Get Your **FATS** Right

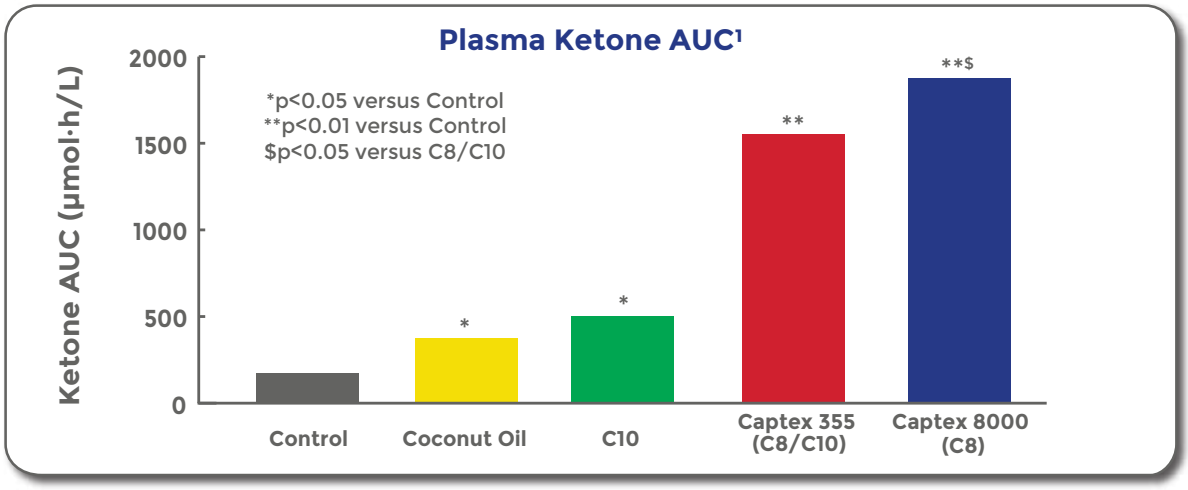
CAPTEX® MCTs

For Health, Endurance & Happiness

Super Charged with C8

Get Your Mind, Body & Health moving in the right direction with **Science-backed C8 MCTs**

- ✔ Enhance your **Cognitive Health** formulations with increased ketone production
- ✔ Support your **Ketogenic** consumers with increased satiety & healthy fat intake
- ✔ Increase your **Sports Nutrition** enthusiast's performance with increased energy, thermogenesis & endurance



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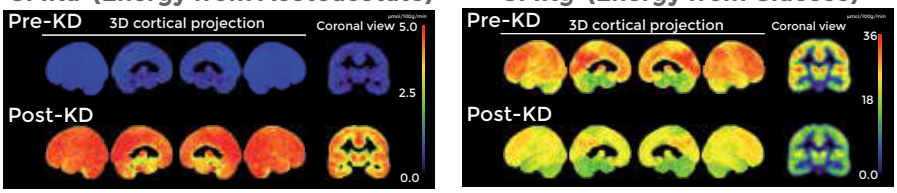
Brain Health

- MCTs support cognitive health
- MCT supplementation increases ketone metabolism in the brain
  - *More ketones in the brain[2], more brain fuel*

CMRa (Energy from Acetoacetate) **CMRg (Energy from Glucose)**

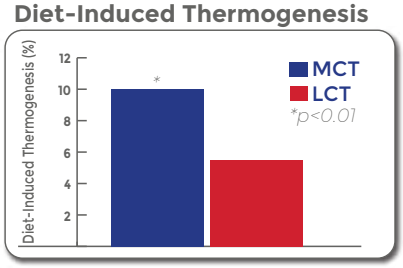


Images of brain energy metabolism during ketogenic diet (KD) including MCT supplementation in healthy adults[2]

Weight Management

- MCTs increase calorie burn during exercise[3]
- MCTs have been shown to enhance metabolism
  - *With exercise, MCTs increase fat metabolism[4]*
- A diet supplemented with MCTs may increase satiety and reduce feelings of hunger[5]

Diet-Induced Thermogenesis

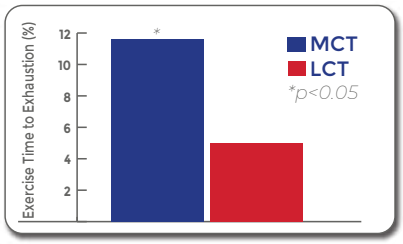


MCT: Medium-chain triglyceride, LCT: Long-chain triglyceride

Sports Nutrition

- MCTs absorb & digest rapidly for quick energy
- MCTs significantly improve endurance performance[6]
- MCTs fuel exercise performance in ketogenic/ fat-adapted athletes

