



NUTRITIONAL INTERVENTION FOR DIABETES MELLITUS WITH ALZHEIMER'S DISEASE.

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Diabetes Mellitus (DM) affects more than 463 million people worldwide. Similarly, the number of deaths related to Alzheimer's disease (AD) has increased by 145%. There are several common risk factors for Type 2 Diabetes and AD, including obesity, insulin resistance, and ageing, as well as common pathological mechanisms, including altered insulin signalling, oxidative stress, neuroinflammation, mitochondrial dysfunction, formation of glycated proteins and metabolic syndrome. This review aims to summarize the therapeutic effects of different nutritional therapy strategies on the reduction of DM and AD risk. Controlling blood sugar levels and reducing calorie intake is crucial to preventing diabetes and Alzheimer's disease. The low-carbohydrate, ketogenic, and Mediterranean diets have been found to improve glucose control in people with Type 2 diabetes (T2D). In addition, MIND (Mediterranean-DASH Diet Intervention for Neurodegenerative Delay) and a ketogenic diet may improve cognition in AD patients. Lactobacillus, Bifidobacterium probiotics, and prebiotics, such as inulin, may inhibit the progression of T2D and AD diseases by suppressing inflammation and modulating gut microbes. In addition, vitamins A, C, D, E, B6, B12, folate, long-chain polyunsaturated fatty acids, zinc, magnesium, and polyphenols may improve cognitive decline, homocysteine levels, and insulin resistance in AD and T2D patients. Healthcare professionals can use the results of this review to understand the beneficial effects of dietary strategies and multi-nutrient supplementation on DM and AD. However, further robust studies are required to investigate the risk factors and underlying mechanisms behind DM-combined AD progression.

THE EFFECTS OF TIME-RESTRICTED EATING ON SLEEP, COGNITIVE DECLINE, AND ALZHEIMER'S DISEASE.

Ezzati, A & Pak, VM
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The ageing population is expected to double, with one in four people being over 65 years in Western countries by 2050. As a consequence, the presentation of age-related disorders like Alzheimer's disease (AD) and mild cognitive impairment (MCI) is likely to increase. MCI, a pre-stage of dementia, is considered reversible. However, there are no known cures for AD so far. Hence interventions such as lifestyle modifications that can delay the onset and progression of the disease are of great interest. Previous research demonstrated that calorie restriction (CR) and time-restricted eating (TRE) have beneficial effects on brain function. The authors of this article sought to summarize the current evidence of such eating patterns, as well as their underlying mechanisms and potential benefits concerning MCI and AD. The review also looked at sleep - as sleep disturbances are a risk factor and are associated with both conditions - and the effects of sleep on cognitive decline and neuroinflammatory markers. TRE presents itself as a promising intervention as it can restore the integrity of the blood-brain barrier and support healthy brain function whilst reducing oxidative stress and inflammation. Furthermore, it can be leveraged for weight and glucose management. Preliminary results also indicate a positive impact on sleep, with adequate sleep benefiting cognitive health. As this is a relatively new field, there is still much more to be understood about the underlying mechanisms, with the optimal time window for fasting needing to be determined. The authors advocate for more research on how TRE and sleep relates to neurodegenerative disease.



MEDITERRANEAN AND WESTERN DIET EFFECTS ON ALZHEIMER'S DISEASE BIOMARKERS, CEREBRAL PERFUSION, AND COGNITION IN MID-LIFE: A RANDOMIZED TRIAL.

Hoscheidt, S ; Sanderlin, AH ; Baker, LD et al.
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There is a current understanding that Alzheimer's disease (AD) development is related to a high intake of saturated fat and simple carbohydrates, which are found in abundance in the so-called Western Diet (WD). In contrast the consumption of low saturated fat and simple carbohydrates characteristic of the Mediterranean Diet (MD), has been associated with a reduced risk for the development of AD. This study aimed to look at the association of the MD and WD with AD in a more robust way using the randomised control method in 84 individuals both with and without mild memory impairment. The results showed that depending on whether an individual has mild brain impairment determines their response to the MD or WD after 4 weeks. In those without brain impairment the adoption of the WD resulted in a shift towards increasing the risk for AD development and the reverse following the MD. Whereas in those with brain impairment, the adoption of the WD was protective against the development of AD and the MD moved individuals towards worse disease outcomes. It was concluded that diet can be of importance in the prevention or progression of AD and that further studies are required to determine the possible mechanisms through which these two diets can act differentially. This study could be used by health care professionals to understand that diet can have a large impact on AD.



EFFECT OF PROBIOTIC BIFIDOBACTERIUM BREVE IN IMPROVING COGNITIVE FUNCTION AND PREVENTING BRAIN ATROPHY IN OLDER PATIENTS WITH SUSPECTED MILD COGNITIVE IMPAIRMENT:

Asaoka, D ; Xiao, J ; Takeda, T et al.
Journal of Alzheimer's disease : JAD. 2022;88(1):75-95

Probiotics are "live microorganisms which when administered in adequate amounts, confer a health benefit on the host" as defined by the International Scientific Association for Probiotics and Prebiotics. The aim of this study was to assess the effect of the probiotic strain Bifidobacterium breve MCC1274 in enhancing cognition and preventing brain atrophy of older patients with mild cognitive impairment (MCI). This study is a double-blind, randomised placebo-controlled trial. Participants (n=130) were randomly assigned to one of the two groups: probiotic group or placebo group. Results show improvement of cognitive function on some subscales scores but not the total scores by the consumption of B. breve MCC1274 in the MCI subjects. In addition, the probiotic supplementation for 24 weeks suppressed brain atrophy progression based on brain MRI. Authors conclude that B. breve MCC1274 is a practical approach for preventing cognitive impairment of MCI subjects. However, further research is necessary to understand B. breve MCC1274 mechanism(s) of action.

