Alternative Therapies in Multiple Sclerosis

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Desi Roth Harrison Center for Multiple Sclerosis

Ochsner Health Neurosciences Symposium

May 8th, 2026

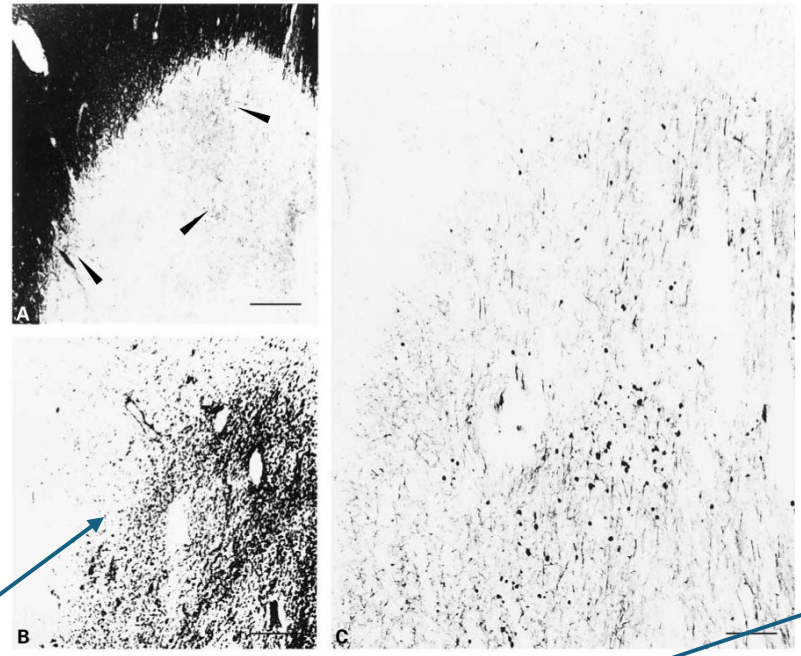
Disclosures

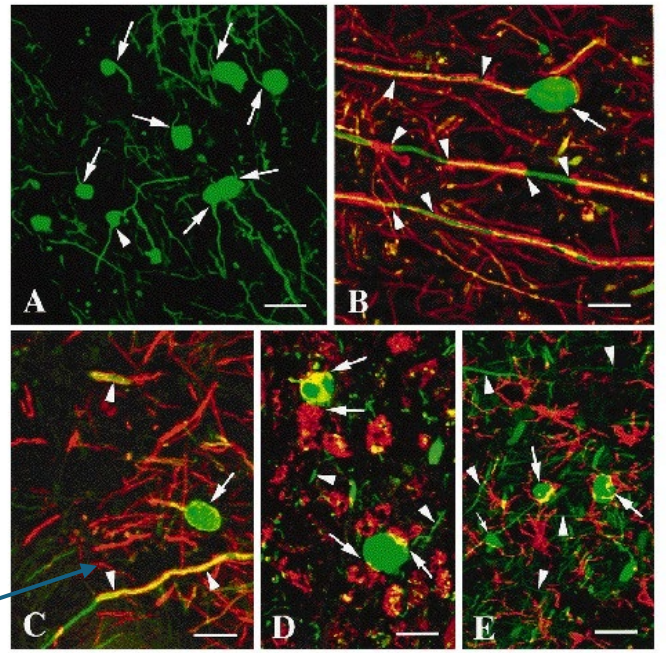
- JF has served on advisory boards for Genentech, TG therapeutics, EMG Serono, Novartis in the past 24 months.

What is MS?

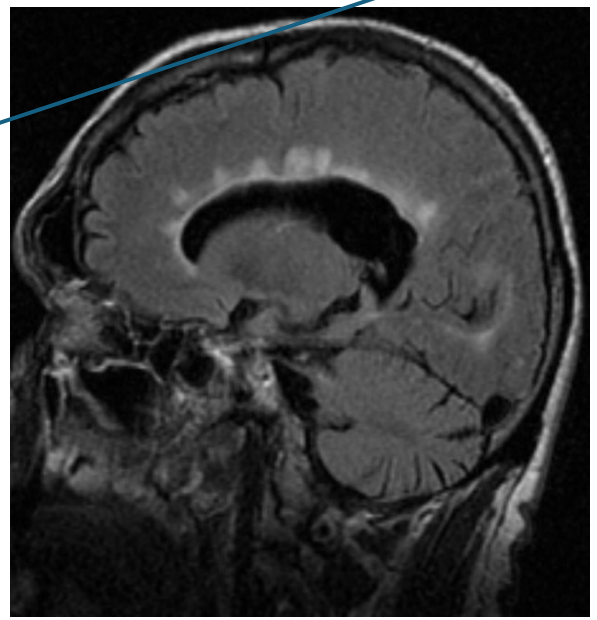
Immune-mediated and neurodegenerative condition affecting the central nervous system (brain, spinal cord, optic nerve)

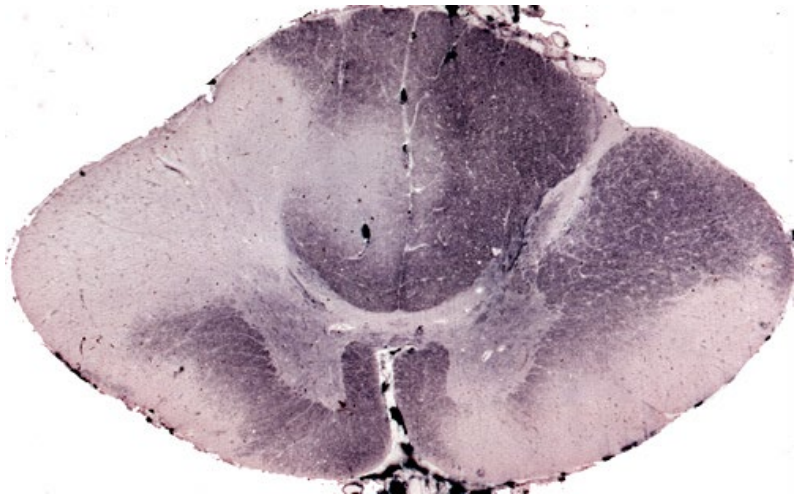
- Inflammatory demyelination
- Axonal loss



