



RESEARCH PROGRESS REPORT SUMMARY

Grant 02252: Investigating a Ketogenic Medium-Chain Triglyceride (MCT) Supplement for the Treatment of Drug-Resistant Canine Idiopathic Epilepsy and Its Behavioral Comorbidities

Principal Investigator: Holger Volk, DVM, PhD
Research Institution: Royal Veterinary College, University of London
Grant Amount: \$107,697.06
Start Date: 5/1/2016 **End Date:** 9/30/2018
Progress Report: End-Year 2
Report Due: 6/18/2018 **Report Received:** 5/20/2018

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Original Project Description:

Canine epilepsy is a chronic neurological condition, often requiring lifelong medication with anti-epileptic drugs (AEDs). Despite appropriate treatment with available AEDs, seizure freedom may not always be achievable. Indeed, over two thirds of dogs with epilepsy continue to have seizures long-term and around 20-30% remain poorly controlled on standard AEDs. The hardest to treat dogs are termed 'refractory' or 'drug-resistant' patients. There is an urgent need to develop alternative treatments to improve the quality of life (QoL) of drug-resistant patients. The ketogenic diet, originally characterized as high in fat and low in carbohydrates, has been a successful treatment in children with epilepsy for several decades, decreasing seizure activity and even leading to seizure freedom in drug-resistant patients. Recent research has identified that a component of the ketogenic diet, a medium-chain fatty acid (MCT) called C10 has direct anti-seizure effects on the brain. The investigators will assess whether dietary supplementation with ACT oil containing C10 for dogs with drug-resistant epilepsy will reduce seizure frequency and/or severity. As epilepsy has multiple impacts on QoL beyond seizure frequency, the researchers will also investigate whether the MCT supplement alters the side effect profile of AEDs, improves behavioral problems associated with epilepsy (e.g. anxiety) and cognition, and improves the stress levels of the affected dog. If successful, MCT supplements could provide a new tool for canine epilepsy treatment.



Publications:

Abstract:

Berk BA, Packer RM, Law T, Volk HA. Investigating the use of dietary supplements in dogs with idiopathic epilepsy. (Abstract) Annual ECVN/ESVN conference, Helsinki, Finland. Sept. 21-23, 2017

Publication:

Packer, R. M. A., Volk, H. A., & Fowkes, R. C. (2017). Physiological reactivity to spontaneously occurring seizure activity in dogs with epilepsy and their carers. *Physiology & Behavior*, 177, 27–33. <http://doi.org/https://doi.org/10.1016/j.physbeh.2017.04.008>

Pending acceptance

Title: INVESTIGATING OWNER USE OF DIETARY SUPPLEMENTS IN DOGS WITH IDIOPATHIC EPILEPSY;
Journal: *Research in Veterinary Science*.

Presentations:

ECVN scientific meeting (Helsinki) – poster submitted for the last report
ECVCN – Abstract accepted and poster will be circulated when prepared for the conference

Report to Grant Sponsor from Investigator:

Canine epilepsy is a chronic neurological condition, often requiring lifelong medication with anti-epileptic drugs (AEDs). Despite appropriate treatment with available AEDs, seizure freedom may not always be achievable. Indeed, over. There is an urgent need to develop alternative treatments to improve the quality of life (QoL) of drug-resistant patients, who may continue to experience unpleasant AED side-effects despite their lack of success. The project will investigate whether supplementing the diet of dogs with drug-resistant epilepsy with an MCT oil containing C10 will reduce seizure frequency and/or severity. As epilepsy has multiple impacts on QoL beyond seizure frequency, we will also investigate whether the MCT supplement alters the side effect profile of AEDs the patient is already receiving, improves any behavioural problems associated with epilepsy (e.g. anxiety), cognition and improves the stress levels of the affected dog and their owner. We have made good progress after we have identified oils which have a good palatability. We have received full ethical approval, have recruited staff on the trial, have standardised and established all the additional cognitive, behavioural, blood and gait tests in the lab and have currently good case recruitment numbers. As aforementioned we had some delay in recruitment. We have now however finished the recruitment with the last patient finishing the trial in February 2018. We could show that by supplementing the diet with MCT oil seizure frequency can be reduced significantly. We are currently doing sub-analysis, which we will share shortly. All metabonomics sample are planned to be run and the first analysis should be ready until the end of summer.