Exercise Time to Exhaustion



The Products

ABITEC PRODUCT	Chemical Name(s)	Caprylic (C8) fatty acid content (%)	Appearance/ Form (25° C)	Raw Material Origin
CAPTEX® 300	Caprylic/capric triglyceride	~ 70% C8	Clear Liquid	Palm, Palm Kernel & RSPO
CAPTEX 300 C	Caprylic/capric triglyceride	~ 70% C8	Clear Liquid	Coconut
CAPTEX 300 NP	Caprylic/capric triglyceride	~ 70% C8	Clear Liquid	Non-Palm
CAPTEX 355	Caprylic/capric triglyceride	~ 55	Clear Liquid	Palm, Palm Kernel & RSPO
CAPTEX 355 C	Caprylic/capric triglyceride	~ 55	Clear Liquid	Coconut
CAPTEX 355 NP	Caprylic/capric triglyceride	~ 55	Clear Liquid	Non-Palm
CAPTEX 8000	Glyceryl tricaprylate: Ticaprylin	98	Clear Liquid	Palm Kernel & RSPO
NUTRI SPERSE® MCT 70	Caprylic/capric triglyceride on Non-Fat Dry Milk	70% MCT from Captex 300	Powder	Palm, Palm Kernel, Coconut, & Non-Palm options
NUTRI SPERSE MCT C8	Glyceryl tricaprylate: Ticaprylin on Non-Fat Dry Milk	70% MCT from Captex 8000	Powder	Palm, Palm Kernel, Coconut, & Non-Palm options

1. Vandenberghe, C., et al. Curr Dev Nutr. 2017. 1(4): 1-5.
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CAPTEX®

FOOD FOR THOUGHT

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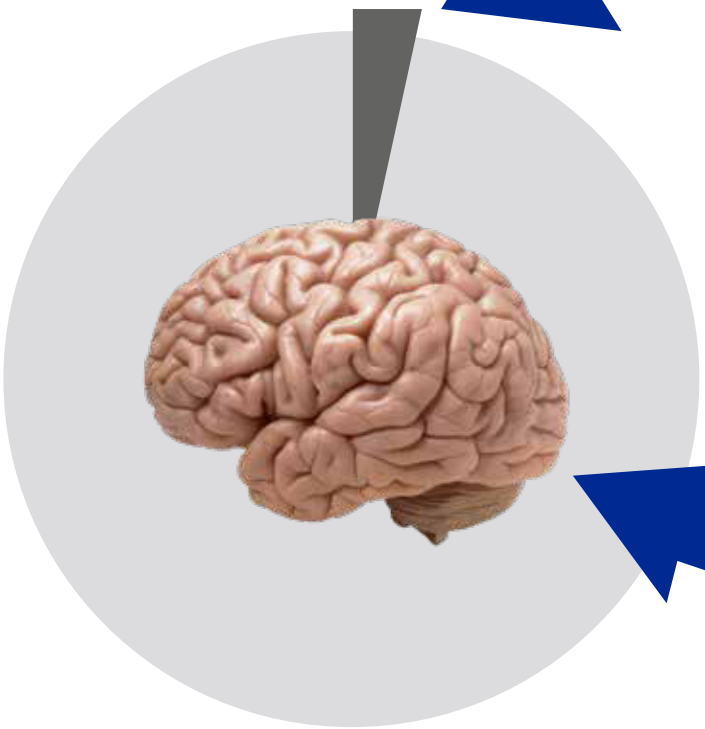
ABFI

Are you getting better with age? Maybe! But what about your mind?

The brain needs fuel in order to continue supplying us all the knowledge and memories we have stored there. Over time, just as our bodies slow down, so does the fuel supply to our brain, sometimes significantly.

Where Does the Fuel Come From?

