KTO-C8[™]100

Pure caprylic acid from coconut oil

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7 designs for health[®]

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KTO-C8[™] 100 is 100% pure caprylic acid sourced exclusively from coconut oil. Each 1-Tbsp serving provide 14 grams of caprylic acid convenient for adding to coffee or tea, using in shakes and smoothies, or incorporating into recipes as needed. Caprylic acid is a medium chain fatty acid with 8 carbon atoms, hence its chemical shorthand, C8. Medium chain fatty acids (MCFAs) have unique properties that distinguish them from other fatty acids and which give them utility for adding to ketogenic diets as well as for incorporating into other dietary approaches for therapeutic reasons.

Ketogenic diets and similar low-carbohydrate, high-fat nutritional strategies have experienced a resurgence as a rapidly expanding body of research supports their use for a number of clinical applications. The very low carbohydrate ketogenic diet (KD) was originally developed as a treatment for refractory epilepsy¹, but it is now established that this way of eating is effective for treating type 2 diabetes and metabolic syndrome,²⁻⁷ polycystic ovarian syndrome (PCOS),⁸ and may also be beneficial for individuals with non-alcoholic fatty liver disease (NAFLD),^{9,10} as well as those living with migraines,¹¹⁻¹⁵ gout,^{14,15} acid reflux/GERD,¹⁶⁻¹⁸ Parkinson's disease,^{19,20} and Alzheimer's disease or its precursor, mild cognitive impairment.^{21,22} Additionally, individuals with type 1 diabetes who follow a KD may be able to improve glycemic control while reducing occurrence of adverse events.²³

Some individuals, however, may be unwilling or unable to follow a ketogenic diet. For conditions that respond specifically to elevated ketones rather than solely a reduction in blood glucose or insulin, KTO-C8[™] 100 may be beneficial because medium chain fatty acids—C8 in particular—are rapidly metabolized into ketones even in the presence of dietary carbohydrate.

MCFAs can serve as an effective supplemental source of fats for those implementing a ketogenic diet or a modified keto diet, where MCFAs augment dietary fat intake. This can be especially useful in helping patients achieve ketosis, as the quantity of fat needed from food may pose as a barrier to adherence, especially in individuals accustomed to low-moderate fat consumption. Medium chain fatty acids are digested and absorbed differently than long chain fatty acids (for example, oleic acid from olive oil or stearic acid from beef). They begin to be broken down by salivary enzymes with continued lingual lipase activity in the stomach and are completely digested by pancreatic lipases in the small intestine. They are absorbed

KTO-C8[™] 100 may help support:*

- Ketone production without the need for carbohydrate restriction
- Healthy cognitive function and mental clarity
- Neuronal energy generation and general cellular energy
- Modest fat loss
- Achievement of nutritional ketosis

directly from the intestine into the portal vein and delivered to the liver, bypassing conventional fat entry into the bloodstream via the lymphatic system.^{24,25} The liver may fully oxidize these MCFAs but more commonly they are metabolized quickly into ketones, which are exported for use in other tissues, particularly the heart, skeletal muscle and brain.

The caprylic acid in KTO-C8[™] 100 is sourced exclusively from coconut oil. The predominant fatty acid in coconut oil is lauric acid (C12), but this is not the optimal choice for an MCFA product. Evidence suggests lauric acid has greater potential to be incorporated into chylomicrons and be transported by the lymphatic system and contribute less to ketogenesis than MCFAs with shorter carbon chains, such as caprylic and capric (C10) acids.²⁵ Additionally, C8 may have unique effects that other MCFAs lack. For example, it was shown that C8 increased ketogenesis in cultured human astrocytes while C10 did not.²⁶ Additional research shows that C10 is oxidized in human neurons at only 20% the rate of C8.²⁷ An oil that is purely C8 may have a larger therapeutic impact than one containing both C8 and C10, as many commercial products do.