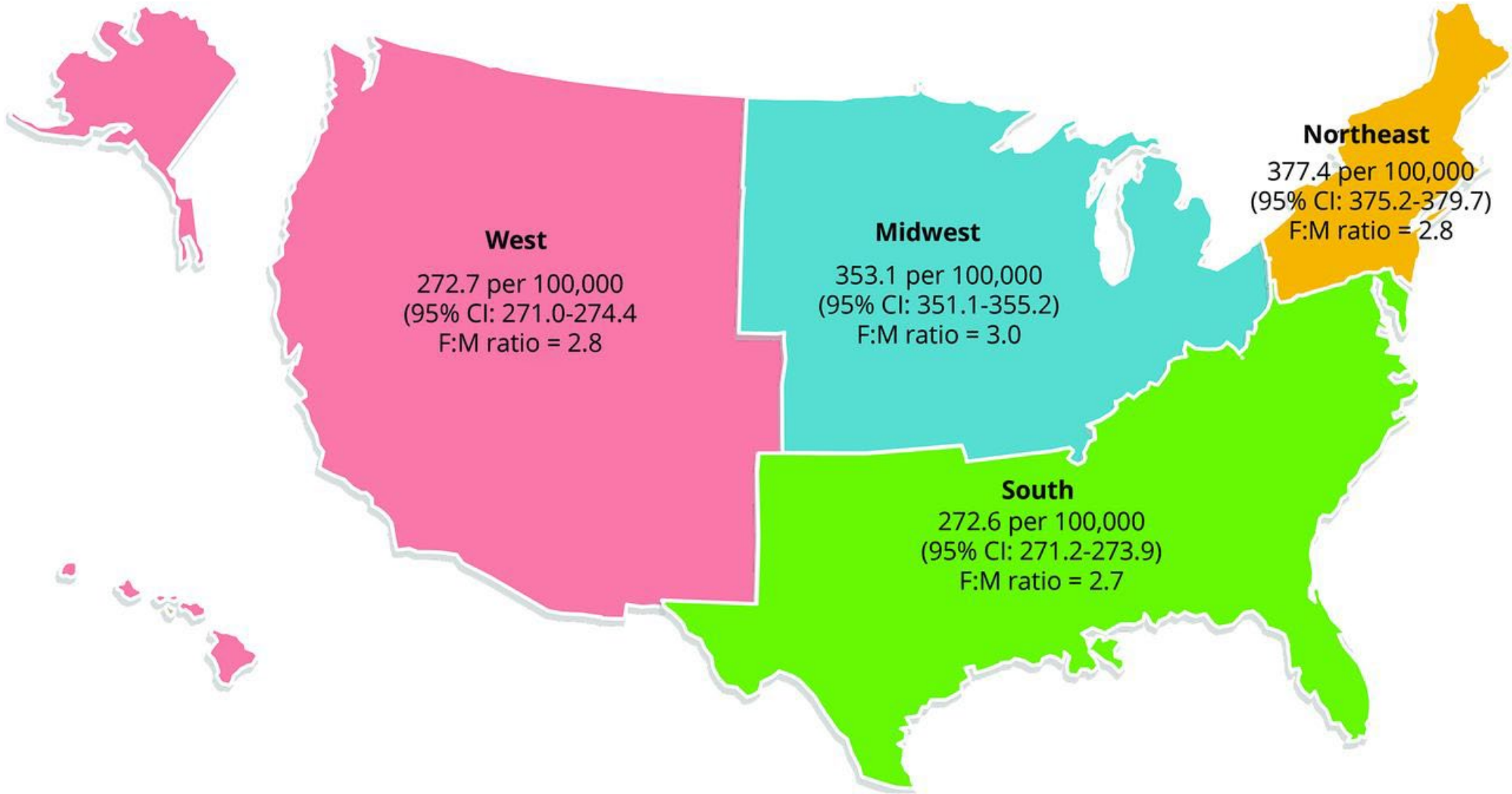


Trapp et al. N Engl J Med 1998; 338:278-285





https://neuropathology-web.org/



Wallin et al. Neurology Mar 2019, 92 (10) e1029-e1040

APPROVED DMTS FOR MS

INJECTION

Avonex
Betaseron
Copaxone
Extavia
Kesimpta
Ocrevus Zunovo
Plegridy
Rebif

ORAL

Aubagio
Bafiertam
Gilenya
Mavenclad
Mayzent
Ponvory
Tascenso ODT
Tecfidera
Vumerity
Zeposia

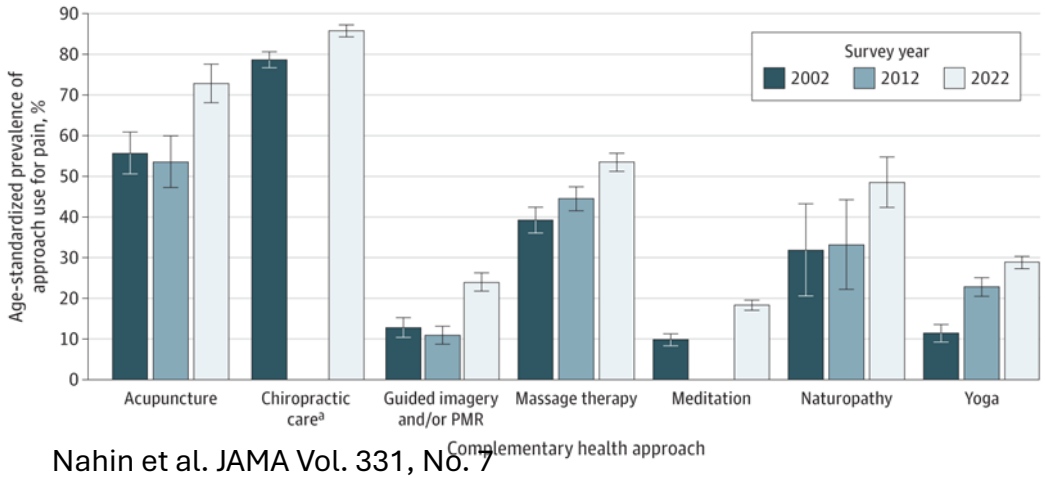
INFUSION

Briumvi
Lemtrada
Mitoxantrone
Ocrevus
Tysabri

MULTIPLESCLEROSISNEWSTODAY.COM

Complementary and Alternative Medicine Market to Surpass USD 791.49 Billion by 2032, Driven by Holistic Wellness Trends and Consumer Shift Toward Natural Therapies | SNS Insider

SNS Insider pvt ltd
September 10, 2025 • 6 min read



Nahin et al. JAMA Vol. 331, No. 7

ELSEVIER
International Journal for Parasitology
Volume 43, Issues 3–4, March 2013, Pages 259-274

Invited Review

Helminth therapy and multiple sclerosis

J.O. Fleming

Article | Open access | Published: 11 February 2020

Nanocatalytic activity of clean-surfaced, faceted nanocrystalline gold enhances remyelination in animal models of multiple sclerosis

Andrew P. Robinson, Joanne Zhongyan Zhang, Haley E. Titus, Molly Karl, Mikhail Merzliakov, Adam R. Dorfman, Stephen Karlik, Michael G. Stewart, Richard K. Watt, Benjin D. Facer, Jon D. Facer, Noah D. Christian, Karen S. Ho, Michael T. Hotchkin, Mark G. Mortenson, Robert H. Miller & Stephen D. Miller

Why?

- Empowerment
  - Feeling sense of control, hope
- Dissatisfaction with conventional medicine
  - Inadequate symptom management
  - Concern about side effects
  - Not enough focus on lifestyle changes
- Desire for personalized care
- Accessibility
- Successful marketing

- Many are non-evidence based
- Limited data on side effects and/or adverse events
- False promises or misrepresentation
- Delayed diagnosis and treatment
- Financial burden

Diet

- Cellular metabolism can affect immune cell function
- Undernutrition
- Overnutrition

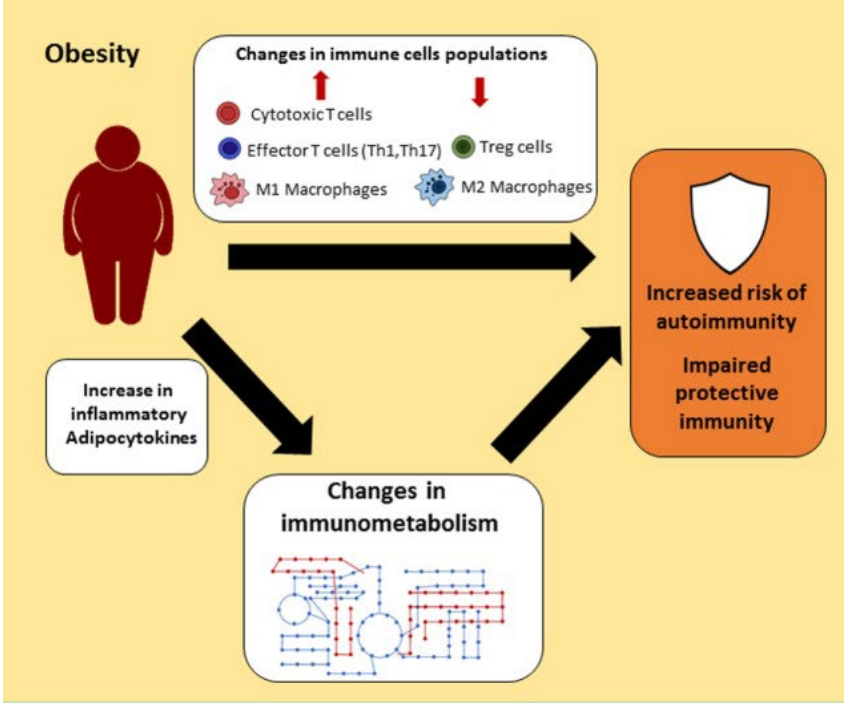
Immune system

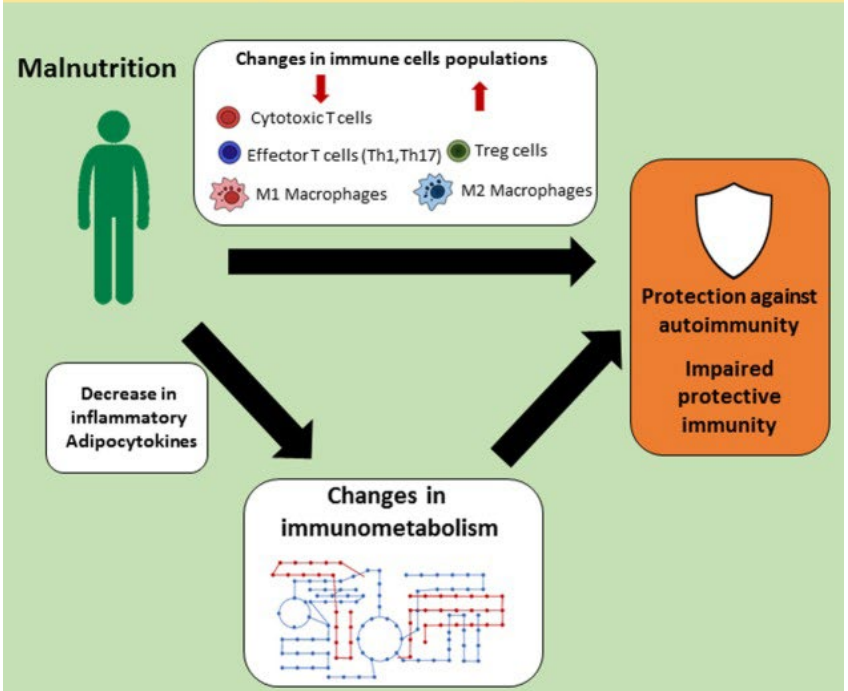
- Gut bacteria metabolites affect immune cells
- Diet can change gut flora composition