The Brain's Energy



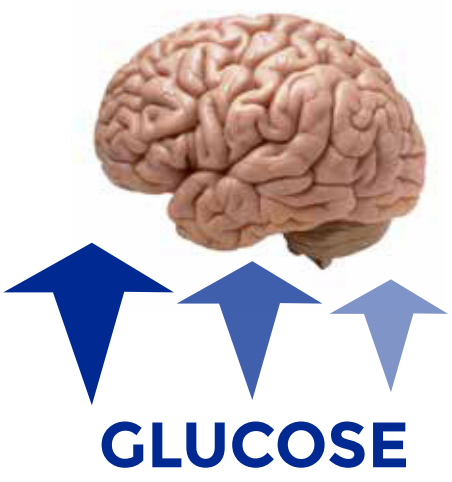
3% [1,2]
ketones

Glucose provides the majority of the energy for a healthy brain to function

97% [1,2]
glucose

Aging causes a reduction in cerebral metabolic rate for glucose [3], which is estimated to decline by 6% per decade globally with most cerebral regions affected [4]...

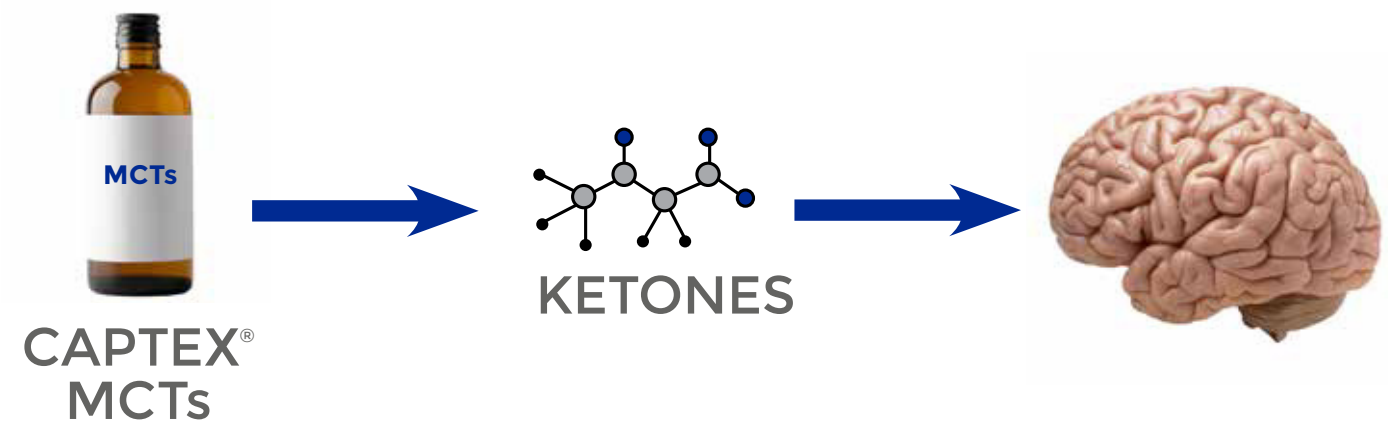
This reduction could result in memory loss and a decline in cognitive thinking.



Captex® MCTs for Energy Supply

Remember that 3% Ketones? The brain can accept up to 66% of its energy from Ketones [3-6]. But how do we increase the level of ketones that our body produces? CAPTEX® Medium Chain Triglycerides! [7]

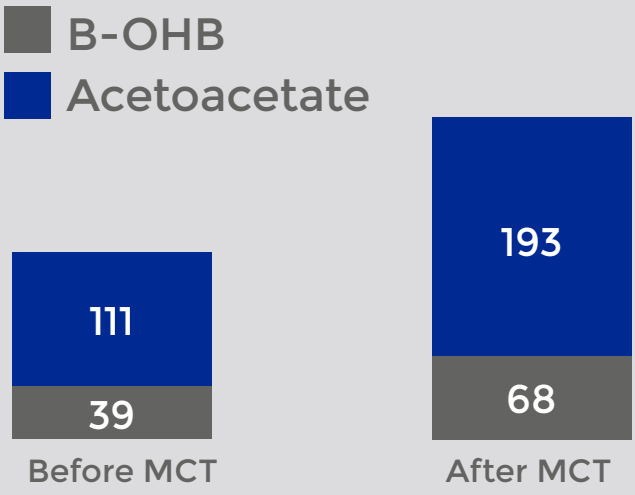
Feed your BRAIN!



As a matter a fact, studies show [7] that elevated ketones can be maintained with relatively low doses of MCT repeated several times a day.

In this study [7] MCTs were given to eight healthy adults for four weeks time. The dosage was gradually increased from 5g given three times per day during meals, to 7.5g given three times per day. As you can see, over this short four week period, mean plasma ketones increased significantly and it is estimated that the additional ketone development could contribute to up to 9% of whole-brain metabolism. That's a quick energy supply!

