

LIFESTYLE INTERVENTION FOR THE PREVENTION OF COGNITIVE DECLINE: A REVIEW OF THE MOST RECENT LITERATURE

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Cleveland Clinic

LEARNING OBJECTIVES

01

Identify critical vitamins and minerals associated with reduced risk of dementia

02

Recognize five key risk factors associated with dementia, including weight and diet

03

Define general protocols to recommend to patients with genetic risk factors (APOE4) and/or family history of Alzheimer's or dementia

“It is a common misconception that we have minimal control over our risk of developing Alzheimer’s disease. However, nearly half of the Alzheimer’s cases could have been prevented or delayed by modifiable factors, including lifestyle changes. Therefore, we should do everything in our power to incorporate healthy lifestyle habits as early as possible.”

-Sarita Khemani, MD, Clinical Associate Professor of Medicine and Neurosurgery Hospitalist at Stanford University.



TYPES OF DEMENTIA

Dementia is an umbrella term for loss of memory and other thinking abilities severe enough to interfere with daily life.

- Alzheimer's
- Vascular
- Lewy body
- Frontotemporal
- Other, including Huntington's
- * **Mixed dementia:** Dementia from more than one cause

DEFINING DEMENTIA

Alzheimer's Association, 2024

INCIDENCE AND NON - MODIFIABLE RISK FACTORS

Genetics
(APOE4)



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graph TD; A[Genetics (APOE4)] --> B[Family history]; B --> C[Race / ethnicity]; C --> D[Gender];
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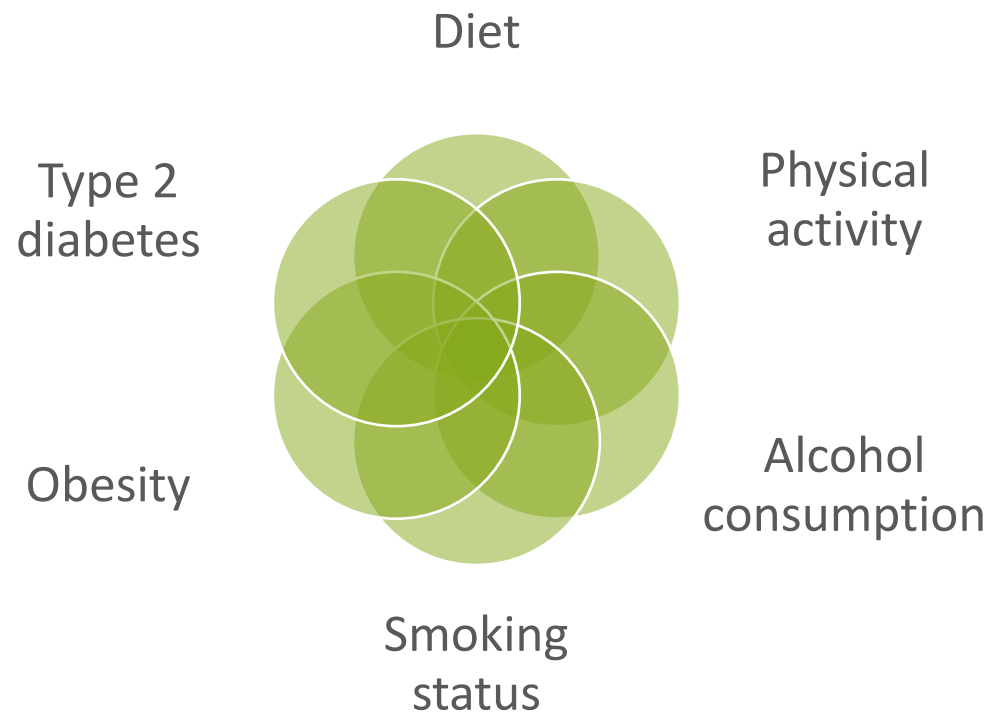
Family history

Race / ethnicity

Gender

- Alzheimer's occurs about 20 years prior to diagnosis and accounts for about 60-80% of dementia cases
- Of those at least 65 years of age, there is an estimated 5.0 million adults with dementia in 2014 and projected to be nearly 14 million by 2060

MODIFIABLE RISK FACTORS



Mukadam N, et al. Changes in prevalence and incidence of dementia and risk factors for dementia: an analysis from cohort studies. *Lancet Public Health*. 2024;9(7):e443-e460

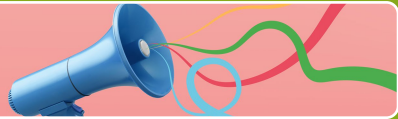
Manuello ,et al. The effects of genetic and modifiable risk factors on brain regions vulnerable to ageing and disease. *Nat Commun*. 2024;15(1):2576

Sabia S, Fayosse A, Dumurgier J, et al. Alcohol consumption and risk of dementia: 23 year follow-up of Whitehall II cohort study. *BMJ*. 2018;362:

MODIFIABLE RISK FACTORS



CVD



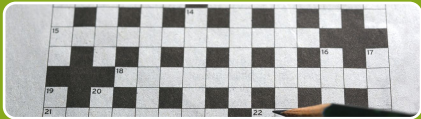
Hearing loss



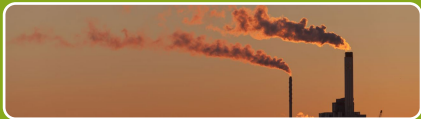
TBI



Social isolation



Cognitive engagement



Air pollution



EVIDENCED BASED APPROACHES TO REDUCING RISK



ALTHOUGH ONLY APPROXIMATELY 20% OF THE GENERAL POPULATION CARRY *APOE4*, CARRIERS ACCOUNT FOR AN ESTIMATED 40–65% OF AD CASES

DEPENDING ON WHETHER A CARRIER HAS ONE OR TWO COPIES, *APOE4* INCREASES AD RISK IN THE GENERAL POPULATION BY THREE TO 12-FOLD

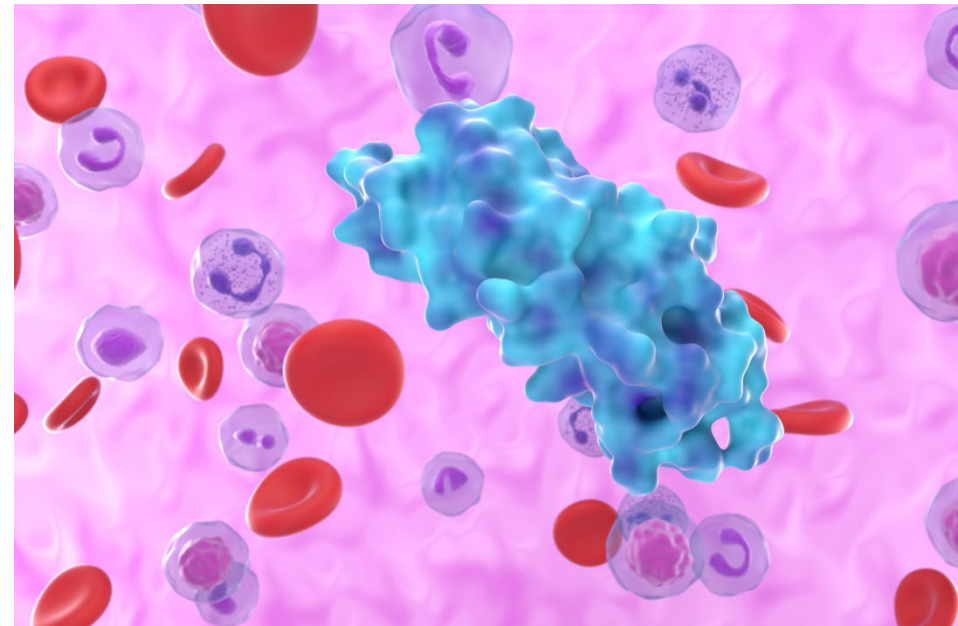
APOE4 AND NUTRITION

- Quercetin (supplement, capers, red onion)
- Extra virgin olive oil
- Cruciferous vegetables
- Fatty fish
- LOW carb / low GI diet, Mediterranean style
- Limit alcohol but supplement with resveratrol
- The ultimate goal is to control insulin resistance



GENETIC RISK AND LOWERING INCIDENCE

- being active
- eating better
- losing weight
- not smoking
- maintaining a healthy blood pressure
- controlling cholesterol
- managing blood sugar