Gut flora

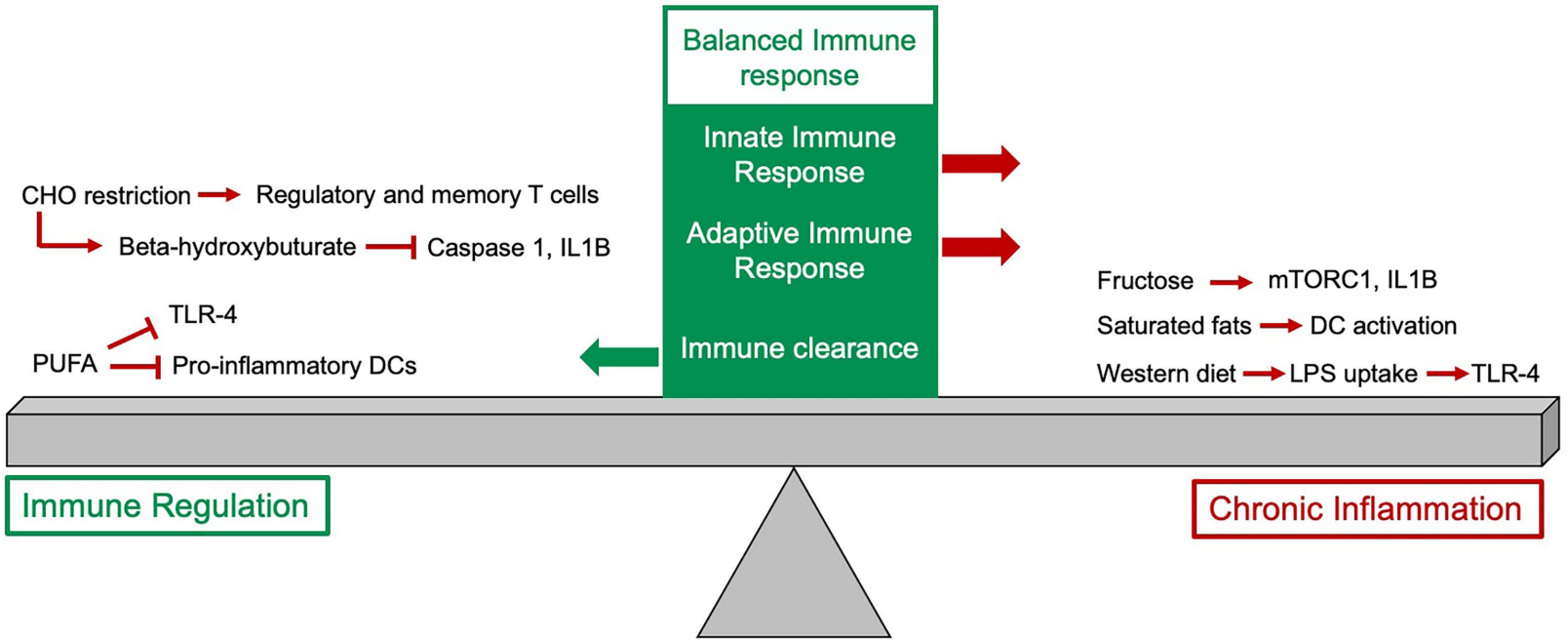
- Cellular metabolites affect neuronal function, synaptic membranes, glial cells, oxidative stress

CNS





Alwarawrah et al. Front Immunol. 2018 May 16;9:1055



Hellmich et al. Front. Immunol., 19 September 2022

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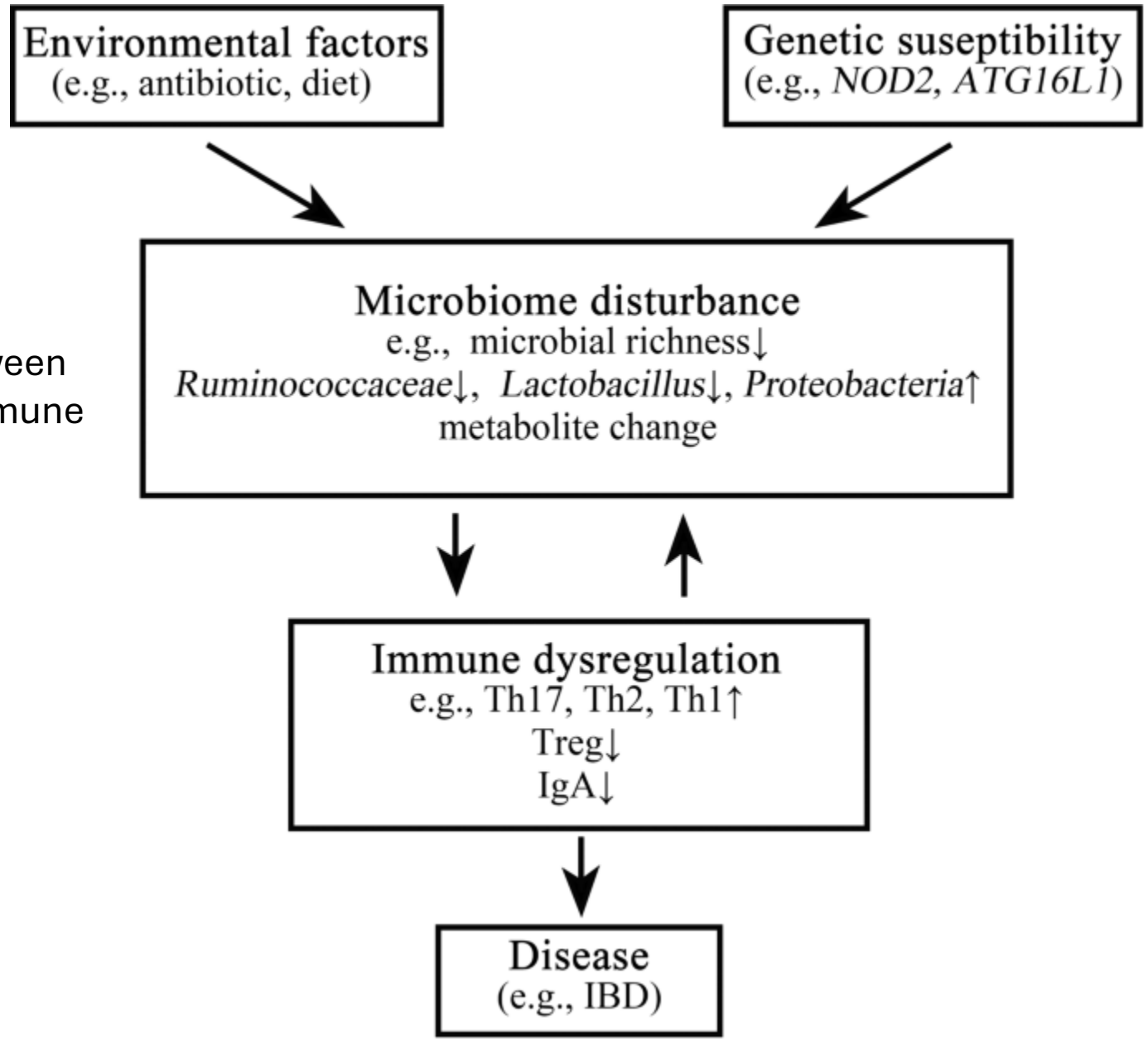
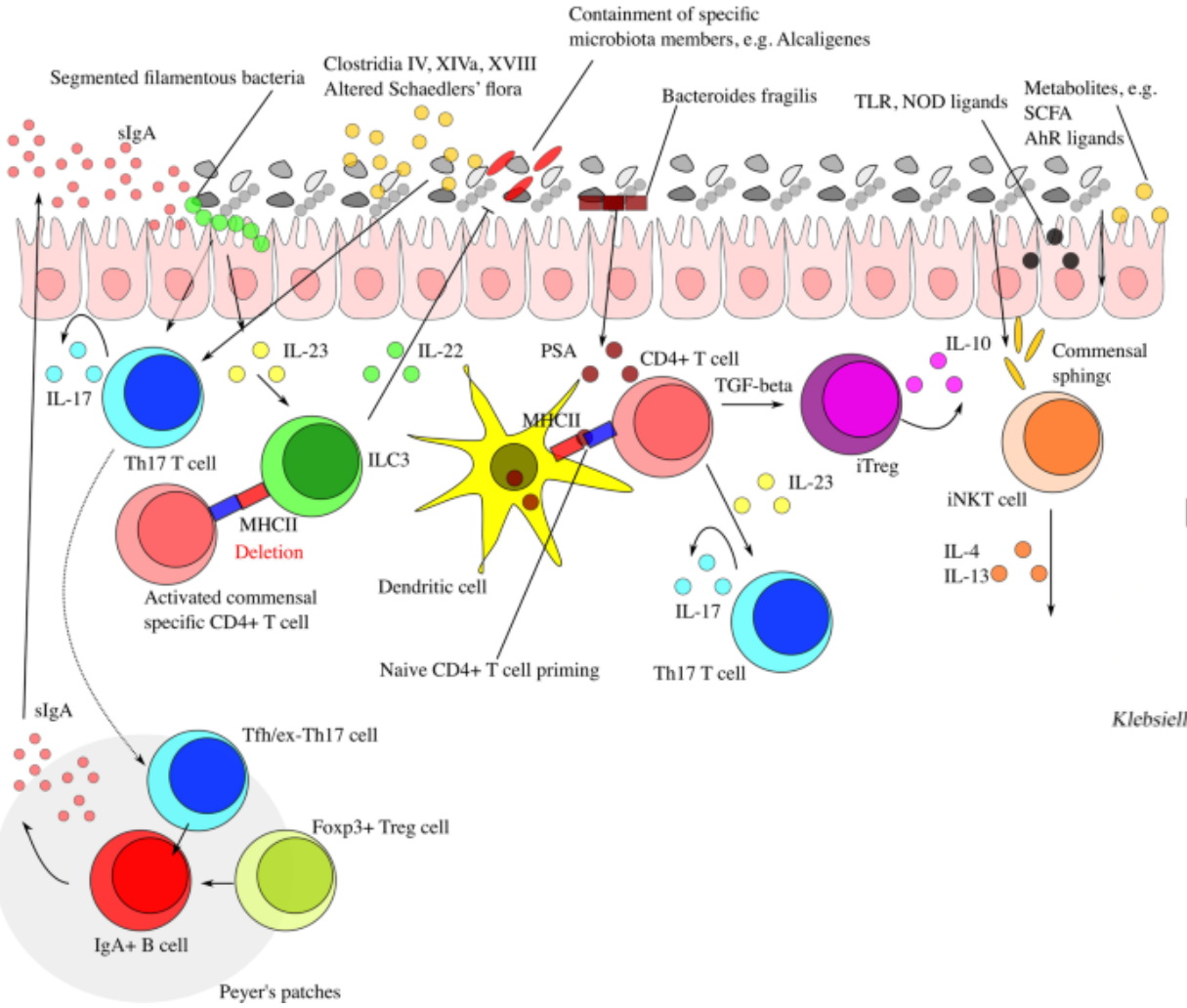
Aberrant interaction between microbiome and host immune system can contribute to development of immune-mediated disorders

