

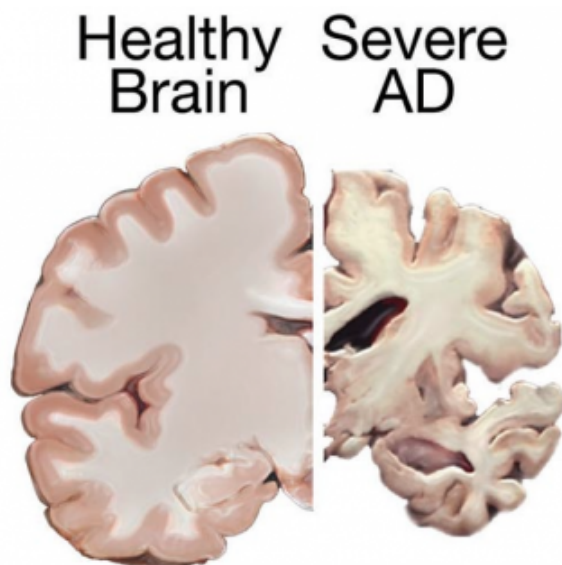


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A Bold New Experimental Treatment for Alzheimer's Dementia

Ketone esters prove astonishingly effective in a single case study.

Posted Oct 16, 2014



Alzheimer's Dementia is a neurodegenerative condition that affects five million Americans in 2014. In fact, a third of seniors will die with the disease or another type of dementia (1). The cause is unknown, but over time the brain cells begin to fill up with waste products and die, leading to an inflammatory reaction in the brain that seems to add to the problem and accelerate the disease. The only FDA-approved treatments are certain medicines of the class of cholinesterase inhibitors. These medicines slow down the breakdown of the neurotransmitter acetylcholine, helping damaged

brain cells work better for a time. These medicines do not stop the progression of the disease, but in some cases can slow it.

Given the awful burden on families, the poor prognosis of individuals who have the disease, and the absolute cost of the illness (in terms of unpaid care by family members, estimated at 220 billion dollars for 2013 by the Alzheimer's Association), a lot of time and research attention has been spent on finding causes, reducing risks, and looking for cures.

Some time ago I wrote an article about one of these lines of inquiry, ketogenic diets and Alzheimer's disease . It explored how a certain product of



metabolism that comes from fasting or from eating very high fat diets, called ketones , might improve cognition in the case of mild cognitive impairment or dementia. Ketones can be used by most cells of the brain to make energy. Why would they have an advantage over our typical brain fuel, glucose, in cases of dementia? Well, it's complicated, but the evidence suggests ketones can be burned more efficiently with fewer waste products, keeping the stress off the damaged brain cells.

The theory seemed reasonable to Mary Newport, a physician whose husband was diagnosed with Alzheimer's years ago. She decided to put him on ketogenic diet (their story is available at their

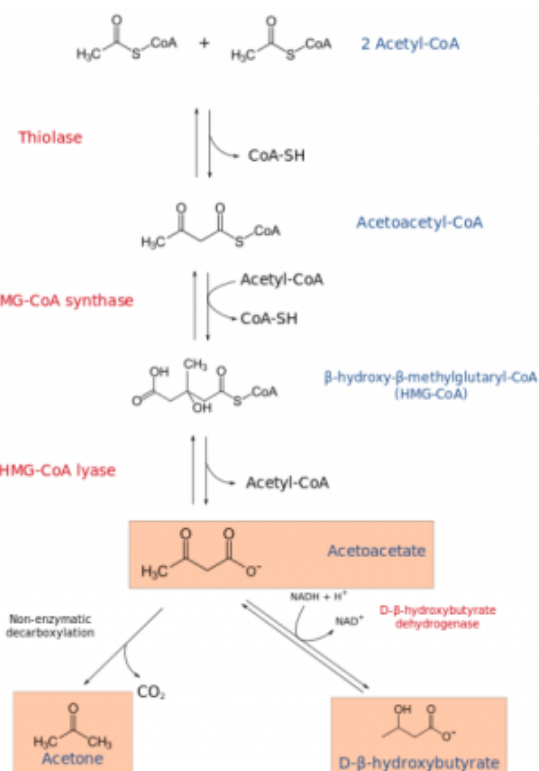
website, coconut ketones), and he had significant improvement within a couple of months. If you follow the link to the website, you can see a dramatic improvement in Mr. Newport's ability to draw a clock within 14 days. I'm aware of a few other cases where patients went from serious cognitive problems, on the verge of not being able to be cared for at home, to being able to wash, dress, and feed themselves and having conversations again with ketogenic diets.

