle-aged women who appeared to be in general good health.

"There was significant impairment in those women who were impaired glucose tolerant," Dye said. "To me, that feels like a ticking time bomb. We need to use food – the diet and food industry – to help us shift these

people back from impaired glucose tolerance. By the time they get to Type 2 diabetes, the impairments are much more evident."

She pointed to a 2009 Japanese study of 129 people in their 80s, 55 of whom had impaired glucose tolerance or Type 2 diabetes. All the subjects in the study consumed more than 30 grams of dietary fiber per day and exercised two to four times per week over a two-year period. Within that timeframe, the 36 people with impaired glucose tolerance showed improvements in delayed recall and block design tests. The Type 2 diabetes group showed improvement in dementia, delayed recall and their mental state.

"That tells us something about how improving glucose regulation through dietary fiber and exercise could improve cognitive functions," Dye said.

She called on the food industry to continue researching the best products for consumers with glucose tolerance issues, such as those foods with increased fiber and those with limited glycemic impact.

Another panelist, Nicholas Bordenave, Ph.D., associate principal scientist in the analytical department of PepsiCo Global R&D, said a key aspect to consider in these foods is satiety. He said two proven avenues for doing that are a shift toward slowly digestible starch and resistant starch in foods and enhanced viscosity of food through digestion. However, he noted that the challenge for food manufacturers is to create foods with these components that taste appealing to consumers.

"From the consumer standpoint there is still a lot to understand," he said. "Right now, people think in terms of satiety. They are not aware yet of the effect of glucose delivery on their mental performance. It's really about consumer education."

Provided by Institute of Food Technologists