Bacon or bagels? Higher fat at breakfast may be healthier than you think, research says

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The age-old maxim "Eat breakfast like a king, lunch like a prince and dinner like a pauper" may in fact be the best advice to follow to prevent metabolic syndrome, according to a new University of Alabama at Birmingham (UAB) study.

Metabolic syndrome is characterized by abdominal obesity, high triglycerides, insulin resistance and other cardiovascular disease-risk factors.

The study, published online March 30 in the International Journal of Obesity, examined the influence exerted by the type of foods and specific timing of intake on the development of metabolic syndrome characteristics in mice. The UAB research revealed that mice fed a meal higher in fat after waking had normal metabolic profiles. In contrast, mice that ate a more carbohydrate-rich diet in the morning and consumed a high-fat meal at the end of the day saw increased weight gain, adiposity, glucose intolerance and other markers of the metabolic syndrome.

"Studies have looked at the type and quantity of food intake, but nobody has undertaken the question of whether the timing of what you eat and when you eat it influences body weight, even though we know sleep and altered circadian rhythms influence body weight," said the study's lead author Molly Bray, Ph.D., professor of epidemiology in the UAB School of Public Health.

Bray said the research team found that fat intake at the time of waking seems to turn on fat metabolism very efficiently and also turns on the animal's ability to respond to different types of food later in the day. When the animals were fed carbohydrates upon waking, carbohydrate metabolism was turned on and seemed to stay on even when the animal was eating different kinds of food later in the day.

"The first meal you have appears to program your metabolism for the rest of the day," said study senior author Martin Young, Ph.D., associate professor of medicine in the UAB Division of Cardiovascular Disease. "This study suggests that if you ate a carbohydrate-rich breakfast it would promote carbohydrate utilization throughout the rest of the day, whereas, if you have a fat-rich breakfast, you have metabolic plasticity to transfer your energy utilization between carbohydrate and fat."

Bray and Young said the implications of this research are important for human dietary recommendations. Humans rarely eat a uniform diet throughout the day and need the ability to respond to alterations in diet quality. Adjusting dietary composition of a given meal is an important component in energy balance, and they said their findings suggest that recommendations for weight reduction and/or maintenance should include information about the timing of dietary intake plus the quality and quantity of intake.

"Humans eat a mixed diet, and our study, which we have repeated four times in animals, seems to show that if you really want to be able to efficiently respond to mixed meals across a day then a meal in higher fat content in the morning is a good thing," Bray said. "Another important component of our study is that, at the end of the day, the mice ate a low-caloric density meal, and we think that combination is key to the health benefits we've seen."

Bray and Young said further research needs to test whether similar

observations are made with different types of dietary fats and carbohydrates, and it needs to be tested in humans to see if the findings are similar between rodents and humans.

"We're also working on a study right now to determine if these feeding regimens adversely affect heart function," Young said.

Provided by University of Alabama at Birmingham