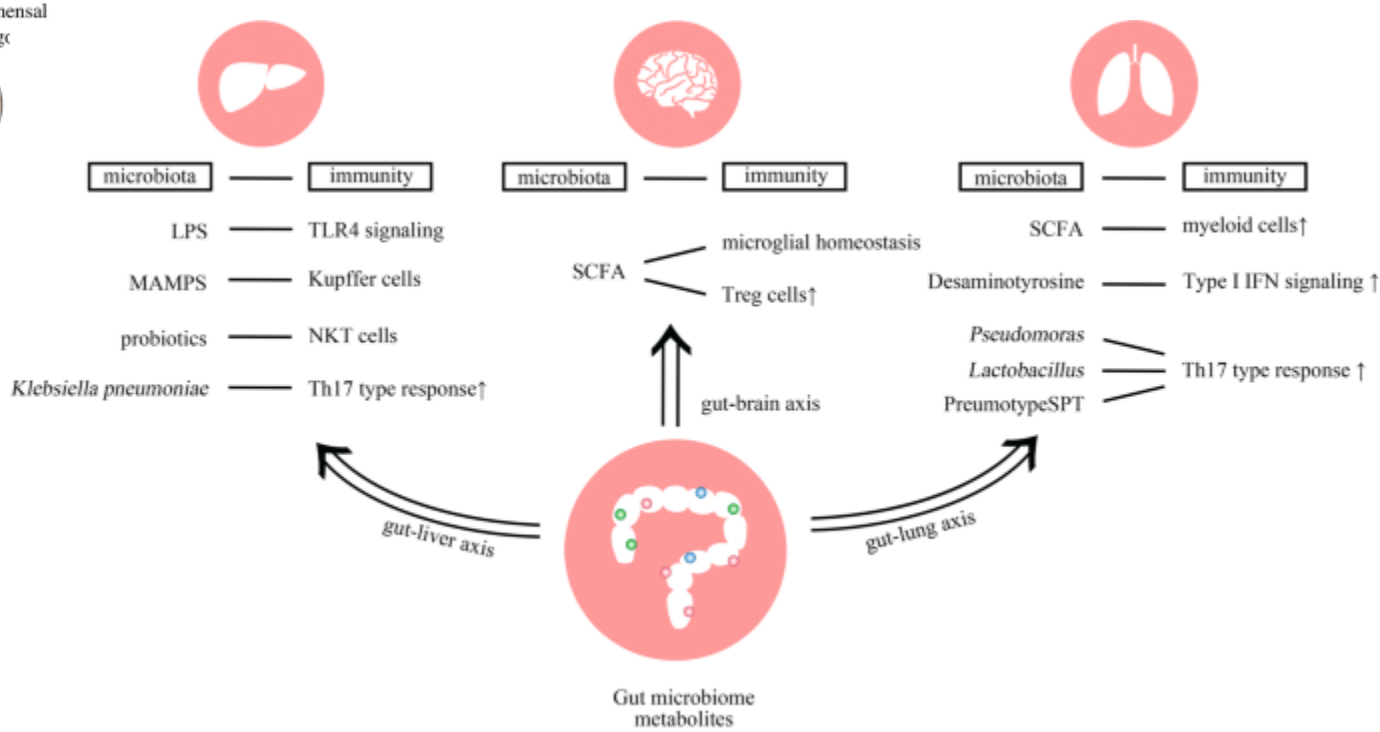


Zheng et al. Cell Research volume 30, pages492–506 (2020)

Alter



Gut microbiome derived ligands and metabolites act directly on enterocytes and intestinal immune cells, also reach remote tissues to modulate immunity