PHYSICAL ACTIVITY

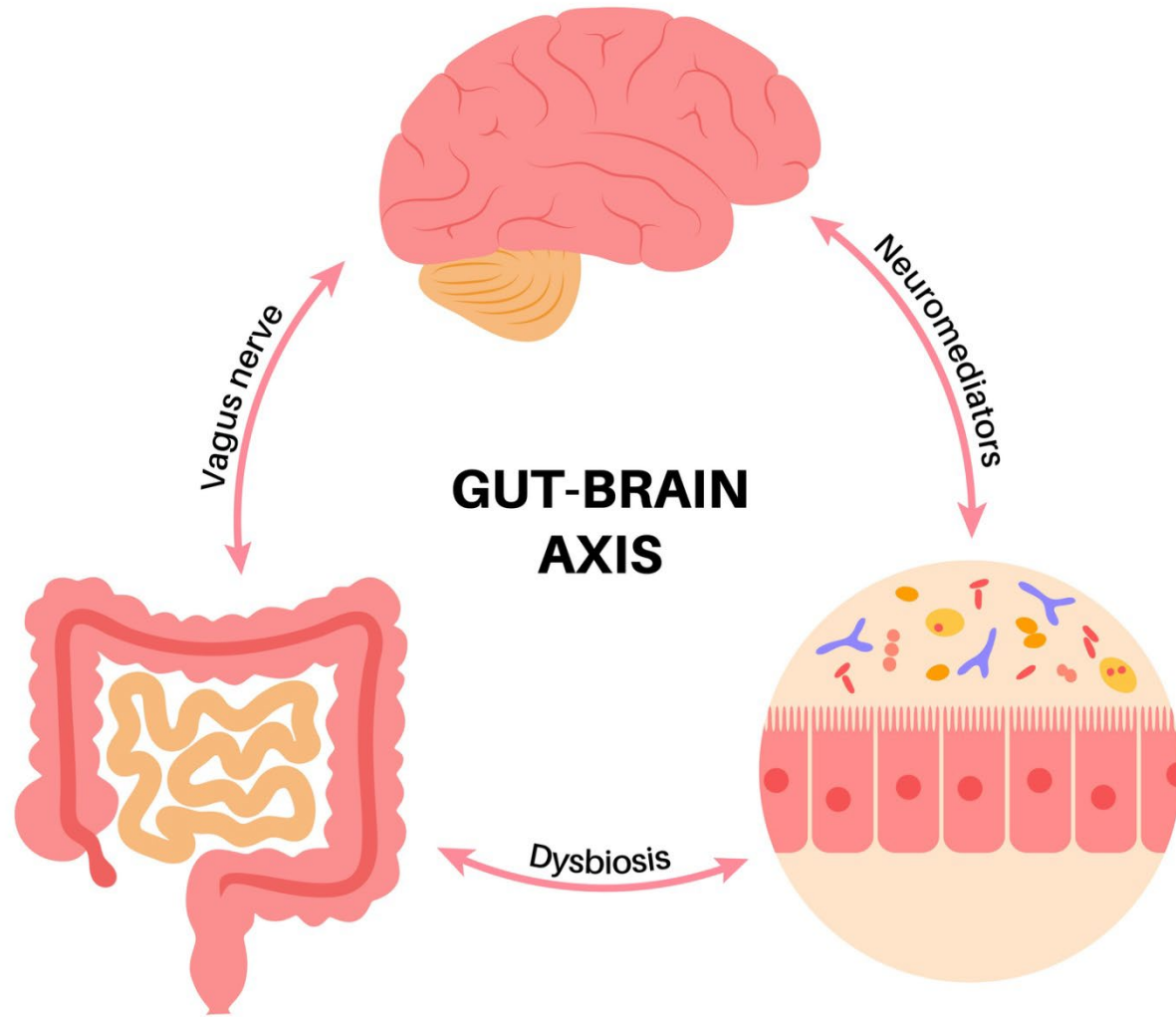
PA WAS ASSOCIATED WITH A LOWER INCIDENCE OF ALL-CAUSE DEMENTIA AND ALZHEIMER'S DISEASE, EVEN IN LONGER FOLLOW-UPS, SUPPORTING PA AS A MODIFIABLE PROTECTIVE LIFESTYLE FACTOR, EVEN AFTER REDUCING THE EFFECTS OF REVERSE CAUSATION



EVEN LIGHT ACTIVITY SHOWS BENEFIT

Zhu J, Ge F, Zeng Y, et al. Physical and Mental Activity, Disease Susceptibility, and Risk of Dementia: A Prospective Cohort Study Based on UK Biobank. *Neurology*. 2022;99(8):e799-e813

OBESITY AND DEMENTIA



Wong Zhang DE, et al. Pathophysiological Links Between Obesity and Dementia. *Neuromolecular Med.* 2023;25(4):451-456

SMOKING CESSATION



Biological Psychiatry Global Open Science

Volume 4, Issue 1, January 2024, Pages 74-82



Archival Report

Investigating the Relationship Between Smoking Behavior and Global Brain Volume





METABOLIC SYNDROME AND DEMENTIA

Blood Pressure, Antihypertensive Use, and Late-Life Alzheimer and Non-Alzheimer Dementia Risk

An Individual Participant Data Meta-Analysis

Diabetes Care®



Diabetes, Prediabetes, and Brain Aging: The Role of Healthy Lifestyle

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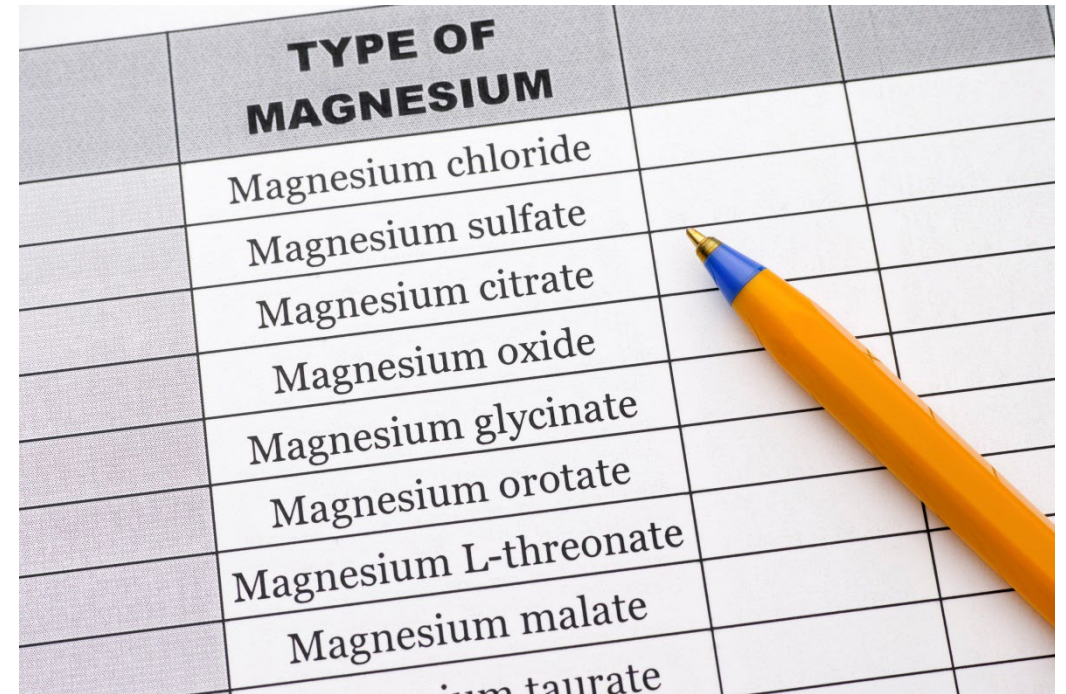
ARTICLES · [Volume 9, Issue 7](#), E443-E460, July 2024 · [Open Access](#)

