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SHORT ARTICLE

A Ketogenic Diet Extends Longevity and Healthspan in Adult Mice

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DOI: <https://doi.org/10.1016/j.cmet.2017.08.005> | CrossMark

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Highlights

- A low-carbohydrate, ketogenic diet extends longevity in adult male mice
- Motor function, memory, and muscle mass are preserved in aged ketogenic mice
- Protein acetylation is increased in the liver and skeletal muscle of ketogenic mice

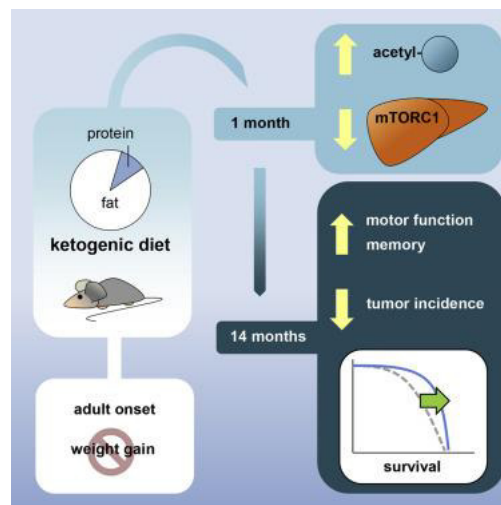
Summary

Calorie restriction, without malnutrition, has been shown to increase lifespan and is associated with a shift away from glycolysis toward beta-oxidation. The objective of this study was to mimic this metabolic shift using low-carbohydrate diets and to determine the influence of these diets on longevity and healthspan in mice. C57BL/6 mice were assigned to a ketogenic, low-carbohydrate, or control diet at 12 months of age and were either allowed to live their natural lifespan or tested for physiological function after 1 or 14 months of dietary intervention. The ketogenic diet (KD) significantly increased median lifespan and survival compared to controls. In aged mice, only those consuming a KD displayed preservation of physiological function. The KD increased protein acetylation levels and regulated mTORC1 signaling in a tissue-dependent manner. This study demonstrates that a KD extends longevity and healthspan in mice.

Keywords:

ketogenic diet, longevity, healthspan, low-carbohydrate diet, aging, lifespan, ketones, ketone bodies, beta-hydroxybutyrate, memory

Graphical Abstract



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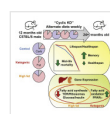
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Received: January 20, 2017; Received in revised form: May 4, 2017; Accepted: August 7, 2017; Published: September 5, 2017; corrected online: April 9, 2018
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Cell Metabolism ISSN: 1550-4131

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