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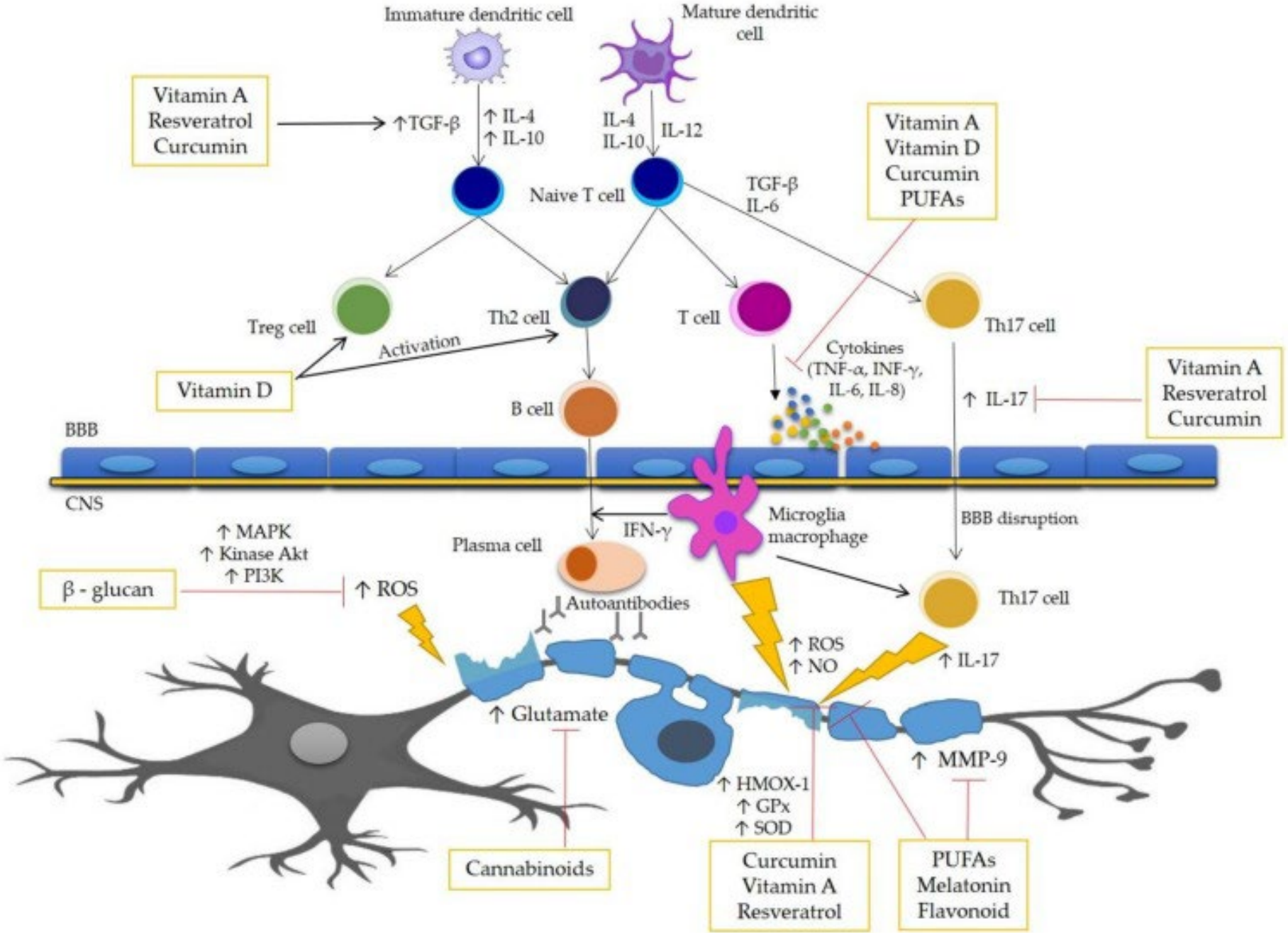
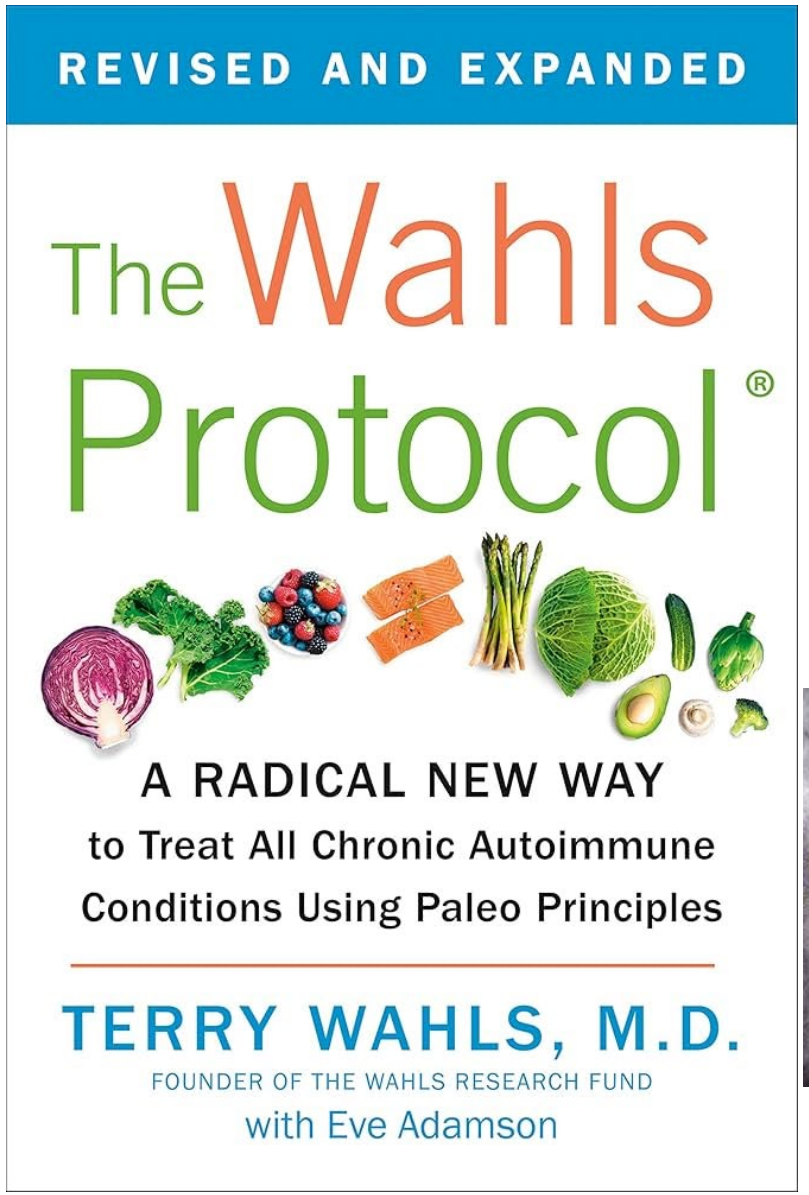
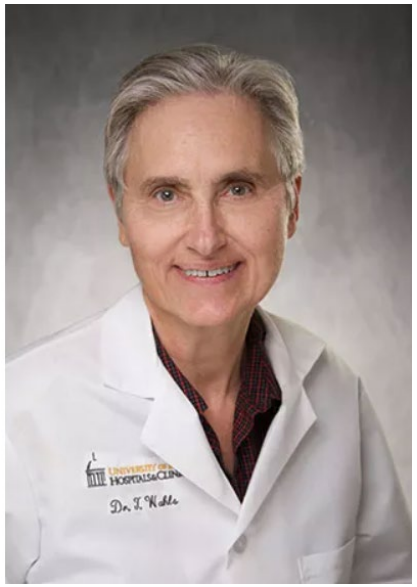


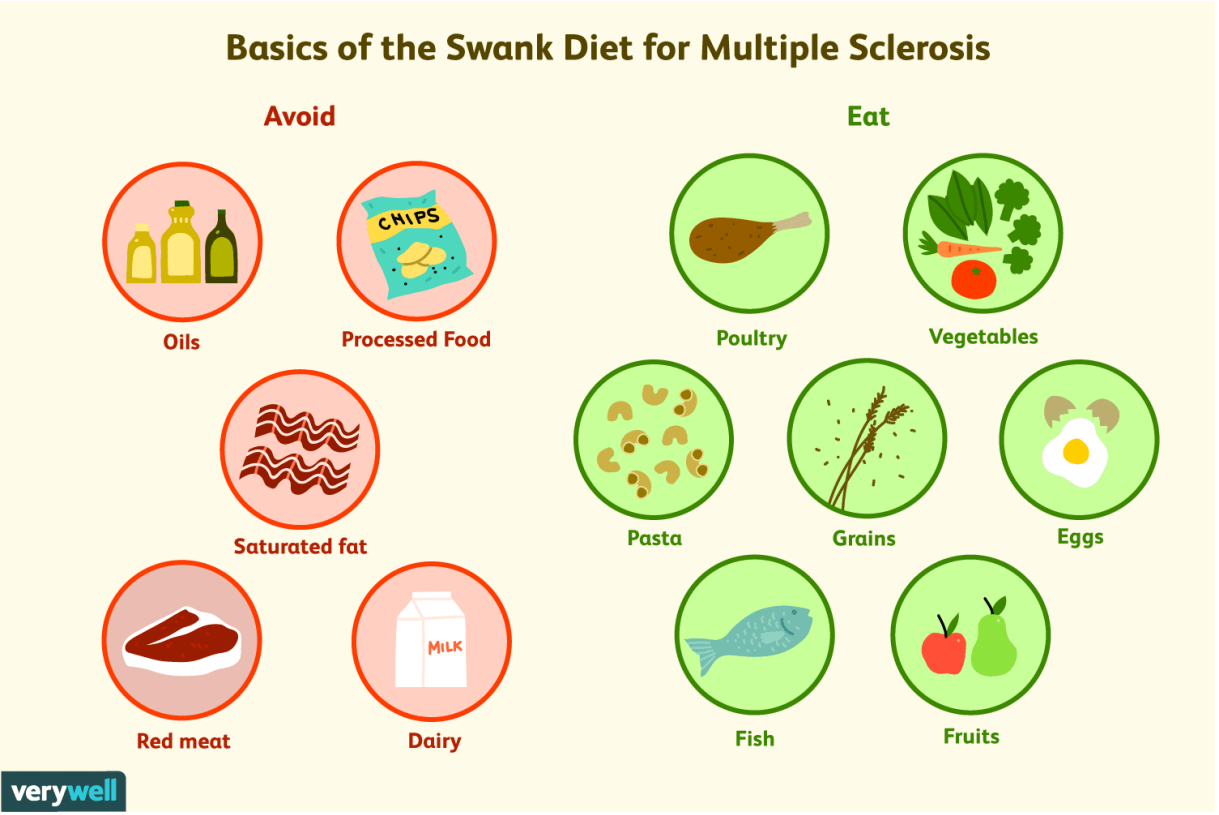
Miller et al. Nutrients. 2019 Jul 5;11(7):1528