Changes in prevalence and incidence of dementia and risk factors for dementia: an analysis from cohort studies



MAGNESIUM

- Consuming more than **550 milligrams** of magnesium each day has a brain age that is approximately one year younger by the time they reach 55 compared with someone with a normal magnesium intake of about 350 milligrams a day.
- Low magnesium levels are associated with high homocysteine and DNA damage.
- Magnesium L-Theonate may be the best supplemental option



TYPE OF MAGNESIUM			
Magnesium chloride			
Magnesium sulfate			
Magnesium citrate			
Magnesium oxide			
Magnesium glycinate			
Magnesium orotate			
Magnesium L-threonate			
Magnesium malate			
Magnesium taurate			

VITAMIN D

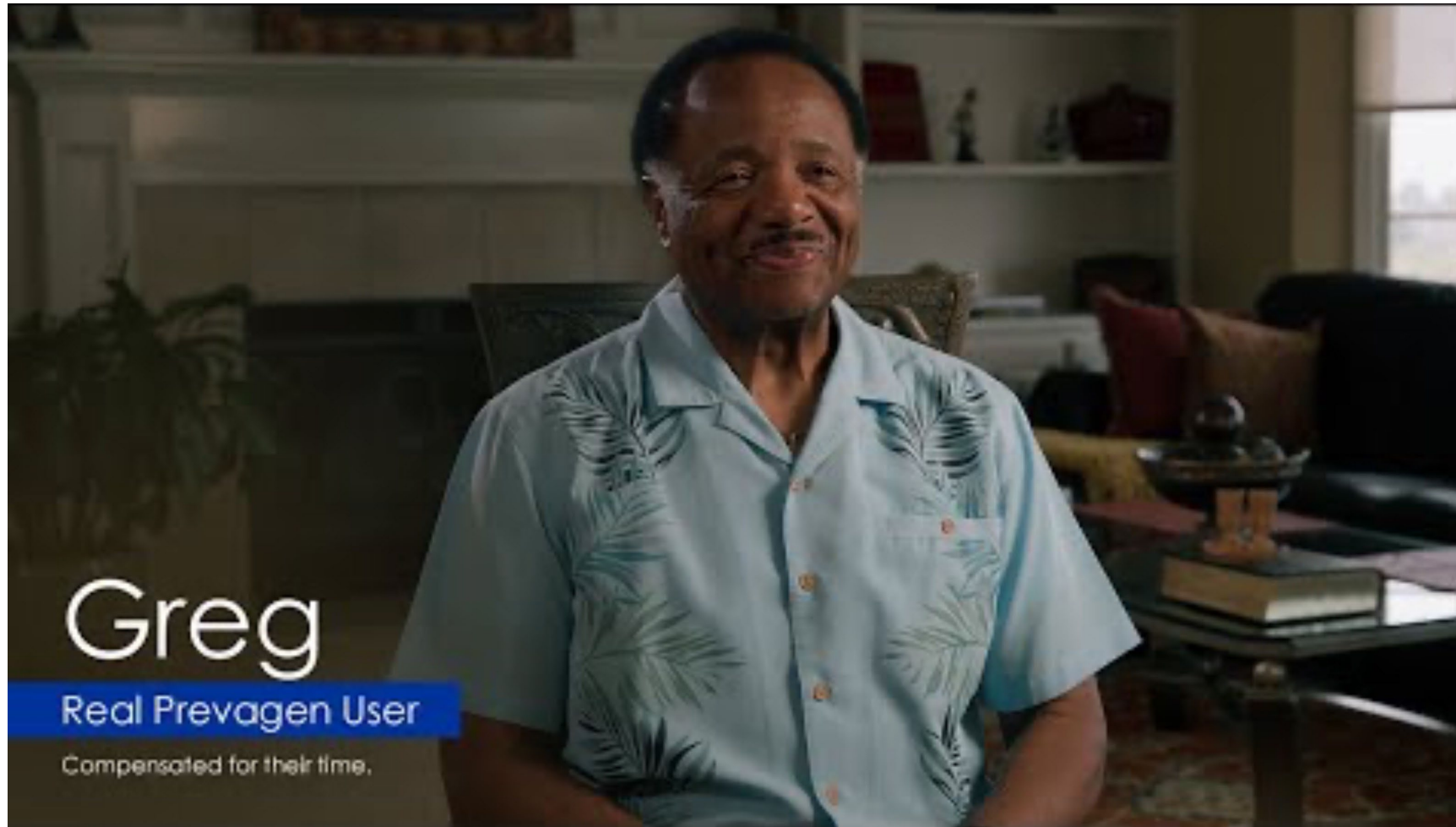
- Taking vitamin D was associated with living dementia-free for longer, and they also found 40 percent fewer dementia diagnoses in the group who took supplements.
- Impact greater in Females
- Impact greater in non carriers of APOe4



