

CANINE NC NEUROCARE

A breakthrough nutritional approach

A diet based on pioneering research

The first diet of its kind, NeuroCare was developed using the insights gathered through extensive research in canine brain health, in collaboration between Purina scientists and veterinary neurology specialists at the Royal Veterinary College in London.

NC NEUROCARE™

FIRST AND ONLY DIET TO CONTAIN

6.5% MCT*

TO PROVIDE AN ALTERNATIVE ENERGY SOURCE FOR THE BRAIN

SPECIFIC

NEURO-NUTRIENTS THAT HELP SUPPORT BRAIN METABOLISM

BRAIN FUNCTION



BRAIN FUNCTION

Formulated with MCT and neuroprotective nutrients clinically proven to help enhance canine brain function

COGNITIVE FUNCTION



COGNITIVE FUNCTION

Formulated to help support cognitive function in elderly dogs

MCT



MCT

Ketogenic diet that provides an alternative source of energy for the brain



PURINA®
PRO PLAN®
VETERINARY
DIETS

NC NEUROCARE™

The first and only diet to contain 6.5% MCT*



Formulated with MCT and neuroprotective nutrients clinically proven to help enhance canine brain function



Formulated to help support cognitive function in elderly dogs



Ketogenic diet providing an alternative source of energy for the brain

Average nutrient contents

Key nutrient values (as fed)	Dry
Moisture	7.5%
Protein	30%
Fat	15%
Carbohydrates	38.5%
Crude Fibre	1.5%
MCT	6.5%
EPA+DHA	0.4%
Vitamin E	519 IU/kg
Vitamin C	82 mg/kg
Arginine	2.2%
Selenium	0.5 mg/kg
B Vitamins	210 mg/kg
Metabolisable energy (ME) [†]	3.67 kcal/g

Feeding guide

Weight (kg)	Adult (g/day)	Senior (g/day)
2.5	70	60
5	110	95
10	175	155
15	230	200
25	325	285
35	405	355
45	480	420
70	645	565

Ingredients

Maize, dehydrated poultry protein, wheat flour, dehydrated salmon protein, medium chain triglycerides oil (6.5%), dried beet pulp, rice, dried egg, maize gluten meal, digest, fish oil, minerals.

References

- Heske L, Nodtvedt A, Jaderlund KH, et al. A cohort study of epilepsy among 665,000 insured dogs: incidence, mortality and survival after diagnosis. *Vet J* 2014;202:471-476.
- Salvin HE, McGreevy PD, Sachdev PS, et Valenzuela MJ. Under diagnosis of canine cognitive dysfunction: a cross-sectional survey of older companion dogs. *Vet J* 2010;184:277-81.
- Moore SA. A clinical and diagnostic approach to the patient with seizures. *Topics Compan An Med* 2013;28:46-50.
- Law TH et al. A randomized trial of a medium-chain TAG diet as treatment for dogs with idiopathic epilepsy. *Br J Nutr* 2015;114:1438-1447.
- Packer RMA, Volk HA. Epilepsy beyond seizures: a review of the impact of epilepsy and its comorbidities on health-related quality of life in dogs. *Vet Rec* 2015;176:306-315.
- Weissmann A, Volk HA, Parkin T, Ortega M and Anderson TJ. Evaluation of Quality of Life in Dogs with Idiopathic Epilepsy. *J Vet Intern Med* 2014;28:510-514.
- Landsberg GM, Nichol J, Araujo JA. Cognitive Dysfunction Syndrome- A disease of canine and feline brain aging. *Vet Clin Small Anim* 2012;42:749-768.
- Chang Y, Mellor DJ, Anderson TJ. Idiopathic epilepsy in dogs: owners' perspectives on management with phenobarbitone and/or potassium bromide. *J Small Anim Pract* 2006;47 (10), 574-81.
- Munana KR. Management of refractory epilepsy. *Topics Compan An Med* 2013; 28:67-71.
- Chang PS, Augustin K, Boddum K, et al. Seizure control by decanoic acid through direct AMPA receptor inhibition. *Brain* 2015;25:1-13.

