

IS IT TIME TO MAKE COCONUT WATER YOUR ENERGY DRINK OF CHOICE?

MCTs FOR ENERGY

» By Pedro van Gaalen, Editor

While this trend lost some momentum over the years, largely due to a lack of credible scientific evidence to support the touted benefits, it never petered out completely.

Today you only have to look to the various coconut-based drinks and bars on sale at health shops, supplement stores and pharmacies to realise that MCTs are back in vogue.

Mark Wolff, an elite age-group triathlete and runner, part-time coach, and founder of local supplement manufacturer, 32Gi, has first-hand experience on the subject, both from a professional and personal perspective. He follows a LCHF diet, with strategic carb re-feeds, when required, to fuel his training or racing.

Wolff explains that MCTs are an ideal source of fuel for endurance athletes

for two main reasons.

"MCTs have a slightly different structure to other fats, which means, in terms of the way in which they're metabolised, they're quite similar to a carbohydrate. MCTs will bypass the normal digestive process that long chain fats go through, and are immediately processed by the liver. This converts them into ketones, which can readily be used for energy production."

These properties can deliver a number of benefits to athletes, not least of which is a denser source of energy, as fats contain more calories per gram than carbohydrates. Wolff does point out that a typical MCT contains roughly 10% fewer calories than a normal long chain triglyceride, offering approximately eight calories per gram, compared with nine from typical fat. "However, that's still double the amount of calories derived from a gram of protein or carbohydrate," he says.

The other benefit is that they can help maximise glycogen utilisation. "In terms of glycogen, once liver and muscle stores

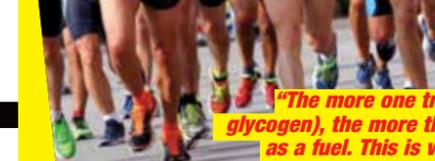
are full they cannot be topped up any further," explains Wolff.

"However, if you introduce a readily available source of fat into the circulatory system, which muscles can easily utilise for fuel, you'll spare glycogen as your body burns this highly bioavailable fuel source. This will enable your 'engine' to run for longer, which can make a significant difference in any endurance event."

However, endurance can be a relative term, as some athletes are able to sustain higher intensities than others. For instance, a sub-three hour marathoner and a five hour marathoner will have vastly different metabolisms and energy requirements.

Accordingly, does the metabolic pathway used to digest MCTs support their use as a fuel for high intensity, sustained endurance activity? To answer this Wolff first explains how the actual energy conversion process works.

"As I already mentioned, MCTs don't follow the normal digestive pathway of a typical long chain



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triglyceride or typical fat. MCTs are processed directly in the liver, and immediately become available for use in the production of energy. Carnitine usually acts as the transporter of free fatty acids into the mitochondria of muscle cells, where they're converted into energy. However, MCTs don't require this form of transport as they cross the mitochondrial membrane quite easily, and are processed very quickly."

However, when it comes to intensity, Mark says we also need to consider the role of oxygen in the metabolism of MCTs. "In short, fats still require oxygen to be converted into ATP, and at higher intensities oxygen levels are low. It is at this point that the body normally turns to glycogen – our naturally occurring carbohydrate store – as this is a more efficient energy pathway when oxygen is less abundant."

However, an athlete's ability to sustain this level of intensity is limited as glycogen stores become depleted, and there is a limit to how much glycogen can be replaced while on the move. "The question we should be asking in this context then becomes, do MCTs help spare glycogen? My answer to that is that it's highly possible, but only if you can harness it properly."

And this is the crux of the matter, according to Wolff. "The effectiveness of MCTs as a source of fuel will depend on the individual athlete, as those who have trained to become fat adapted, and are therefore better metabolisers of fat, in any form and at higher intensities, will derive the greatest benefit."

This is something that can be developed through proper training, he says. "The more one trains on fat (in the absence of sufficient glycogen), the more the body adapts to the metabolism of fat as a fuel. This is what makes athletes more fat efficient."

As this type of training progresses an athlete should also improve his ability to metabolise fat at higher intensities, which means he will use more fats during a race or intense training session before reaching the point where glycogen is required. "An athlete who is always dependant on carbohydrates, be it for training or racing, will never reach this level of efficiency though."

To better illustrate this point, Wolff offers a simple comparison with a

coffee drinker. "If an athlete drinks five cups of coffee a day, and then decides he needs caffeine during an event, the caffeine won't really do much to him as he has developed a tolerance to it. However, a person who doesn't have a high caffeine tolerance will get a bigger boost when consuming it. In the same vein, an athlete who expects a huge impact from MCTs, when all he does is consume excessive amounts of carbohydrates, won't really derive the greatest benefit of this type of fat. An athlete who is fat adapted, on the other hand, will definitely feel a difference when consuming MCTs, especially the longer the endurance event is."

