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SHORT ARTICLE

A Ketogenic Diet Extends Longevity and Healthspan in Adult Mice

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Summary Full Text Methods Images/Data References Related Articles Comments

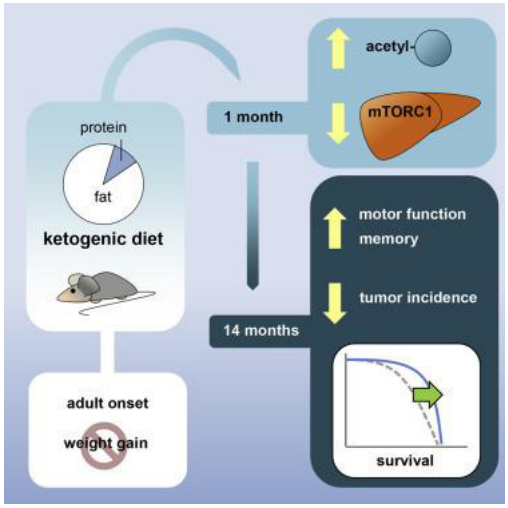
Highlights

- 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.

Graphical Abstract



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

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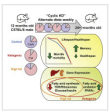

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