4 weeks, 8 Adults, up to 30g MCT/day

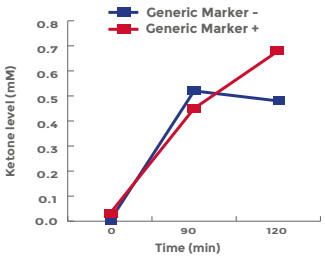


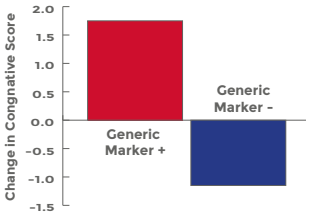
CAPTEX® MCT's for Cognitive Improvement

The use of a ketone promoting diet has shown promise for weight management, performance, and cognition. Several studies have been performed to describe the efficacy of MCTs for increasing ketones

Increased Ketone Levels in Humans Consuming MCTs [10]

- Consumption of MCTs increased circulating ketones.
- Higher ketone values were associated with greater improvement in paragraph recall.
- MCT treatment improved performance on cognitive testing for subjects without the genetic marker for Alzheimer's disease.

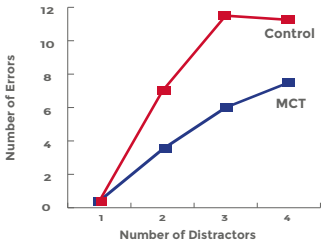


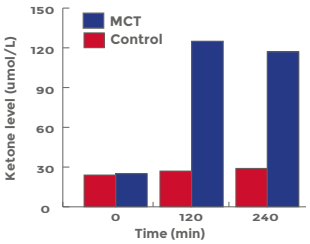


The oral supplementation of MCTs succeeded in raising ketone levels almost 8 times baseline level 90 minutes after consumption in both groups. Patients with Alzheimer's disease without the genetic marker show cognitive improvements in response to the increase in ketones. These elevations were associated with better cognitive scores (indicated by a negative score) as a measure of mental status change and paragraph recall. Adapted from data in [10].

More Efficient Learning Effects in Aged Dogs [9]

- The dogs supplemented with MCT showed significantly better performance in most of the test protocols (landmark discrimination learning ability, egocentric visual spatial function and attention) than the control group.
- The more difficult tasks showed greater effects of MCT supplementation compared with easier tasks.
- Those dogs supplemented with MCTs showed significantl elevated levels of ketones.

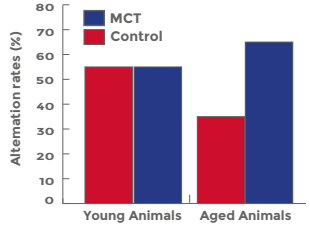




Aged Beagle dogs supplemented with MCTs have significantly higher levels of circulating ketones. Additionally, MCT supplemented dogs performed better on an attention task. As the number of distractions increased, aged dogs receiving MCTs in the diet performed the tasks with significantly fewer errors compared with aged Beagle dogs without supplementation (control). Adapted from data in [9].

Improvement of Cognitive Function in Rats [8]

- Feeding MCTs for six weeks resulted in an increase in circulating ketones in both young and old animals.
- Cognitive function was improved in aged rats fed MCTs both under normal conditions and when challenged by reduced oxygen.



The T-maze test, used for general cognitive function, is based on the innate preference of animals to explore an area (an arm) that has not been previously explored (called alternations). The MCT supplementation in aged rats resulted in a higher alternation rate compared with aged control rats. Adapted from data in [8].

Product Portfolio

	Chemical Name(s)	Caprylic (C8) fatty acid content (%)	Capric (C10) fatty acide content (%)	Appearance/ Form (25° C)	Saponification Value (mg KOH/g)	Specific Gravity (25° C)	Viscosity (Brookfield, 25° C)
Liquid Products							
CAPTEX 300	Caprylic/capric triglyceride	≈ 70	≥ 20	Colorless to light yellow, clear liquid	335-360	0.92-0.96	20-25
CAPTEX 355	Caprylic/capric triglyceride	55	≥ 35	Colorless to light yellow, clear liquid	325-340	0.92-0.96**	25-33
CAPTEX 1000	Glyceryl tricaprate; Tricaprin	≤ 1	98	White to pale yellow solid	295-315		
CAPTEX 8000	Glyceryl tricaprylate; Tricaprylin	≈ 98	≤ 1	Clear liquid	335-360		

	Substrate Base	Oil Type	Load
Powdered Products			
NUTRI SPERSE MCT 70	Dairy	MCT	70%
NUTRI SPERSE MCT 50	Non-dairy	MCT	50%
NUTRI SPERSE MCT C8	Dairy	MCT	70%

Listed properties are not specifications and are for formulation information only.