RESEARCH ARTICLE | [Open Access](#) | CC BY NC ND

Vitamin D supplementation and incident dementia: Effects of sex, *APOE*, and baseline cognitive status

OTHER VITAMIN / MINERAL CONSIDERATIONS



Supplement Facts

Serving Size: 1 capsule

Amount per capsule	% Daily Value	
Vitamin D (as D3 cholecalciferol)	50 mcg	250%
Apoaequorin	10 mg	†

† Daily Value not established.

Other ingredients: microcrystalline cellulose, vegetable capsule (cellulose, water), maltodextrin, contains 2% or less of: casein peptones, lactose, magnesium stearate (vegetable source), modified corn starch, salt, soy peptones, sugar.

Contains: Milk and Soy

Contains a bioengineered food ingredient.

Distributed by: Quincy Bioscience Holding Company, Inc., Madison, WI 53717, USA

Suggested use: Take one capsule daily in the morning, with or without food.

HEALTHY FATS



OMEGA 3



- Evidence has shown that there is an increase in pro-inflammatory mediators two or more years before the onset of dementia, which could impact the progression to AD
- Omega-3 FA supplementation could be beneficial in the early stages of neurodegenerative diseases
- In individuals with genetic predisposition, omega 3 intake showed a reduction in the breakdown of nerve cells in the brain

Results of ConsumerLab.com Testing of **Omega-3** Marine Oil Supplements


(Click arrows or swipe left or right to see all columns)



Approval Status ⓘ Product Name	Omega-3 Fatty Acids Per Serving ⓘ Astaxanthin & Phospholipids (Krill only) ⓘ	Freshness ⓘ Heavy Metals Suggested Serving on Label	Unit Size ⓘ Concentration of EPA + DHA ⓘ Chemical Form ⓘ Storage ⓘ
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sh Oil - Regular Softgels:

<div>APPROVED</div> <div>Top Pick</div> <div>for very/extremely high concentration</div> <div>Carlson® Maximum Omega 2,000 ⓘ</div> <div></div> <div>ist. by Carlson Division of J.R. Carlson Laboratories, Inc.</div>	<div>2 softgels</div> <div>EPA: 1,250 mg [found: 1,314.5 mg ✓]</div> <div>DHA: 500 mg [found: 547.2 mg ✓]</div> <div>DPA^F: 76.6 mg</div> <div>Total Omega-3: 2,000 mg [found: 2,150.2 mg ✓]</div> <div>Total Omega-7^F: 9.4 mg (42.9% palmitoleic acid)</div> <div>Total Oil: 2,600 mg</div> <div>Complies with aspects of GOED monograph ⓘ</div>	<div><u>Freshness: Pass</u></div> <div>Peroxide: 1 meq/kg</div> <div>Anisidine: 24.4</div> <div>TOTOX: 26.4</div> <div>(Natural lemon flavor)</div> <div><u>Heavy Metals: Pass</u></div> <div>Lead: 0.002 mcg/day (0.005 mcg/g)</div> <div>Cadmium: <0.01 mcg/g</div> <div>Arsenic: <0.01 mcg/g</div> <div>Mercury: <0.001 mcg/g</div> <div>Adults: Take two soft gels daily at mealtime.</div>	<div>Very large softgel</div> <div>Very high concentration</div> <div>Triglyceride</div>
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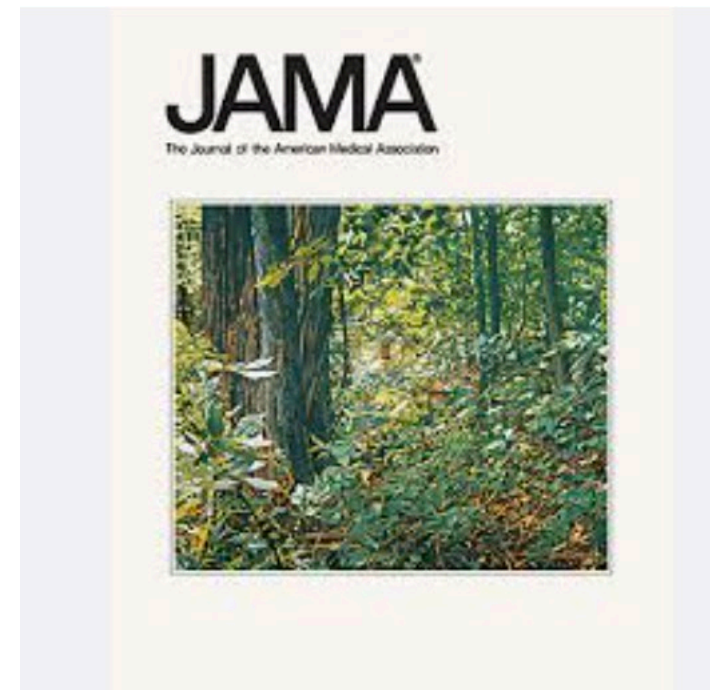
EXTRA VIRGIN OLIVE OIL