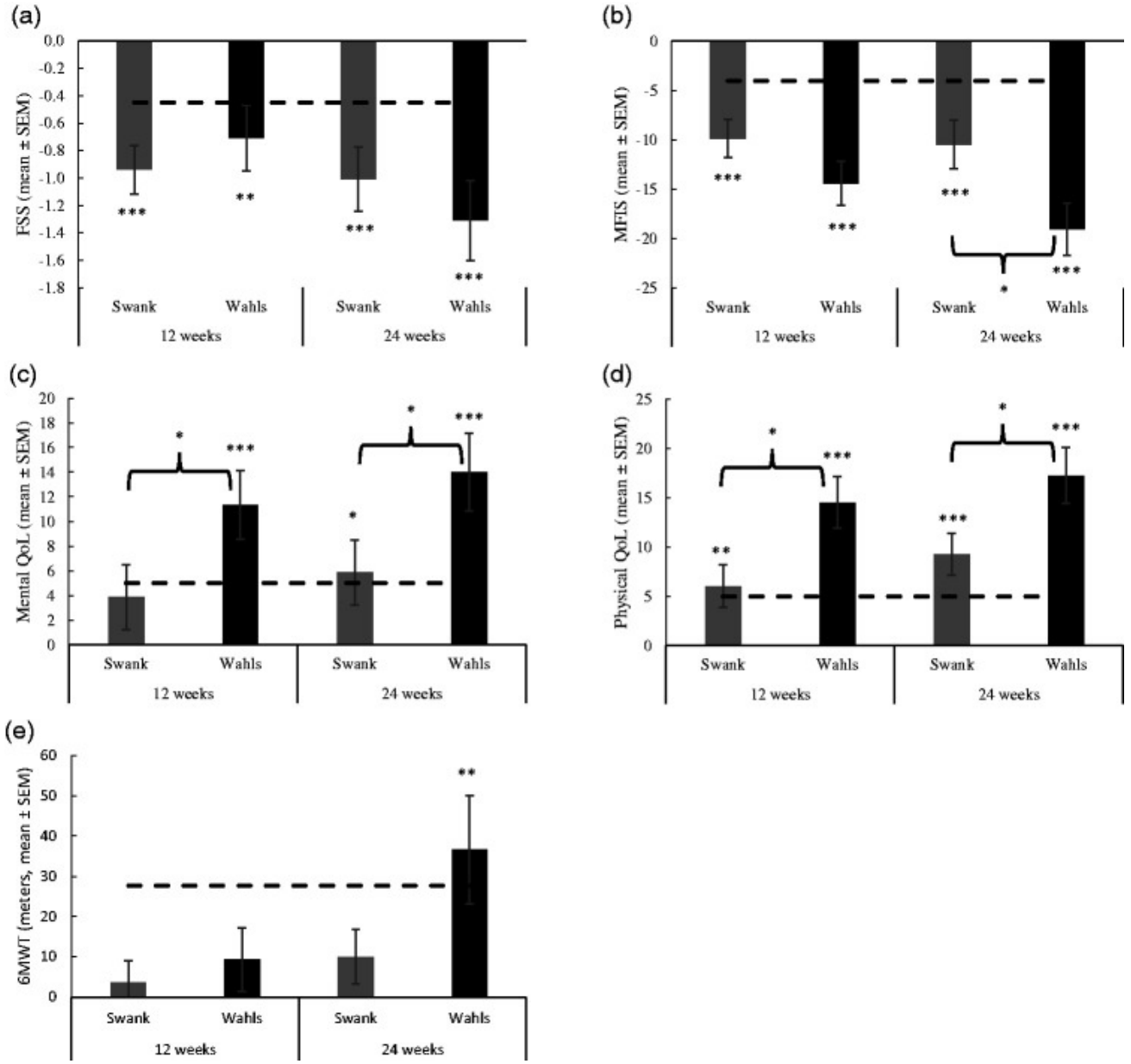




Food item	Instruction	Recommended daily intake
Green leafy vegetables	Recommended*	Three cups cooked/six cups raw = three servings
Sulfur-rich vegetables	Recommended*	Three cups, raw or cooked = three servings
Intensely colored fruits or vegetables	Recommended*	Three cups, raw or cooked = three servings
Omega-3 oils	Encouraged	Two tablespoons
Animal protein	Encouraged	4 ounces or more
Plant protein	Encouraged	4 ounces or more
Nutritional yeast	Encouraged	One tablespoon
Milks of soy, almond, peanut, rice, and coconut	Encouraged	According to subject choice
Kelp	Encouraged	¼ teaspoon powder or two capsules
Spirulina/chlorella/ klamath blue green algae	Encouraged	¼–1 teaspoon or 4–8 capsules
Gluten-free grains/ starchy food	Allowed	Only two servings per week
Gluten-containing grain	Excluded	
Dairy products	Excluded	
Eggs	Excluded	

Notes: *If not able to take total nine servings of the recommended food, subjects were asked to take equal proportions of each category. Copyright © 2014. Reprinted with permission from Mary Ann Liebert, Inc. Bisht B, Darling WG, Grossmann RE, et al. A multimodal intervention for patients with secondary progressive multiple sclerosis: feasibility and effect on fatigue. *J Altern Complement Med*. 2014;20(5):347–355.[17]





Mult Scler J Exp Transl Clin. 2021 Jul 31;7(3):20552173211035399

Mediterranean diet

Foods to include or limit

EAT AT EVERY MEAL.

Fruits, veggies, whole grains, extra virgin olive oil

EAT AT LEAST 3 SERVINGS A WEEK.

Fish/seafood, nuts, legumes

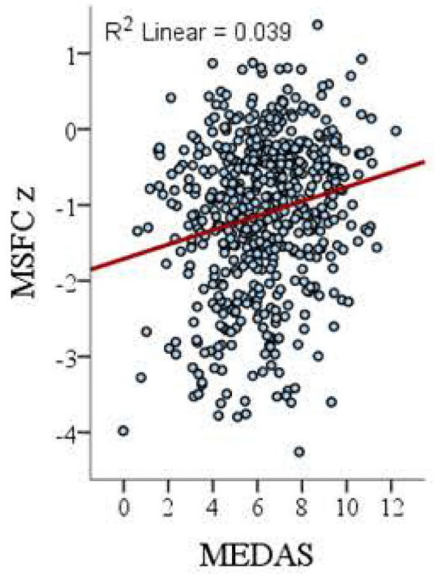
LIMIT TO 1 SERVING A DAY.

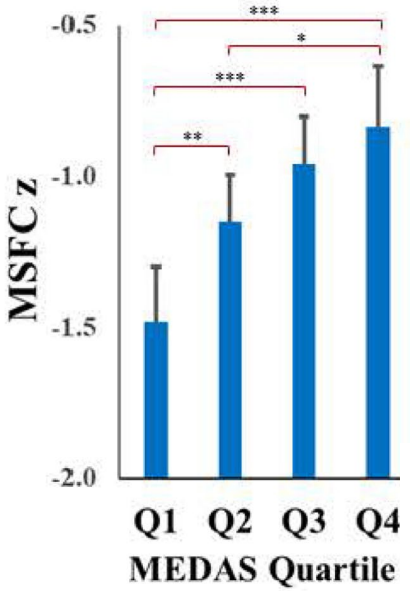
Poultry, low-fat dairy, eggs

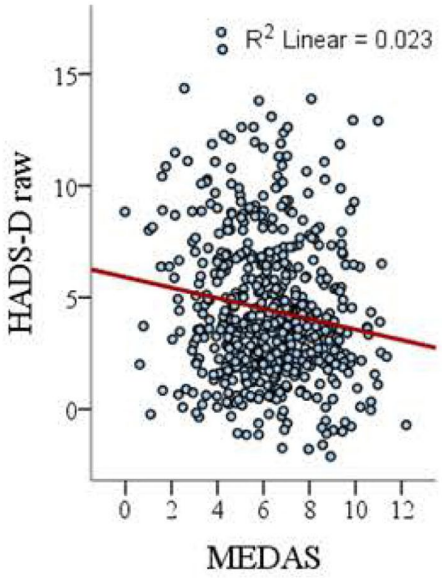
LIMIT TO 1 SERVING PER WEEK.

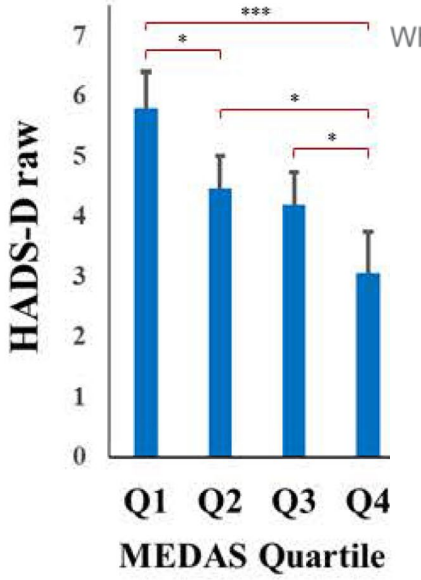
Red meat, sweets

Cleveland Clinic









Mediterranean diet and associations with the gut microbiota and pediatric-onset multiple sclerosis using trivariate analysis

Ali I Mirza [1,2], Feng Zhu [1], Natalie Knox [3,4], Lucinda J Black [5,6,7], Alison Daly [5], Christine Bonner [3], Gary Van Domselaar [3,4], Charles N Bernstein [8,9], Ruth Ann Marrie [8,10], Janace Hart [11], E Ann Yeh [12], Amit Bar-Or [13], Julia O'Mahony [12], Yinshan Zhao [1], William Hsiao [2], Brenda Banwell [14], Emmanuelle Waubant [11], Helen Tremlett [1,✉]