Certifications, Registrations, Compliance

- GFSI-BRC Global Standard for Food
- ISO 9001
- Kosher and Halal
- ISO 14001 and OHSAS 18001
- Batch processes, quality practices, product recall and traceability drills
- Registered with FDA as required by the Food Safety Modernization Act

CAPTEX® Medium Chain Triglycerides
NUTRI SPERSE® MCT Powdered Lipids

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8. Xu, K., et al., Diet-induced ketosis improves cognitive performance in aged rats, in Oxygen Transport to Tissue XXXI. 2010, Springer. p. 71-75.

9. Pan, Y., et al., Dietary supplementation with medium-chain TAG has long- lasting cognition-enhancing effects in aged dogs. Br J Nutr, 2010. 103(12): p. 1746-54.

10. Reger, M.A., et al., Effects of beta-hydroxybutyrate on cognition in memory- impaired adults. Neurobiol Aging, 2004. 25(3): p. 311-4.

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07/2018/V1

Get Your **FATS** Right

CAPTEX® =
MCTs for Cognitive Health

Fuel your BRAIN with ABITEC's Medium-Chain Triglycerides

Cognition may decline as we age

Decreased glucose (brain fuel) to the brain has been shown to lead to cognitive decline including impaired learning and memory.[1,2]

MCTs show positive effects on cognitive tasks including, working memory, visual attention and task switching in the healthy elderly.[3]

**more studies available upon request*

ABITEC's CAPTEX® MCTs

Support cognition & brain health
Provide quick energy
Kosher, Halal, GFSI & ISO certified
Liquid & Powder forms
Palm Kernel, Coconut and Palm-free options
Keto Friendly

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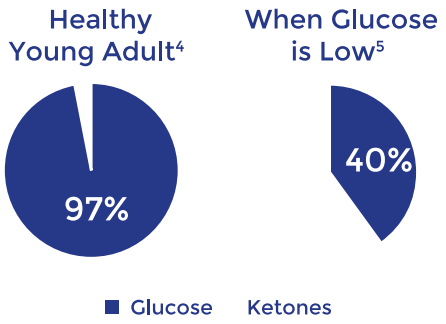
The Brain's Energy

Glucose is the brain's primary energy source
Ketones provide a secondary energy source

- Ketones are produced (ketogenesis) in the liver from fatty acids
- Low levels of ketogenesis occur at all times
- Increased ketogenesis occurs:
  - Fasting/Starvation
  - Low carb/High fat diet
  - Type I diabetes
  - Decreased glucose utilization

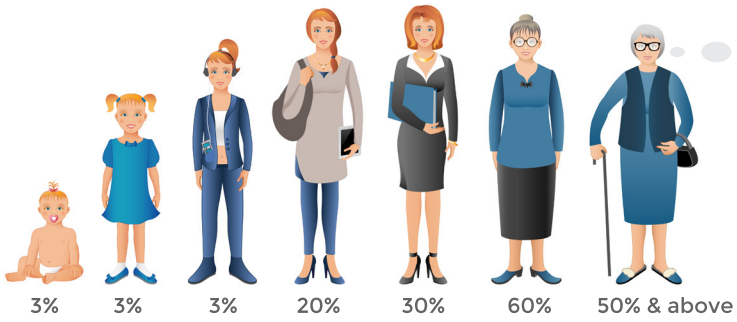
Brain Fuel



MCTs are the Brain's Quick Energy Source when Glucose is Low

MCTs are rapidly absorbed from the gut via portal vein
MCTs are converted to ketones in the liver
Ketones cross the blood brain barrier to fuel the brain
Brain will not be energy deficient with MCT supplementation

MCTs



Replaces glucose usage and restores energy to the brain ...

