

Evaluating the Benefits of Reducing Canine Carbohydrate Intake:

Ketogenic Diets as Therapies for Epilepsy?

Evidence Review
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Abstract— Fasting and ketogenic diets have been used to treat refractory epilepsy in human patients for nearly 100 years. This white paper reviews the evidentiary basis for these treatment strategies in dogs. We conclude that while a sizable body of evidence suggests that ketogenic diets are efficacious treatments for refractory childhood epilepsy in humans, the evidence suggesting similar efficacy in canine patients is more limited.

EVIDENCE REVIEW

Fasting and so-called “ketogenic diets” (diets which enhance the production of ketone bodies, classically through carbohydrate restriction coupled with an increase in dietary fat intake) have been used as nutritional treatments for refractory epilepsy in human patients (primarily children) since at least 1921. Recent clinical trials have shown with some consistency that about 50% of children with refractory epilepsy who receive a ketogenic diet will experience at least a 50% reduction in seizures. Perhaps more impressively, about one-third of patients report at least a 90% reduction in seizure frequency.

But a similarly persuasive body of evidence has yet to emerge from studies of canine subjects. In fact, to our knowledge, only two studies have ever been published describing the use of ketogenic diets on dogs with refractory epilepsy. In the first (Patterson et al. 2005), dogs receiving ketogenic diets for six months did not display a significant difference in seizure frequency compared with control dogs. As the authors of the study themselves noted, the significance of these findings should not be overstated—the sample size used in the study was very small (only six dogs) and the blood ketone levels achieved were somewhat lower than in typical human treatments—but, nevertheless, it certainly does not qualify as affirmative evidence in favor of the efficacy of ketogenic diets in epileptic dogs.

On the other hand, a larger and more recent randomized, double-blind, placebo controlled crossover trial (Volk et al. 2015) reported findings much more in-line with those that have typically emerged from research on human subjects. After a three-month control period, a group of 21 epileptic dogs was fed a ketogenic diet for three months. (Here ketosis was achieved through supplementation with medium-chain triglycerides, not carbohydrate restriction.) During the experimental period, one-third of subjects saw seizure frequency reduce by at least 50% and three dogs became entirely seizure-free, findings which clearly echo those that have emerged from human trials.

The scientific community’s understanding of the potential therapeutic value of ketogenic diets for dogs with refractory epilepsy remains in its infancy. But it is certainly notable that the best-designed experiment ever conducted on the subject has produced findings that are quite similar to the statistics that have emerged from the larger body of evidence concerning human patients.

OVERALL SUPPORT FOR PRIMARY THESES

5/10: A limited amount of species-specific evidentiary support, bolstered by a larger and more consistent body of evidence from studies involving human subjects.

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