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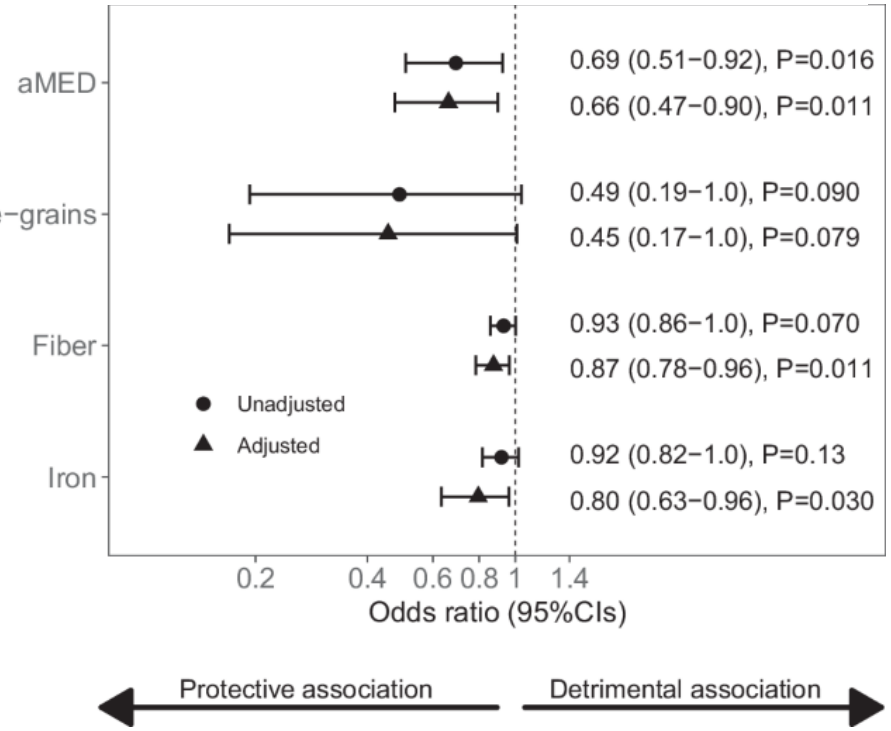
PMCID: PMC11271616 PMID: 39030379



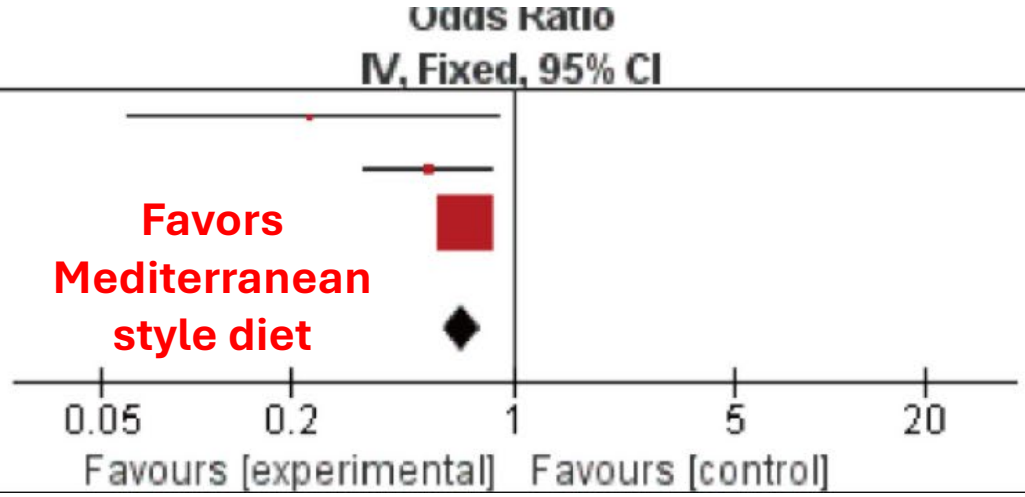
Sand et al. Mult Scler. 2022 Oct 13;29(2):248–260

ARR

Study or Subgroup	log[Odds Ratio]	SE	Weight	Odds Ratio IV, Fixed, 95% CI
F. Sedaghat 2016	-1.46967597	0.6879788	1.0%	0.23 [0.06, 0.89]
L. Alfredsson 2023	-0.61618614	0.23673132	8.2%	0.54 [0.34, 0.86]
S. Mirashrafi 2021	-0.34249031	0.07132267	90.8%	0.71 [0.62, 0.82]
Total (95% CI)			**100.0%**	**0.69 [0.60, 0.78]**

Heterogeneity: Chi² = 3.78, df = 2 (P = 0.15); I² = 47%

Test for overall effect: Z = 5.53 (P < 0.00001)

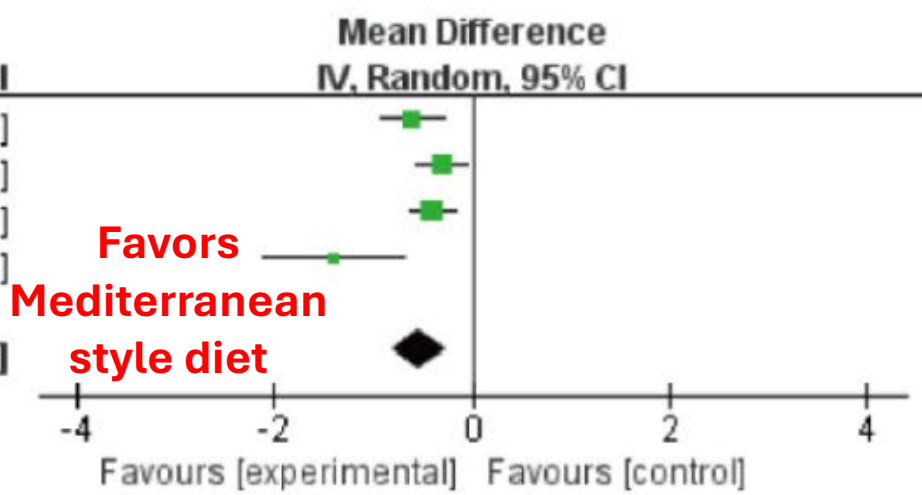


EDSS

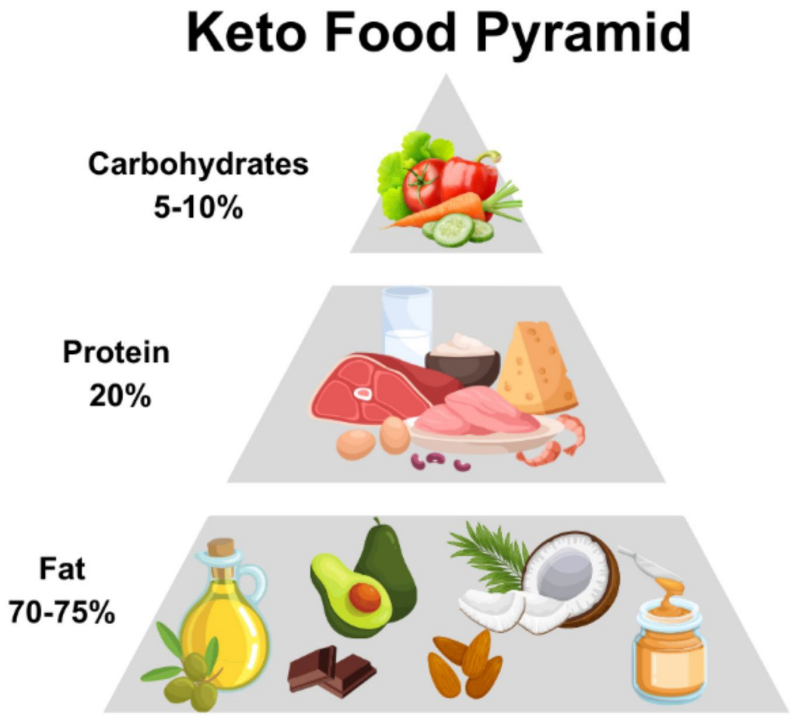
Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
A. R. Moravejolahkami 2020a	1.4	0.6	17	2	1.1	194	26.4%	-0.60 [-0.92, -0.28]
A. R. Moravejolahkami 2020b	1.7	0.7	68	2	0.9	79	30.3%	-0.30 [-0.56, -0.04]
J. Bohlouli 2021	1.7	0.6	68	2.1	0.8	79	32.3%	-0.40 [-0.63, -0.17]
S. U. Özel 2024	2.6	1.44	48	4	2.1	47	11.0%	-1.40 [-2.13, -0.67]
Total (95% CI)			**201**			**399**	**100.0%**	**-0.53 [-0.81, -0.25]**

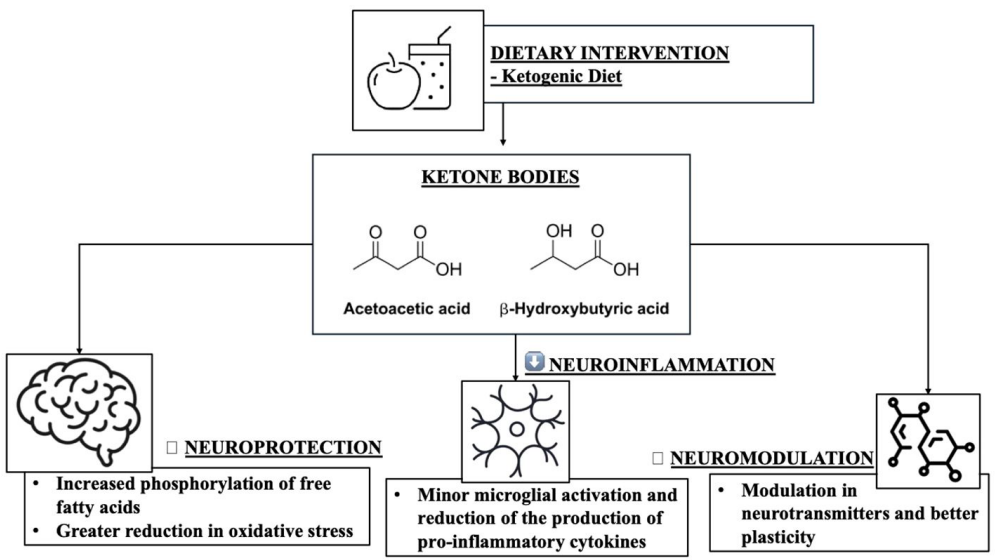
Heterogeneity: Tau² = 0.05; Chi² = 8.88, df = 3 (P = 0.03); I² = 66%