The Products

ABITEC PRODUCT	Chemical Name(s)	Caprylic (C8) fatty acid content (%)	Capric (C10) fatty acide content (%)	Appearance/ Form (25° C)	Raw Material Origin
CAPTEX® 300	Caprylic/capric triglyceride	~70	~30	Colorless, clear liquid	Palm Kernel, Coconut, and Palm-Free Options Available
CAPTEX 355	Caprylic/capric triglyceride	~55	~35	Colorless, clear liquid	
CAPTEX 1000	Glyceryl tricaprate: Tricaprin	< 1	98	Solid	
CAPTEX 8000	Glyceryl tricaprylate: Tricaprylin	98	< 1	Colorless, clear liquid	
NUTRI SPERSE® MCT 70	Caprylic/capric triglyceride on Non-Fat Dry Milk	70% CAPTEX® 300		Powder	
NUTRI SPERSE MCT 50	Caprylic/capric triglyceride on Non-GMO Maltodextrin	50% CAPTEX® 300		Powder	

1McNay et al. J Gerontol A Biol Sci Med Sci, 2001. 56(2):B66-71.
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CAPTEX® triglycerides are prepared from high-purity vegetable oil fatty acids. They have been specifically designed for pet food, nutrition, topical, supplement, and pharmaceutical products that require high quality nutiritionals, solubilizers, extenders, and carriers. When incorporated into diets, CAPTEX MCTs may provide healthy animal support in several areas:

- weight wellness
- cognition
- geriatric support
- neonatal support
- GI support
- energy

LIQUIDS

CAPTEX 300
CAPTEX 355
CAPTEX 1000
CAPTEX 8000

POWDERS

CAPTEX CA
CAPTEX 50
CAPTEX 70

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5. Y. Pan, B. Larson, J. A. Araujo, W. Lau, C. de Rivera, R. Santana, A. Gore, N. W. Milgram. Dietary supplementation with medium-chain TAG has long-lasting cognition-enhancing effects in aged dogs. Br J Nutr (2010) 103:1746-54.

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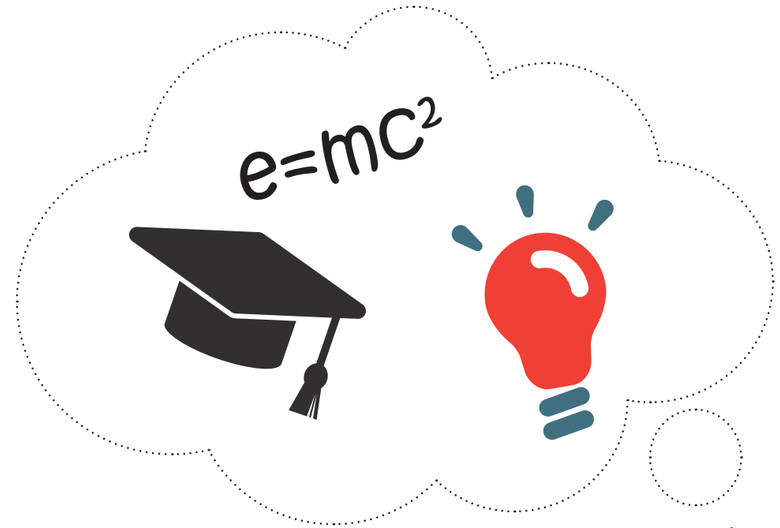
CAPTEX®

medium chain triglycerides

COGNITION



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20% OF CATS

ARE 10 YEARS OLD OR OLDER

CATS WITH AT LEAST ONE SIGN OF COGNITIVE DECLINE

28 %
11-14 years old

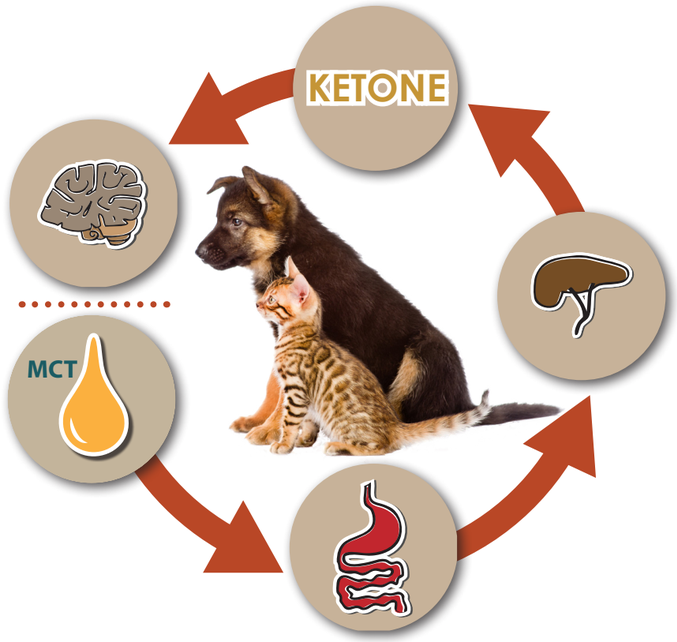
50 %
> 15 years old

- Increased confusion
- Alterations in sleep-wake cycle
- Loss of litterbox habits
- Meows at night for no reason
- Alterations in activity - aimless wandering
- Decreased interaction with humans and other animals