Original Investigation | Nutrition, Obesity, and Exercise

May 6, 2024

Consumption of Olive Oil and Diet Quality and Risk of Dementia-Related Death







NUTRITIONAL
COGNITIVE
NEUROSCIENCE

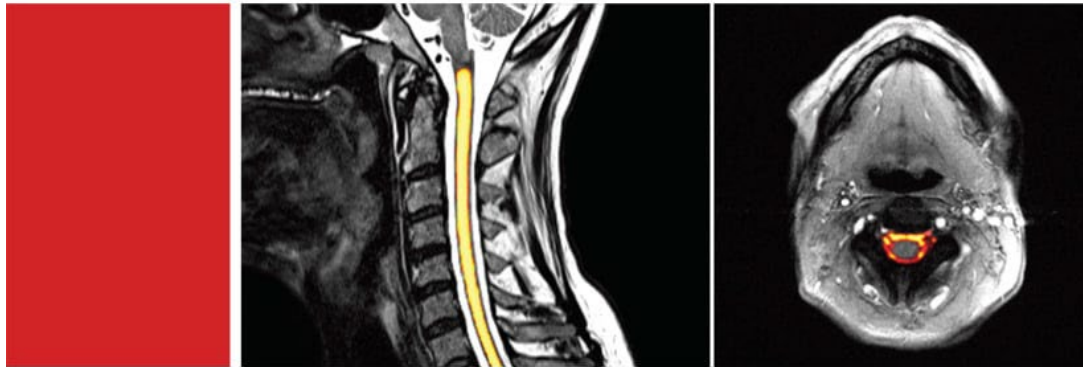
13 KEY NUTRIENTS

- Fatty Acids from both animals and plants
- Carotenoid-rich foods include spinach, kale, corn, bell peppers (red, green, or yellow), tomatoes, watermelon, grapefruit, cantaloupe, broccoli, and carrots.
- Vitamin E
- Choline



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RESEARCH ARTICLE

Ten-Year Follow-up of Internal Neurofibroma Growth Behavior in Adult Patients With Neurofibromatosis Type 1 Using Whole-Body MRI 320

RESEARCH ARTICLE

Plasma Phosphorylated Tau at Threonine 181 and Neuropsychiatric Symptoms in Preclinical and Prodromal Alzheimer Disease 324

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Impact of White Adipose Tissue on Brain Structure, Perfusion, and Cognitive Function in Patients With Severe Obesity: The BARICO Study 328

RESEARCH ARTICLE

Endovascular vs Medical Management for Late Anterior Large Vessel Occlusion With Prestroke Disability: Analysis of CLEAR and RESCUE-Japan 336

INDIVIDUALS WHO
CONSUMED MORE
FLAVONOIDS HAD
A SLOWER RATE
OF MEMORY
DECLINE



LOW FLAVANOL INTAKE
ASSOCIATED WITH A GREATER
RATE OF COGNITIVE DECLINE

REPLENISHMENT OF
FLAVANOLS IN OLDER ADULTS
ASSOCIATED WITH BETTER
SCORES ON COGNITIVE TESTS



GLP-1R AGONIST
DRUGS

CONTACT: Alzheimer's Association Media Line, 312.335.4078, media@alz.org
AAIC 2024 Press Office, aaicmedia@alz.org

FROM THE ALZHEIMER'S ASSOCIATION INTERNATIONAL CONFERENCE 2024 GLP-1 DRUG LIRAGLUTIDE MAY PROTECT AGAINST DEMENTIA



DRUG DEVELOPMENT | **Free Access**

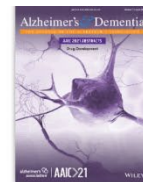
Liraglutide and semaglutide: Pooled post hoc analysis to evaluate risk of dementia in patients with type 2 diabetes



DRUG DEVELOPMENT | **Free Access**

Evaluation of liraglutide in the treatment of Alzheimer's disease

Paul Edison · Cecilia Becerra · Emma Bell · Sofia W. Bickel · Clara Holmes · Thomas Walker · David U. Bickel



Volume 17, Issue S9
Supplement: Drug
Development
December 2021
e057848



12-month neurological and psychiatric outcomes of semaglutide use for type 2 diabetes: a propensity-score matched cohort study