Further reading

- Chang P, Terback N, Plant N, et al. Seizure control by ketogenic diet-associated medium chain fatty acids. *Neuropharm* 2013;69:105-114.
- Ebert D, Haller RG, Walton ME. Energy contribution of octanoate to intact rat brain metabolism measured by 13C nuclear magnetic resonance spectroscopy. *J Neurosci* 2003;23:5928-5935.
- Landsberg G. Therapeutic agents for the treatment of cognitive dysfunction syndrome in senior dogs. *Prog Neuropsychopharmacol Biol Psychiatry* 2005;29:471-479.
- Pan Y, Larson B, Araujo JA, et al. Dietary supplementation with medium-chain TAG has long-lasting cognition-enhancing effects in aged dogs. *Brit J Nutr* 2010;103:1746-1754.
- Schonfeld P, Reiser G. Why does brain metabolism not favor burning of fatty acids to provide energy? - Reflections on disadvantages of the use of free fatty acids as fuel for brain. *J Cerebral Blood Flow Metabol* 2013;33:1493-1499.
- Wlaz P, Socala K, Nieoczym D, et al. Anticonvulsant profile of caprylic acid, a main constituent of the medium-chain triglyceride (MCT) ketogenic diet, in mice. *Neuropharmacology* 2012;62:1882-1889.
- Wlaz P, Socala K, Nieoczym D, et al. Acute anticonvulsant effects of capric acid in seizure tests in mice. *Prog Neuro-Psychopharmacol Biol Psychiatry* 2015;57:110-116.

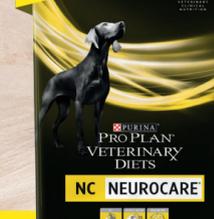
To find out more about Neurocare please contact your PURINA® representative Nestlé PURINA, 3 rue Neuve, CH-1003 Lausanne

PURINA®
PRO PLAN®
VETERINARY
DIETS

The diet that's changing minds



FIRST AND ONLY
CANINE DIET FORMULATED WITH
6.5% MCT*



NC NEUROCARE™

*Based on declared amount of MCT in the ingredient list

†Based on declared amount of MCT in the ingredient list
‡Calculated using modified Atwater's factors

*Based on declared amount of MCT in the ingredient list

BRAIN HEALTH

Essential for optimum overall and neurological health, behaviour and cognition

As with humans, dogs' brains and nervous systems are very complex. Affecting dogs of all ages and breeds, neurological abnormalities can be caused by many different factors – ranging from hereditary disease and general health problems, to injury and reaction to medication.^{1,2,3}

Keeping the brain healthy is just as important as the rest of the body

FOR DOGS, Changes in brain function can negatively impact all aspects of a dog's life:^{1,5,6,7}

- Reduced quality of life
- Poorer interactions with humans and other pets
- Increased anxiety and disorientation
- Potentially reduced lifespan
- Significant reduction in motor function, balance, appetite and/or cognition

FOR OWNERS, abnormal canine brain function can also impair quality of life:^{7,8}

- Problems with dog's housetraining
- Poorer social interactions with dog
- Decreased trainability
- Upsetting changes in behaviour and fears about health

However, abnormal brain function can often be difficult to manage

Medications can be highly beneficial, but:^{7,9}

- Are commonly associated with undesirable side effects
- Often reduce rather than eliminate clinical signs

NEW APPROACHES TO SUPPORTING BRAIN FUNCTION ARE THEREFORE OF GREAT INTEREST TO VETERINARY SURGEONS



Formulated with MCT and neuroprotective nutrients clinically proven to help enhance canine brain function.

