

SEEKING WEAPONS OF MASS REDUCTION

Each new year brings renewed rounds of resolutions, among which losing weight and developing healthier habits consistently rank in the top five. Just as predictable are a bevy of newly released ads touting the latest in weight loss diets and tools for wishful fitness enthusiasts.

Grapefruit, cabbage and reverse diets ... Israeli Army, Atkins, Eat-Right-for-Your-Type diets ... and 2008's offering: the GenoType Diet.

"The ability to determine a proper diet based on your genotype is premature," says Utah State University researcher Michael Lefevre. "We know that both genetic and non-genetic factors play a role in how an individual responds to different diets, but we don't yet know why."

Lefevre, who was recruited to USU through the Utah Science Technology and Research – USTAR – initiative, has long studied the role of diet in the development of cardiovascular disease and Type 2 diabetes.



USU USTAR professor Michael Lefevre explores the role of diet in the development of cardiovascular disease and Type 2 diabetes.

"We know that lowering saturated fat and increasing plant sterols and fiber in one's diet can lower cholesterol levels," says Lefevre, who joined USU's Center for Advanced Nutrition in September 2007. "But everyone

responds differently to diet changes and we need tools to help us identify the best diet match for each person.”

Lefevre believes that a metabolomics approach – rather than a genomics approach – may provide those tools. Metabolomics is the systematic study of the unique chemical ‘fingerprints’ that specific cellular processes leave behind.

To test his approach, he plans to set up a metabolomics research kitchen with the ability to feed up to 25 human subjects at a time.

“We will provide all meals for the people in each study, the length of which could last from three to four weeks or up to six months,” he says. “The findings should help us begin to identify specific genetic and non-genetic markers and tailor the appropriate diet to each individual.”

Food is not always the enemy, says Lefevre, who studies so-called functional foods; that is, nutritional compounds in foods that inhibit disease. Examples include antioxidants that are often lauded for their health benefits. The compounds, praised for their cancer prevention and anti-aging properties, are so ubiquitous in food, he notes, that whether or not they deserve such credit is open to debate.

His current research focuses on bioactive compounds, including flavonoids found in many fruits and vegetables. Early studies indicate that such compounds may offer protection against cardiovascular disease and cancer.

Lefevre continues his work with Louisiana State University’s Pennington Biomedical Research Center, his former employer, on a National Institutes of Health-funded botanical research project that is examining how bioactives in fruits’ plant pigments affect health. The rich blue and red hues of your favorite berries and grapes

could be doing more good for you than simply pleasing your senses.

“Plant pigments may provide protection against metabolic syndrome or insulin resistance – a precursor to Type 2 diabetes,” he says.

Finding the right tools, including improved nutrition, to combat modern-day plagues is critical, he says.

“Today’s obesity epidemic is unprecedented,” Lefevre says. “We have access to a large supply of relatively inexpensive food – much of which is high in fat and salt.”

He also notes that today’s lifestyles encourage inactivity.

“Consider this: we actually press a button to remotely start our cars and open their doors,” Lefevre says. “The simplest tasks have been reduced to one finger. We have escalators instead of stairs and we sit at computers all day. These little things add up in our lives. It’s amazing how few calories we actually need when we’re inactive.”

Personal choice is a factor in good health but public policy encouraging healthy habits, including pedestrian and bike-friendly communities, could discourage overly sedentary lifestyles, he says.

“Reversing current trends requires action from all of us on personal and communal levels,” Lefevre says.

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