

Ketone metabolism is normal in these regions and therefore is an alternative fuel source. Ketones also reduce excitotoxic glutamate, increase GABA, act as antioxidants, mitochondrial enhancers and PPAR inhibitors, amongst other actions 2,3. However, compliance to and restrictiveness of ketogenic diet (KD) is difficult due to cognitive deficit in AD who may inadvertently eat non-KD foods. MCT oil can be administered easily and compliance can be monitored.

MCT oil has several advantages over other oils.

* Bypasses peripheral circulation and enters liver through portal vein 4
* Does not require carnitine for beta-oxidation 4
* May have direct effect on brain like conversion to ketones in astrocytes 4
* More ketogenic than LCFAs 4

Three clinical studies on MCT oil and Alzheimer’s disease have been done so far. Henderson et al (2009) found that daily administration of a ketogenic compound, AC-1202 (MCT, CA8) in 152 subjects diagnosed with mild to moderate AD had significantly elevated the level of serum ketone body (β-hydroxybutyrate) 2 hours after administration when compared to placebo in a US-based, 90-day, randomized, double-blind, placebo-controlled, parallel-group study 5. Reger et al. (2004) found that acute administration of medium-chain triglycerides (MCT) improves memory performance in Alzheimer’s disease patients. Further, the degree of memory improvement was positively correlated with plasma levels of β-hydroxybutyrate produced by oxidation of MCT 6.

Newport et al (2015) described a new way to produce therapeutic hyperketonemia, entailing prolonged oral administration of a potent ketogenic agent-- ketone monoester (KME)-- to anAPOE4 (+) patient with Alzheimer’s disease and a pretreatment Mini-Mental State Examination score of 12 7.

In our study the following was noted:

There is no statistically significant difference on the objective test data possibly due to small sample size and also limited duration of the trial. **Subjectively, all caregivers have reported a stability in function.Further, in 6 out of 10 patients, the caregivers reported an improvement in alertness, ADL function and general awareness of their condition and surroundings. I**n 2 patients, there was an increase in irritability which on probing was atrributed to their increased insight into their condition and also inability to do tasks they were able to in the past. The patients were feeling frustrated due to their condition and overall initiative to do activities had increased.

**Introduction**

**Alzheimer’s disease (AD) is an irreversible cerebral degeneration. Current therapy provides temporary beefit at most. Most of these are targeted at the Acetylcholine (Ach) deficit, the amyloid plaques and tau proteins. The glucose hypometabolism can be overcome by supplying an alternative fuel, namely ketone. We report the outcome of a 6 month open label trial of MCT oil in AD subjects**

Method

MCT oil was administered at 1ml/Kg post-meal.

Addenbrooke’s Cognitive Examination (ACE)- Indian adaptation by Mathuranath, et al, 2007 were administered at baseline and after 6 months. Blood ketone was measured 2 hour post MCT. Biochemical battery including lipid profile were performed at baseline and every three months.

Results

Blood BHB levels ranged between 0.6 amd 1.4 mmol/dL

A Wilcoxon signed-rank test showed that after 6 months of MCT there was no statistically significant change in the participant’s scores on the ACE total score or any of the subtest scores.

Discussion

Glucose hypometabolism is noted in MCI, early AD and also in pre-AD (Few decades prior to onset of AD). It is caused by relative absence of Glucose transporter (Glut) 1 and 3 in specific regions of the brain (Posterior cingulate, parietal and temporal lobes) 1. This causes inability of these regions to ‘pull’ glucose into these regions 1.

**Conclusion** :

**Ketones supplied through MCT oil can supply the hypometabolic regions of the brain and stabilize the cognitive deficits of AD. To ascertain if there is an improvement in cognitive abilities, a long term trial with a larger sample size is underway.**

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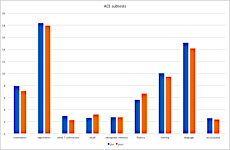
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| [**P2-020** Use of Medium Chain Triglycerides (MCT) in Alzheimer’s Disease (AD) – Pilot Trial](https://alz.confex.com/alz/2017/aaic/extra/index.cgi?username=17100&password=542622&EntryType=Paper&Personid=Person19444&personpwd=756294) |

**Conclusion**

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