

# High consumption of branch chain amino acids at night could negatively impact the heart

29 April 2021, by Adam Pope



BCAAs are found in many sources of protein — red meat, poultry, fish, eggs and nuts. Credit: Unsplash/CC0 Public Domain

A new study published in the *Journal of Molecular and Cellular Cardiology* by University of Alabama at Birmingham researchers shows that an increase in the consumption of branch chain amino acids later in the day could result in a negative effect on cardiovascular health.

Using animal models, findings suggest that consuming BCAAs at the end of the active period — dinner time—caused a dramatic growth of the [heart](#), resulting in a 75% increase in cardiomyocyte size in four hours. The high consumption of BCAAs also worsened heart disease progression.

Martin Young, D.Phil., professor with the UAB Division of Cardiovascular Disease, has devoted much of his career studying the effects of circadian rhythms on [heart health](#), and was surprised by the findings.

"Our study is the first to show such a dramatic

growth of mammalian heart cells following a single meal," Young said. "This study highlights an interaction between heart health and behaviors, and in this case, the behavior being what time of the day we should be eating certain nutrients."

The implications of this research might be positive for healthy individuals, according to Young. However, for people with chronic health conditions such as obesity, diabetes and heart disease, this could serve as a warning.

"[The research] blew us away," Young said. "What we found was heart cells grew 75% within four hours of the BCAA meal, but then they returned back to normal size again throughout the rest of the day."

Young added the enlargement of heart cells worsened heart disease.

"In our models, a high-BCAA meal at the equivalent of dinner time worsened remodeling of the heart, leading to a dramatic decline in contractile function of the heart and ultimately heart failure development," Young said. "However, a high-BCAA meal at the equivalent of breakfast time had no detrimental effect."

So should people start consuming most of their BCAAs in the morning? Young says this research is consistent with that idea.

"Population-based studies are already emerging that suggest we should be eating more protein at breakfast and less at dinner, and now our basic science study is confirming this concept," he said. "Based on our research, we would recommend that [heart disease](#) patients restrict the amount of protein, and in particular the amount of BCAAs, that they consume at dinner."

**More information:** Mary N. Latimer et al.

Branched chain amino acids selectively promote cardiac growth at the end of the awake period, *Journal of Molecular and Cellular Cardiology* (2021). DOI: [10.1016/j.yjmcc.2021.04.005](https://doi.org/10.1016/j.yjmcc.2021.04.005)

Provided by University of Alabama at Birmingham

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