JOURNAL ARTICLE

Efficacy and Safety of Exogenous Ketones in People with Mild Neurocognitive Disorder and Alzheimer's Disease: A Systematic Literature Review

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Abstract

Context

Mild neurocognitive disorder (NCD), formally known as mild cognitive impairment, is usually the clinical stage preceding the development of Alzheimer's disease (AD), the most prevalent major NCD, and other causes of dementia. Glucose is a major source of energy for human brain metabolism and the uptake of glucose is reduced in patients with mild NCD, AD, and other NCDs. Unlike glucose, the uptake of ketones remains normal in people with mild NCD and AD, suggesting that the use of ketone bodies may compensate for glucose energy deficiency in patients with mild NCD and AD.

Objective

The aim of this systematic review was to summarize the efficacy and safety of exogenic ketones, including medium chain triglycerides (MCTs), on cognitive function in patients with mild NCD and AD.

Data Sources

The Embase, MEDLINE, MEDLINE In-Process, PubMed Ahead-of-Print, Cochrane Central Register of Controlled Trials, Europe PMC databases were searched from inception to April 2022. Studies reporting cognitive function efficacy and safety outcomes from randomized controlled trials of exogenic ketones in patients with mild NCD and AD were included.

Data Extraction

Data were extracted by 1 reviewer and checked by a second reviewer. Risk of bias was assessed using the Cochrane risk of bias tool, version 2.

Data Analysis

This review identified 13 individual trials investigating the efficacy and safety of MCT or coconut oil for patients with mild NCD or with AD. Because of the heterogeneity of the studies, a narrative synthesis was used.

Conclusion

Overall, improvements associated with exogenic ketones were observed in multiple aspects of cognitive abilities, although the large heterogeneity between the included studies makes it difficult to draw firm conclusions from the current literature. Although some studies investigated the impact of the apolipoprotein E ε4 allele status on treatment efficacy, the current data are insufficient to conclude whether such an effect is present.

Systematic Review Registration

PROSPERO registration No. CRD42022336664.

Keywords: exogenic ketones, medium chain triglycerides, mild neurocognitive disorder, Alzheimer's disease, cognitive function

Topic: alzheimer's disease, heterogeneity, apolipoprotein e, safety, ketones, mild neurocognitive disorder, triglycerides, medium chain, cognitive ability, coconut oil

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