Owing to their unique metabolic fate, MCFAs can elevate blood ketone levels without the need for carbohydrate restriction, potentially making KTO-C8[™] 100 a beneficial therapeutic tool for individuals who have difficulty adhering to a ketogenic diet or simply those who enjoy the distinct effects of MCFAs regardless of the diet they follow. Once referred to as "metabolism's ugly duckling",²⁸ ketones have since been called "a high-octane fuel for the body"²⁹ and "a superfuel" because they are more efficient sources of ATP than glucose or fatty acids.³⁰ This may underlie the use of ketones and MCFAs as potential therapeutic interventions for conditions involving reduced cellular energy generation from glucose metabolism, in particular Alzheimer's disease.³¹⁻³⁴

MCFAs have limited potential for storage as triglycerides and enter mitochondria largely independent of the carnitine transport system, making them a relatively rapid source of energy and less likely to contribute to excess body fat stores. A meta-analysis of randomized controlled trials looking at the effects of medium-chain triglycerides on weight loss and body composition found that compared to diets higher in long chain fatty acids, diets enriched with MCTs resulted in small but statistically significant reductions in body weight, waist circumference, and total and visceral fat.³⁵ A separate meta-analysis came to similar findings³⁶ and other research suggests that substituting a small portion of long chain fats with MCTs may help slightly decrease body fat in overweight men.³⁷ It is possible that increased MCT consumption in place of a portion of other fats may be beneficial as part of a multifaceted strategy for fat loss.

Ketones are well-recognized for crossing the blood-brain barrier and MCFAs themselves have also been shown to have this property. It is often stated that fatty acids are not a direct fuel source for the brain, and this may be true but MCFAs are metabolized by astrocytes, generating ketones as a byproduct that are exported as fuel for neurons.²⁶ The rapid conversion of C8 to ketones, and especially the uptake of MCFAs and ketones alike into the brain, may explain the mental clarity and sharp cognition many people experience when adding MCT oil to their morning beverage.

An increasing number of chronic health conditions have been associated with impaired mitochondrial function and excessive oxidative stress. MCFAs appear to have beneficial effects in these areas. It was shown in cultured mouse muscle cells that cells treated with MCFAs had increased mitochondrial oxidative capacity and less oxidative stress than cells treated with long chain fatty acids.³⁸ MCFAs were also shown to upregulate mitochondrial biogenesis in mice consuming a MCFA-enriched diet.³⁹

For individuals with conditions related in part to chronic hyperinsulinemia (e.g., type 2 diabetes, PCOS, hypertension, obesity, dyslipidemia, gout and cardiovascular disease), KTO-C8[™] 100 is not a substitute for a low-carb or ketogenic diet. However, it may be used as an adjunct to carbohydrate restriction in support of overall physical and mental energy, achievement of nutritional ketosis, and potentially contributing to a modest increase in fat loss when substituted for other fats in the diet.

КТО-С8™ 100

Supplement Facts

Serving Size 15 mL (approx. 1 Tablespoon) Servings Per Container 32

Amount Per Serving	%	Daily Value
Calories	130	
Total Fat	14 g	18%*
Saturated Fat	14 g	70%*
Caprylic Acid (C8) (from coconut oil)	14 g	
*Percent Daily Values are based on a	2.000 ci	alorie diet.

Contains tree nuts (coconut).

Recommended Use:

Mix 15 mL (approx. one Tbsp) in 8-12 ounces of liquid per day, or as directed by your health care practitioner.

KTO-C8[™] 100 can be added to coffee, tea, shakes or smoothies, or can be incorporated into homemade salad dressings and other condiments

Caution: It is recommended that patients introduce KTO-C8[™] 100 into their diet slowly, gradually increasing the amount over time, as overconsumption may result in GI upset or loose stools in some individuals.

For a list of references cited in this document, please visit: https://catalog.designsforhealth.com/assets/itemresources/KTO-C8100_References.PDF

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