MCTs:

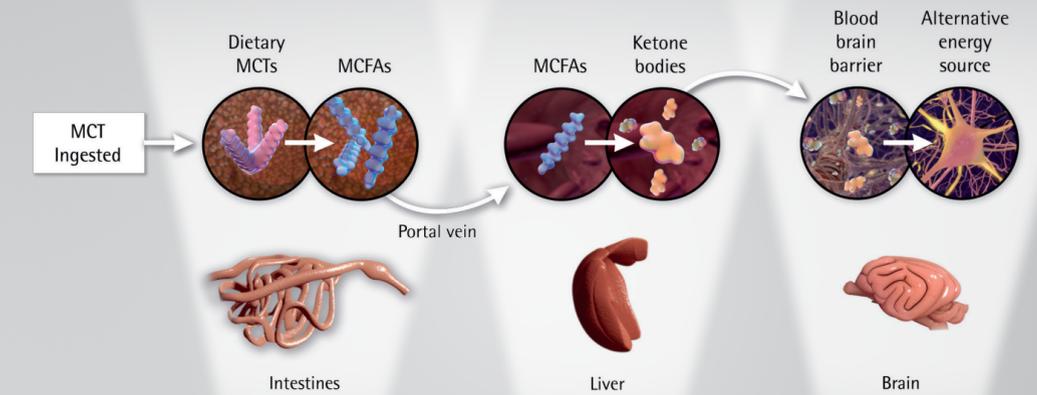
AN ALTERNATIVE ENERGY SOURCE FOR THE BRAIN

The brain usually utilises glucose as its primary energy source. In the face of compromised glucose metabolism, neurons may benefit from an alternative energy source, such as:

KETONE BODIES

MCTs (medium-chain triglycerides) from the diet are metabolised to MCFAs (medium-chain fatty acids) during the digestion process and converted in the liver to ketone bodies-β-hydroxybutyrate (BHB) which can act as an alternative energy source to compensate for decreased glucose metabolism by the brain.

Also, MCFAs from MCTs are more readily oxidised by astrocytes in the brain than the long chain triglycerides and therefore can be used as an alternative energy source by the brain.



In addition to MCTs, NeuroCare contains a specific combination of nutrients that help support brain metabolism.

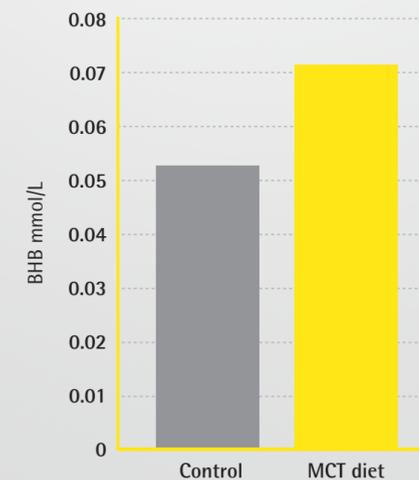
ARGININE
Supports healthy circulation, blood pressure and brain function

EPA + DHA
Supports brain structure and function. EPA helps reduce inflammation

ANTIOXIDANTS:
Vit C, Vit E, Selenium
Helps reduce oxidative stress

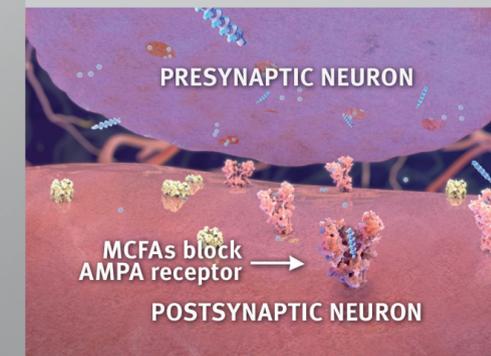
B VITAMINS
Used in energy metabolism and DNA maintenance

Levels of the ketone body, β-hydroxybutyrate, significantly higher in the blood of dogs fed a diet fortified with MCTs vs. control diet.⁴



c10 MCFA effects

Experts believe that MCFA (c-10 decanoic acid) may block AMPA receptors, inhibiting the excitatory neurotransmission.¹⁰



NEUROCARE VS TRADITIONAL KETOGENIC DIETS

Traditional ketogenic diets are used to help in the management of children epilepsy, and are diets high in fat, low in protein and low in carbohydrates.

NeuroCare does not achieve its ketogenic effect in this way.

NeuroCare is a moderate fat, high protein and moderate carbohydrates diet.

