

MINI-REVIEW ARTICLE

Coconut oil may be a palliative therapy agent against radiotherapy or chemotherapy related neurotoxicity and Alzheimer

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INTRODUCTION

The ketogenic diets, that constitutes high-fat, low-carbohydrate, have been used as a non-pharmacological treatment for diabetes, cancer and neurodegenerative diseases because beneficial downstream metabolic changes (1).

The coconut oil (CO) has no cholesterol and contains 91 % of saturated fatty acids like lauric, capric and caprylic acids. CO has some antibacteriel, hypolipidemic activity with contributing lauric acid which inhibites the protein targets involved in hyperlipidemics (2).

Antioxidant and anti-inflammatory effect of CO was shown on rats which have nephrotoxicity induced by methotraxate (3).

Alzheimer disease affects to 47.5 million people worldwide according to the World Health Organization (WHO) dementia criteria (4). Alzheimer's disease (AD) occurs 60% and 70% of dementia cases (5).

It is a progressive, chronic and irreversible disease that is characterized with cognitive deterioration (DC) and dementia by the presence of neurofibrillary tangles and neuritic plaques. In early stages episodic memory of anterograde was insidious onset and working memory is also affected that activities of daily life such as problem solving (5).

Advanced neurodegeneration in the cerebral cortex causes visual agnosia and executive dysfunction. The etiology of Alzheimer's was

related to different causes such as lack of the acetylcholine which neurotransmitter, insülin resistance and the genetic causes (6-10, 11). The accumulation of plaques of beta-amyloid proteins, and hyperphosphorylation of tau protein determined in the brain (12,13). Medium chain triglycerides (MCTG) and medium chain saturated fatty acids (MCFA) such as capric acid, caprylic acid, and lauric acid can be possible good alternative sources because possible insuin resistance (2).

The lauric acid occurs to approximately 45% of coconut oil although has smaller proportions palmitic, stearic, myristic and oleic acid (14). Therefore the coconut oil can be an alternative to drug therapy for dementia and Alzheimer diseases without side effects (15).

Studies shown to cognitive benefit after administration of coconut oil. Determined with using the MoCA and MMSE tests on patients (Table 1). The caprylic acid is most important chemical in coconut oil for Alzheimer treatment (16).

In one randomized study, the patients of Alzheimer were analysed after administering the 40ml of coconut oil for 21 days. they could be observed the good results compared to control group whose not taken to this product (17).

Table 1: The following table provides median MMSE scores by age and educational level.

Age	Education				Total
	0-4y	5-8y	9-12y	>=12y	
18-24	23	28	29	30	29
25-29	23	27	29	30	29
30-34	25	26	29	30	29
35-39	26	27	29	30	29
40-44	23	27	29	30	29
45-49	23	27	29	30	29
50-54	23	27	29	29	29
55-59	22	27	29	29	29
60-64	22	27	28	29	28
65-69	22	28	28	29	28
70-74	21	26	28	29	27
75-79	21	26	27	28	26
80-84	19	25	26	28	25
>=85	20	24	26	28	25
Total	22	26	29	29	29

Source: Adapted from Crum RM, Anthony JC, Bassett SS, et al. Population-based norms for the mini-mental state examination by age and educational level. *JAMA* 1993;269:2386-91. Copyright 1993, American Medical Association.

Statistically significant improvement was shown for orientation and language-construction, perhaps with improvement in the insulin resistance via increased use of the energy obtained from the ketone bodies in the different cortical areas (18). But there is not experienced a significant improvement for fixation, memory and calculation functions, although an increase in score (17). The functions of memory and fixation, are related to strictures of adjacent to the third ventricle then prematurely affected by amyloid plaques and tangles neurofibrillary (19), The new paradigm of functioning brain is based on cortical networks throughout the cortex cerebral. They are developed through nuclear modules such as cognitive, elementary, sensory and motor functions (20).

It can also be used in neurotoxicity due to radiotherapy and chemotherapy. There is no made sufficient study on the literature about this important topic. There is a need for comprehensive randomized work in this area because there is not shown any important side effect of coconut oil treatment.

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