

Stiftung Tierärztliche Hochschule Hannover
University of Veterinary Medicine Hannover, Foundation



Department of Small Animal Diseases

How to feed the epileptic brain

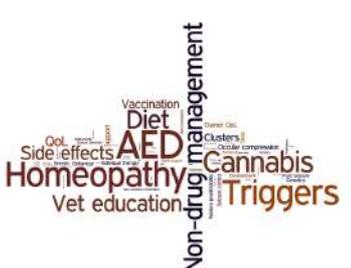
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Disclosures

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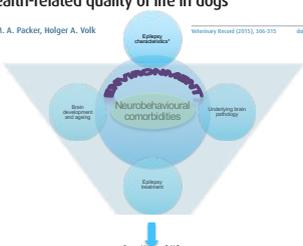
What next in canine epilepsy research?



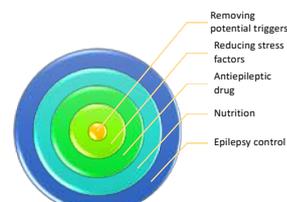
Review

Epilepsy beyond seizures: a review of the impact of epilepsy and its comorbidities on health-related quality of life in dogs

Rowena M. A. Packer, Holger A. Volk
Veterinary Record (2015), 116-115 doi:10.1136/vr100320



A holistic approach....



What is the role of diets?



Dietary supplementation with medium-chain TAG has long-lasting cognition-enhancing effects in aged dogs

Yuanlong Pan^{1*}, Brian Larson¹, Joseph A. Araujo^{2,3}, Winnie Lau², Christina de Rivera^{2,3}, Ruben Santana¹, Ana Gore¹ and Norton W. M. Ingram^{2,3,4}



Seizure control by ketogenic diet-associated medium chain fatty acids

Philip Chang¹, Nicole Tsvbach¹, Nick Platt¹, Philip E. Chen¹, Matthew C. Walker^{1,2,3,4}, Robin S.E. Williams¹

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ABSTRACT
 The ketogenic diet (K/D) has been shown to be effective in reducing seizure frequency in dogs with idiopathic epilepsy. However, the long-term effects of K/D on cognition and quality of life are unknown. We investigated the effects of a medium-chain triglyceride (MCT) diet on cognition and quality of life in dogs with idiopathic epilepsy. Dogs were randomized to either a MCT diet or a placebo diet. Cognitive function was assessed using a series of tests, including the modified Beckwith-Jones test, the modified Beckwith-Jones test, and the modified Beckwith-Jones test. Quality of life was assessed using a series of tests, including the modified Beckwith-Jones test, the modified Beckwith-Jones test, and the modified Beckwith-Jones test. The MCT diet group showed significantly better cognitive function and quality of life compared to the placebo group. These findings suggest that MCT diet may be a beneficial treatment for dogs with idiopathic epilepsy.

Brain Journal of Medicine, page 1 of 20
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A randomised trial of a medium-chain TAG diet as treatment for dogs with idiopathic epilepsy

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Medium chain triglycerides diet (MCTD) study design



- 6-month prospective, randomised, double-blinded, placebo controlled crossover dietary trial
- Idiopathic epilepsy
- ≥1 Antiepileptic drug (AED) chronically treated (steady state)
- ≥3 seizures in last 3 months

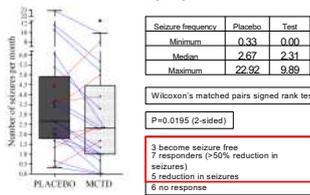
Included dogs

- 21 dogs included (n=21)
- 6 females (4 neutered + 2 whole)
- 15 males (10 neutered + 5 whole)
- 4.59 ± 1.73 years of age
- 29.79 ± 14.73 kg at start of trial
- All 21 dogs received Phenobarbital
 - Most dogs were treated additionally with K/D (n=18)
 - imepitoin (n=1)
 - levetiracetam (n=4)
- No change in acute or chronic treatment throughout the trial

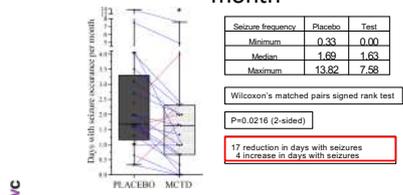
Breeds of dogs

- English Springer Spaniel
- Boxer
- American Bulldog
- Beagle (2)
- Border Collie (2)
- Cavalier King Charles Spaniel
- Crossbreed (3)
- English Bull Terrier
- German Shepherd
- Golden Retriever
- Lhasa Apso
- Mastiff
- Rhodesian Ridgeback
- Saint Bernard
- Siberian Husky
- Welsh Springer Spaniel
- Slovakian Rough Haired Pointer

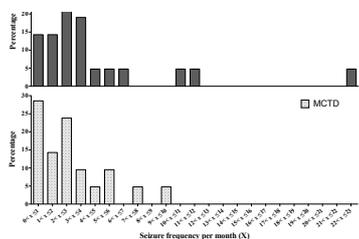
Seizure frequency per month



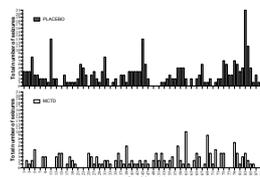
Seizure day frequency per month



Seizure frequency distribution



Total seizure number



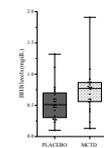
Summary and Conclusion

MCTD improves seizure control

- Most dogs showed a reduction in seizure frequency in 30 days when fed as an adjunct to veterinary therapy
- Over the course of 90 days:



- No effect on antiepileptic drug serum levels
- MCTD significantly increases BHB serum levels



Investigating the short-term effects of medium-chain triglycerides (MCT) supplement on canine epilepsy in drug-non responders

Dr Dr Benjamin-A. Berk MSc MRCVS¹

Resilient EDVON

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- 3 Tierärztliche, Dr. A. Balhen-Nöthen, Hatfeldstraße, Cologne, Germany
- 4 Faculty of Veterinary Medicine, Dep. of Equine and Small Animal Medicine, Helsinki, Finland
- 5 Klinik für Kleintiere, Stiftung Tierärztliche Hochschule Hannover, Bünteweg, Hannover, Germany



Effects of a ketogenic diet on ADHD-like behavior in dogs with idiopathic epilepsy

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- Significant reduction in chasing behaviour (reduction in ADHD-like behaviour?) during MCT diet period
- Reduction in stranger-directed fear (anxiolytic properties of the MCT?)

Summary

Mechanism



• Reduction in seizure frequency

Mode of Action

• Behavioral effects