In the past, ketogenic diets were extremely strict (they have to be very low carbohydrate, less than in a banana) and also low protein, but with the inclusion of certain foods and products like coconut oil and medium chain triglyceride oil, you can double or even triple the amount of allowed carbohydrate, making for a more flexible and ultimately safer diet. Ketogenic diets have been followed for years, particularly by children with intractable seizures as treatment, but there are few scientific studies of adults trying them for extended periods. Such diets may lead to increased risk of kidney stones, nutrient deficiencies (particularly the very strict diets), reduced thyroid function, and weight loss. While most adults in America might welcome weight loss, poor eating habits and weight loss can be devastating for someone with dementia who might not be able to feed his or herself.

Mary Newport, considering the options of having her husband living in a care facility and having very poor quality of life versus attempting a ketogenic diet using supplemental coconut/MCT oil and having him be much more functional and live at home, decided to take the risk. He improved in cognitive function, gait, and many activities of daily living, and serial

MRIs over this time showed no progression of the disease. However, it turns out the benefits of the ketogenic diet didn't last forever.

According to a new paper from *Alzheimer's and Dementia*, A new way to produce hyperketonemia: Use of ketone ester in a case of Alzheimer's disease, Mr. Newport took a turn for the worse in 2010 while participating in a clinical trial for a drug for Alzheimer's Dementia. He went back to square one, losing interest in yard work and requiring step by step instructions to dress himself. His wife, Dr. Newport, sought a different way to induce a higher level of ketosis in her husband. Using coconut/MCT oil supplements in normal, healthy adults will raise ketone levels in the blood from 0.09 mM to 0.3-0.4 mM immediately, and over time one can get 10 times those levels sticking to the supplement and a low carbohydrate diet. Ingestion of 50 grams of a supplement called a ketone ester can double those levels within an hour, leading to 6-7mM concentrations one can only find in humans with prolonged fasting. Ingesting the supplement every 3-4 hours can maintain these high levels.



Ketone esters are in a class of supplements called “generally recognized as safe” or GRAS by the FDA. They are expensive, difficult to find, and taste nasty (I've smelled some, and it was a bit like salty urine). There are no long term studies of the safety of these supplements in humans, though high ketone levels were maintained in severely obese, fasting patients for 6-8 weeks and there seemed to be no side effects. The main risk might be an exacerbation of gout, but truly, the long term consequences are unknown. For someone with dementia facing an inevitable downward spiral and life in a long term care facility, the question of benefits versus risk is a different calculation than in someone without that condition.

After a few days of escalating doses, Mr. Newport was brushing his own teeth, spontaneously dressing and bathing himself again, had improvements in mood, and was able to recite the alphabet. After 6-8 weeks, his memory improved and he started to do yard work again. After 20 months, he maintained definite improvement, with his cognitive function seeming to wax and wane with rising and falling ketone levels in his blood.

While this report is just a single case study, it does merit more clinical investigation. Given the

severity and cost of the disease, the possibility of a far more effective treatment than what we currently have must be explored further. In addition, dementia is not the only intractable and devastating brain illness that could be helped by the administration of ketone esters. People with epilepsy, bipolar disorder, schizophrenia, autism, and traumatic brain injury might also benefit. The only way to know for sure is to do the research.

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