

Emerging Therapeutic Promise of Ketogenic Diet to Attenuate Neuropathological Alterations in Alzheimer's Disease

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Alzheimer's disease (AD) is a multifactorial and chronic neurodegenerative disorder that interferes with memory, thinking, and behavior. The consumption of dietary fat has been considered a vital factor for AD as this disease is related to blood-brain barrier function and cholesterol signaling. The $\epsilon 4$ allele of apolipoprotein E (APOE4) is a primary genetic risk factor that encodes one of many proteins accountable for the transport of cholesterol and it is deemed as the leading cholesterol transport proteins in the brain. In case of AD development, the causative factor is the high level of serum/plasma cholesterol. However, this statement is arguable and, in the meantime, the levels of brain cholesterol in individuals with AD are extremely inconstant and levels of cholesterol in the brain and serum/plasma of AD individuals do not reflect cholesterol as a risk factor. In fact, APOE4 is neither fundamental nor sufficient for the advancement of AD; it just acts as a synergistic and increases the danger of AD. Another noticeable characteristic of AD is area-specific decreases in the metabolism of brain glucose. It has been found that the brain cells cannot efficiently metabolize fats; hence, they totally rely upon glucose as a vitality substrate. Thus, suppression of glucose metabolism can possess an intense effect on brain actions. Hypometabolism is frequently found in AD and has quite recently achieved impressive consideration as a plausible target for interfering in

the progression of the disease. One promising approach is to keep up the normal supply of glucose to the brain with ketone bodies from the ketogenic diet signifies a potential therapeutic agent for AD. Therefore, this review represents the role of ketogenic diets to combat AD pathogenesis by considering the influence of APOE. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

Alzheimer's disease

APOE4

Hypometabolism

Ketogenic diets

Lipids