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Research shows balanced carbohydrate and fat intake can prevent certain diseases

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A team of scientists in the U.S. Department of Agriculture's (USDA) Agriculture Research Service (ARS) recently found that consuming a high level of carbohydrates regulates a gene in the body that can reduce

your risk of obesity, hypertension, type 2 diabetes, and other metabolic diseases.

This is good news for most people. The bad news, however, is that high fat intake reduces this protection and may lead to health problems for those who regularly consume fatty foods.

"This is exciting for nutrition research because it gives insight on how balanced nutrition can affect our health, from the perspective of an important, but single gene called CPT1A," said ARS Scientist Dr. Chao-Qiang Lai. "I can't say that eating all carbs will prevent you from developing type 2 diabetes and I can't say that avoiding fat will protect you from obesity. A balanced intake of carbohydrate and fat may be the best way to prevent metabolic diseases."

The newly-released research shows that your dietary habits can influence CPT1A gene activity level and ultimately lead to positive or negative health consequences. ARS research now shows that high carbohydrate intake is associated with lower levels of the gene, while high fat intake is associated with higher levels. But how does food influence our genes and subsequently affect our health? In the case of the CPT1A gene and this research, the answer involves a special chemical tag or decoration that sits on top of the gene to regulate gene levels. This tag is called an "epigenetic signal." The signal becomes stronger or weaker based on the foods we eat, causing the body to produce more or less of the gene.

The research, which was highlighted in this month's issue of the *American Journal of Clinical Nutrition*, examined three populations in the United States and Europe to investigate the links between total carbohydrate, fat, and energy intake, and the risk of metabolic diseases.

More information: Chao-Qiang Lai et al. Carbohydrate and fat intake associated with risk of metabolic diseases through epigenetics of