

Diet low in specific amino acids may be the key to weight loss

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A worldwide epidemic of diabetes and obesity has led many individuals to try to lose weight by dieting - but reduced-calorie diets are notoriously difficult to maintain. New research published in the *Journal of Physiology* indicates that lowering consumption of specific building blocks of proteins (amino acids) may combat the metabolic problems that occur in diabetes and obesity.

In a mouse study, researchers at the University of Wisconsin-Madison found that lowering the consumption of specific types of [amino acids](#) called branched-chain amino acids (BCAAs) improved metabolic health, even when overall calories were not reduced.

The study found that feeding obese, pre-diabetic mice a specialized diet low in the amino acids leucine, isoleucine and valine promoted leanness and improved the regulation of [blood sugar](#). The researchers examined their weight, body composition, glucose metabolism and energy expenditure.

Importantly, mice in this study were free to eat as

much of the low-BCAA food as they wanted, and thus did not experience overall calorie reduction. Despite continuing to eat an unhealthy high-fat and high-sugar diet, mice on the low-BCAA diet still experienced an improvement in metabolic health.

If these results can be translated to humans, it is possible that such diets, or drugs that mimic the effect of a low-BCAA diet, would be easier for people to follow and more effective than traditional calorie-counting diets.

The research team hopes that a low-BCAA dietary approach could be an effective way to treat or prevent metabolic syndrome, which is a group of conditions including high blood pressure, high blood sugar, abnormal cholesterol levels, and excess abdominal fat that collectively increase the risk of diabetes, heart disease, and stroke.

Researchers will next investigate whether reducing dietary BCAAs can improve the metabolic health of humans, and how the specific [amino acid composition](#) of dietary protein regulates metabolic health. This could help explain the wide variation seen between individuals in response to different weight-loss diets.

Dr. Dudley Lamming, one of the lead investigators on the project, commented on the findings:

'We've identified an unanticipated role for dietary BCAAs in the regulation of energy balance, and we show that a [diet](#) with low levels of BCAAs promotes leanness and good control of blood sugar. Our results also suggest that the specific amino acid composition of [dietary protein](#) - not just how much protein we eat - regulates [metabolic health](#).'

More information: Nicole E. Cummings et al, Restoration of metabolic health by decreased consumption of branched-chain amino acids, *The Journal of Physiology* (2017). [DOI: 10.1113/JP275075](#)

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