COGNITION, in humans, is a complex notion that includes

- learning and memory
- language
- attention
- motor skills
- executive function
- spatial abilities

These functions are also integral parts of an animal's cognitive process and the improvements in nutrition and veterinary medicine have allowed our companion animals to live longer. As such, the decline in cognitive function noted in humans is also mirrored in our companions. The term cognitive dysfunction syndrome is used to describe the progressive cognitive decline that is characterized by a gradual decline in learning, memory, perception, and awareness in animals.[1,2] Using protocols that are designed to assess different cognitive areas, it has been shown that cognitive decline can start as early as 6 years in dogs and in cats, age-related cognitive impairments are noted before the clinical signs of cognitive decline.[2,3] This may suggest a link between cognitive impairment and behavioral changes.[3]

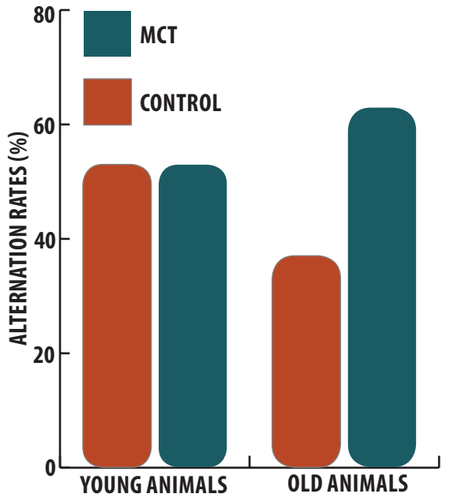


MEDIUM CHAIN TRIGLYCERIDES (MCT) are fats composed of fatty acids of 8-10 carbons. These triglycerides are easily digested into fatty acids that are freely absorbed from the intestine into the portal vein for direct access to the liver. In the liver, MCTs are quickly metabolized into ketones that are able to be used as an alternate energy source by the brain.

MCTS IN RATS [4]

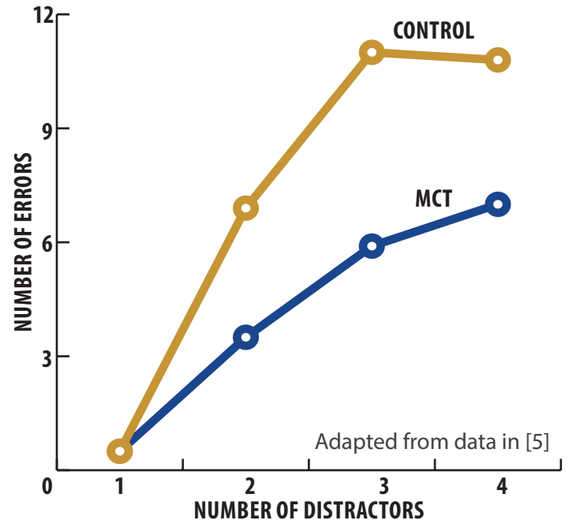
Feeding MCTs for 3weeks resulted in increased circulating ketone levels and improved cognitive function in aged rats

ALTERNATION (T-MAZE TEST)



Adapted from data in [4]

MCTS IN DOGS [5]



Adapted from data in [5]

- Dogs fed MCTs demonstrated better performance in most tests over control dogs
- Difficult tasks showed greater effects of MCTs supplementation

CANINE COGNITIVE DECLINE

5% of dogs 10-12 yo
23% of dogs 12-14 yo
41% of dogs >14 yo

DOGS WITH AT LEAST ONE SIGN OF COGNITIVE DECLINE

28 %
11-12 years old

68%
> 15 years old

- Increased confusion
- Alterations in sleep-wake cycle
- Loss of housetraining
- Barks at night for no reason
- Loss of recognition of familiar people
- Decreased interaction with humans and other animals