Exogenous Ketone Supplements Improve Motor Performance in Rodents

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Abstract

Motor impairment can be caused by injury or neurological degeneration. One treatment method – the ketogenic diet (KD) – has received attention from clinicians and the public alike. KD works by inducing nutritional ketosis, where the body burns fat and protein for energy due to extremely low carbohydrate consumption. Unfortunately, although KD effectively improves motor outcomes in many neurometabolic conditions, patient adherence to the diet is difficult due to strict nutritional requirements and potential side effects. Alternative methods of achieving ketosis are needed – and ketone supplements are a possible solution. Researchers at the University of South Florida and Savaria University, Hungary investigated the effect of ketone supplements on motor performance in mice and rats. By treating the rodents with a variety of ketone combinations prior to a rotarod test, the researchers found that motor performance was improved to various degrees by ketone supplementation. Levels of the ketone body R-beta-hydroxybutyrate were increased and in some cases blood glucose was decreased following exercise when ketone supplements were used. Although clinical studies are needed to demonstrate the same effect in humans, the results suggest that exogenous ketone supplementation may be a promising treatment for motor impairment due to neurometabolic conditions.