In this regard, Wolff says that it takes time to adapt, and it isn't merely a case of only consuming MCTs during training sessions. "Proper nutrition, at all times, which could consist of a general LCHF diet,

or carb backloading strategies, for instance, and the correct type of training to promote fat adaptation, is where the focus should be to take full advantage of MCTs as a fuel source during activity. There are no quick fixes."



"An MCT oil offers various health benefits, and should therefore be incorporated into a healthy diet. In terms of sporting performance, it is an additional source of energy that can form part of a comprehensive approach to race fuelling."

WITH ALL THE HYPE AROUND LOW CARB, HIGH FAT (LCHF) DIETS, AND THE POPULARITY OF PALEO-TYPE EATING, PARTICULARLY IN THE CROSSFIT COMMUNITY, THE SUBJECT OF MEDIUM CHAIN TRIGLYCERIDES (MCT) AS A SUITABLE ENERGY SOURCE IS GROWING IN PROMINENCE.

HOWEVER, THE IDEA IS BY NO MEANS NEW. IN THE MID TO LATE '90S MCT OILS BECAME POPULAR AMONG THE BURGEONING ENDURANCE COMMUNITY, WHILE MCT OIL WAS PROMOTED IN BODYBUILDING AND FITNESS CIRCLES AS A SUPERIOR FORM OF FAT FOR BODY COMPOSITION AND CONDITIONING.

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WHICH MCTs SHOULD YOU CONSIDER?

So, should endurance athletes be throwing their carb-based gels away, and replacing them with some form of MCT oil? Don't be too hasty, says Wolff.

"MCTs definitely won't replace carbohydrates when it comes to fuelling optimal performance. I believe there is room for both, but that equation boils down to the individual, his dietary habits, training and physiological requirements during an event."

However, he does caution against spiking blood sugar before an endurance event. "It's my opinion that's not the way to go. Stable blood sugar levels are required initially, which is something that MCTs can provide. MCTs will 'brim' your fuel tank nicely, delivering a steady supply of energy in the initial stages of a race, leaving the more efficient energy source – glycogen – for when you need a burst, or the final pick up to the finish line."

In that case, what form of MCTs should you consider then? Well, Wolff suggests sticking to one of two options. "I would only recommend coconut oil or palm kernel oil. You can also purchase extracted MCTs, and there are already a few brands out there that offer high quality products."

And he believes that this list will only continue to grow, in accordance with the growing popularity of LCHF eating, and greater awareness around the health implications of excessive sugar consumption. "This is already a trend in Europe, with sufficient evidence to suggest that there will be more conventional energy supplement products that contain MCTs on local shelves very soon. At the very least, expect to see MCTs added to sports gels, protein shakes and weight loss products."

There is also a growing body of research to support the use of MCTs as an energy supplement, which was the missing factor in the 1990s when the initial rise in MCT use started to lose steam. "There has definitely

been more scientific testing since the '90s, which is helping to fuel this shift. For instance, in 2003, medical testing showed energy expenditure increased due to the high fat oxidation rates associated with MCTs, which was associated with both increased energy and weight loss. Accordingly, many athletes use MCTs to reduce fat and increase lean muscle mass, which has a direct correlation in performance due to improved power to weight ratios."

Respected sports nutrition scientist, Asker Jeukendrup, has also produced data that support the use of fat as a source of fuel for endurance athletes. "While his studies show that ingestion of MCTs did not play any significant role in high intensity performance, he did find that in an endurance-trained individual, if diet was altered and followed for 7-10 days before an endurance event, substrate utilisation during sub-maximal exercise could be altered substantially by a high fat (60-70% of energy) intake." There is also an increase in research funding going into LCHF eating and its effect on health and performance, which should deliver new data that further supports this approach in the near future.

In closing, Wolff asserts that MCTs are not a 'miracle product' or something that will enhance performance in any significant manner. "An MCT oil certainly offers various health benefits, and should therefore be incorporated into a healthy diet. In terms of sporting performance, it is merely an additional source of energy that can form part of a comprehensive approach to race fuelling, but it's only effective if an athlete does the necessary work to derive the full benefit. Anyone who is expecting an immediate energy boost from MCT consumption, and a commensurate increase in performance on a bike, swim or run, should think again." ■