[Riccardo De Giorgi](#) ^{a,b} · [Ivan Koychev](#) ^{a,c} · [Amanda I. Adler](#) ^d · [Philip J. Cowen](#) ^{a,b} · [Catherine J. Harmer](#) ^{a,b} · [Paul J. Harrison](#) ^{a,b}

RECRUITING ⓘ

COMMENTS- Combination MCI Metabolic Syndrome

ClinicalTrials.gov ID ⓘ NCT06072963

Sponsor ⓘ Rutgers, The State University of New Jersey

Information provided by ⓘ Michal Schnaider Beerli, Ph.D., Rutgers, The State University of New Jersey (Responsible Party)

Last Update Posted ⓘ 2024-03-22



COMMON
QUESTIONS

MY TOP FIVE QUESTIONS

1. what is the best diet to prevent dementia?

2. How much alcohol can I have?

3. Should I focus on aerobic or resistance training?

4. I have the APOE-4 gene. Is there still hope?

5. Will menopause impact my risk?



THE MIND DIED

RESEARCH ARTICLE

| March 8, 2023 |



Association of Mediterranean-DASH Intervention for Neurodegenerative Delay and Mediterranean Diets With Alzheimer Disease Pathology

Puja Agarwal, PhD , Sue E. Leurgans, PhD , Sonal Agrawal, PhD, Neelum T. Aggarwal, MD , Laurel J. Cherian, MD , Bryan D. James,

WHAT'S ON THE MIND DIET?



AT LEAST **THREE SERVINGS** OF WHOLE GRAINS EACH DAY

AT LEAST ONE DARK GREEN SALAD AND ONE OTHER VEGETABLE EACH DAY



BERRIES AT LEAST TWICE A WEEK



AT LEAST A ONE-OUNCE SERVING OF NUTS EACH DAY



BEANS OR LEGUMES AT LEAST EVERY OTHER DAY

POULTRY AT LEAST TWICE A WEEK



FISH AT LEAST ONCE A WEEK

NO MORE THAN ONE TABLESPOON A DAY OF BUTTER OR MARGARINE; CHOOSE OLIVE OIL INSTEAD

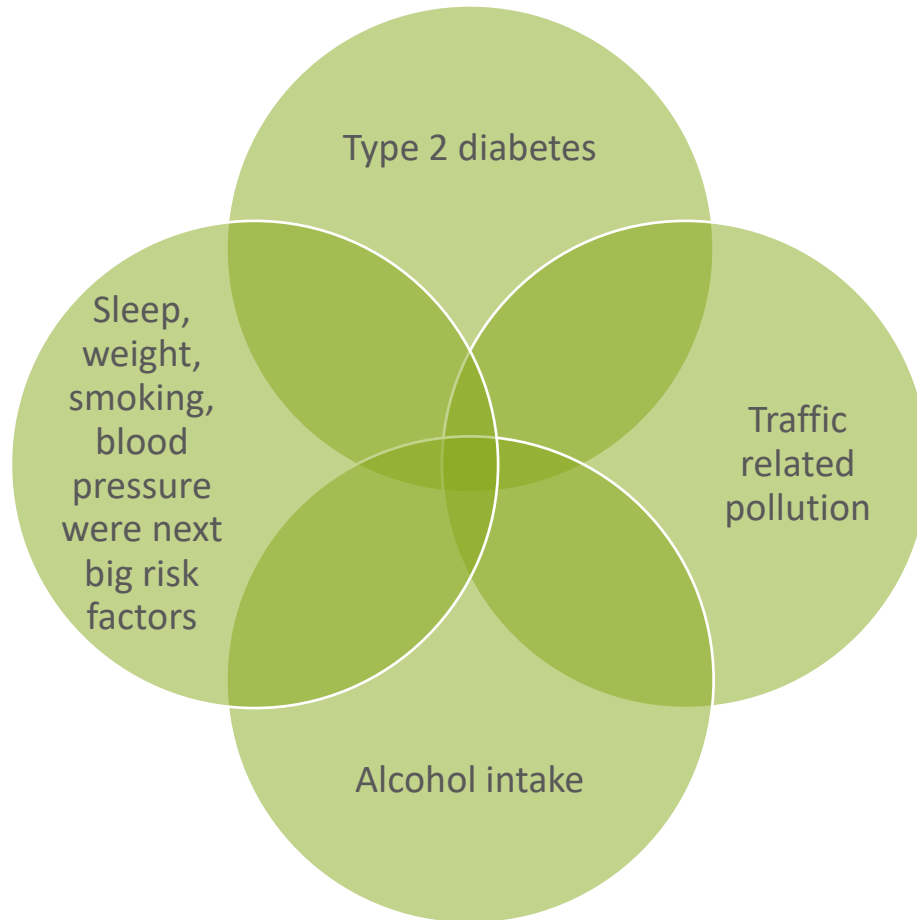


CHEESE, FRIED FOOD AND FAST FOOD NO MORE THAN ONCE A WEEK

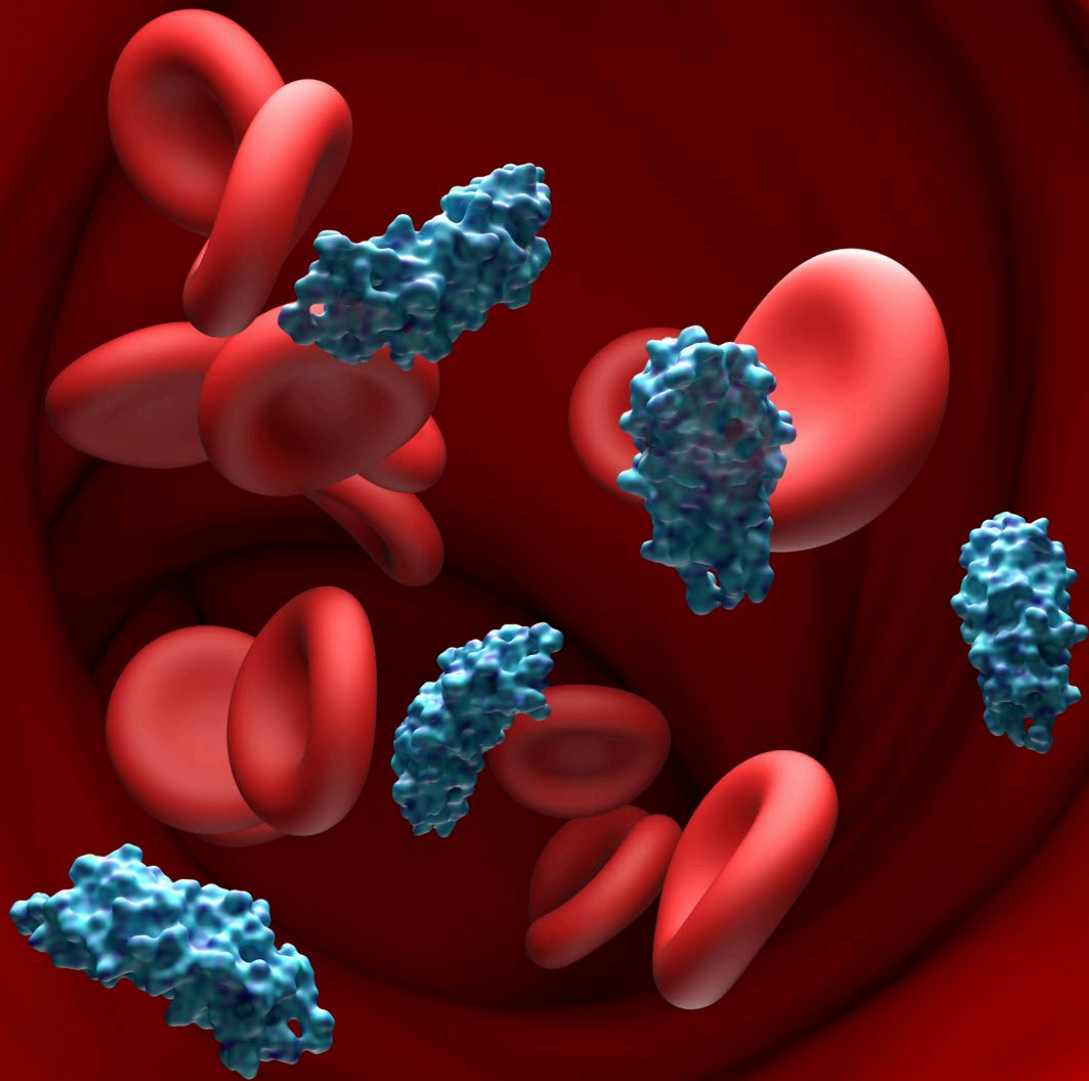
PASTRIES AND SWEETS LESS THAN FIVE TIMES A WEEK



ALCOHOL AND DEMENTIA RISK







*WHILE APOE4 HOMOZYGOTES
ACCOUNT FOR ONLY ABOUT
2% OF THE OVERALL
POPULATION, THEY MAKE UP
A LARGER SHARE OF AD
CASES—AN ESTIMATED 15%.*

Systematic review and meta-analysis of the effects of menopause hormone therapy on risk of Alzheimer's disease and dementia



ARTICLES · Volume 60, 102033, June 2023 · Open Access

Association of earlier age at menopause with risk of incident dementia, brain structural indices and the potential mediators: a prospective community-based cohort study

The Role of Estrogen Therapy as a Protective Factor for Alzheimer's Disease and Dementia in Postmenopausal Women: A Comprehensive Review of the Literature

Noor Ali ^{1, 2} · Rehab Sobail ³ · Saida Rehab Jaffer ⁴ · Sadia Siddique ⁵ · Barfin Kaya ^{6, 7} · Inioluwa Atogwa ⁸

Alzheimer Disease and Related Dementia Following Hormone-Modulating Therapy in Patients With Breast Cancer



Women's
Alzheimer's
Movement



Cleveland Clinic

Parade

69%

of adults think about
brain health issues,
but many don't get care
when symptoms arise.





[fuelwellkrissy](#)



[fuelwellwithkrissy](#)



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