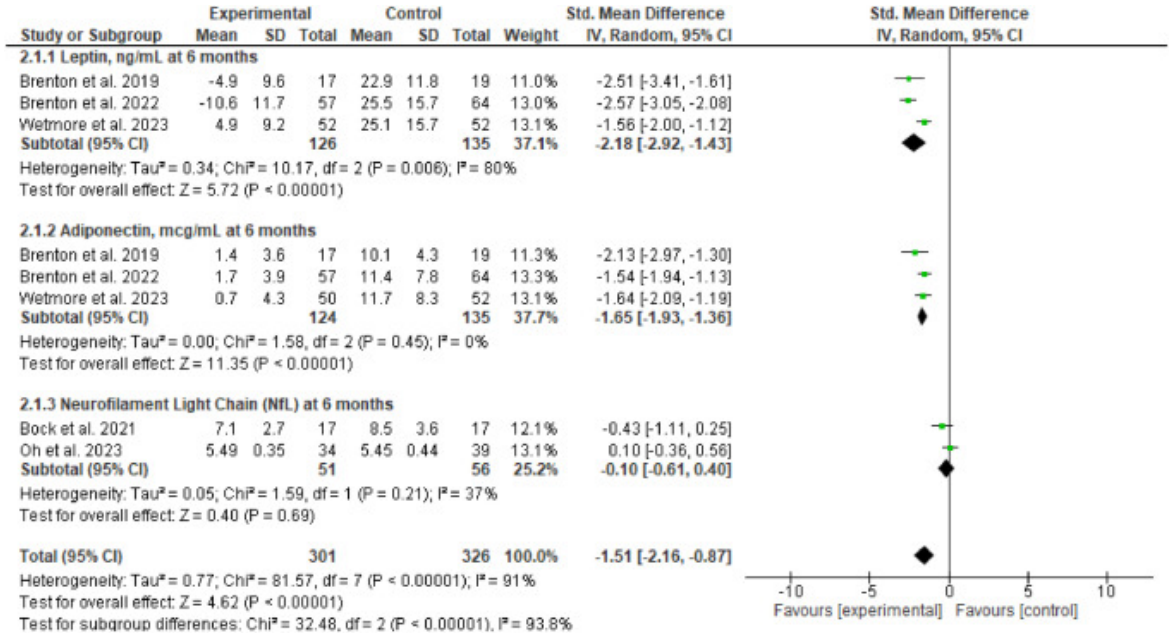
Test for overall effect: Z = 3.72 (P = 0.0002)

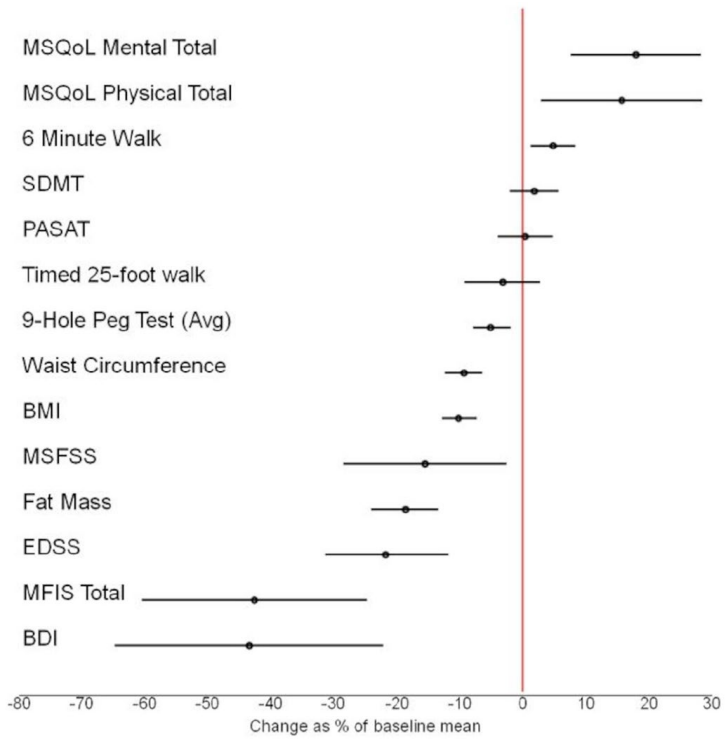


Kong, Jingpeng et al. Multiple Sclerosis and Related Disorders, Volume 104, 106739









Monda et al. Front. Immunol., 11 August 2024; Reddy et al. Disease-a-Month, Volume 71, Issue 11, 2025; Brenton et al. J Neurol Neurosurg Psychiatry. 2022 Apr 13;93(6):637–644

are numerous, though it is most effective when the treatment is delivered close to the time of the injury. Once considered an untreatable injury and amongst the most difficult diagnoses to treat with HBOT, Dr. Harch's dosing approach to drowned patients has dramatically changed the ability to recover neurological function.

Migraine Headache

Dr. Harch has found that migraines resulting from brain injuries are very responsive to HBOT. When delivered at the time of an acute migraine, oxygen therapy helps by constricting the dilated blood vessels that cause the pulsing sensation.

Mild Cognitive Impairment (MCI) and Dementia

Hyperbaric oxygen treatment has been proven to help treat the symptoms of mild cognitive decline and even reverse the decline for many patients. Brain blood flow scans have shown improvement in blood flow in patients with MCI and dementia treated by HBOT. This is most likely because HBOT treats the underlying brain wounds responsible for cognitive decline and dementia.

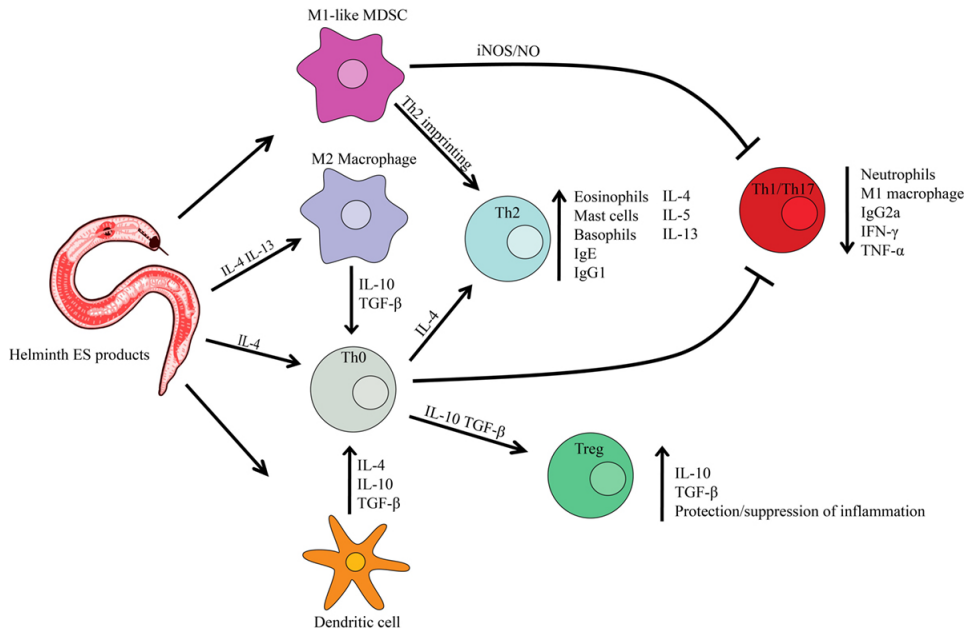
Multiple Sclerosis

HBOT treats the wounds of multiple sclerosis, commonly called MS. Hyperbaric oxygen treatment of MS has been proven to reduce symptoms in patients, stabilize their function in the long term, and even increase their overall health and wellness. Many MS patients who undergo oxygen treatment experience increased mobility and energy, along with reduced urinary incontinence, involuntary movements, and fatigue.

Plastic or Cosmetic Surgery

After plastic or cosmetic surgery, nearly all patients experience agonizing side effects like swelling, bruising, and pain. Surgery inflicts trauma on a patient and this trauma results in wounds to the body. HBOT is a treatment for wounds. It can take time to heal after even a minor surgical procedure, but HBOT can help you heal faster because of its wound-healing effects. Many patients see improvements in bruising and swelling caused by plastic surgery after just a few HBOT treatments. Oxygen treatments can accelerate your recovery by several weeks or even months due to the body's need for increased oxygen and HBOT's ability to supply this oxygen.

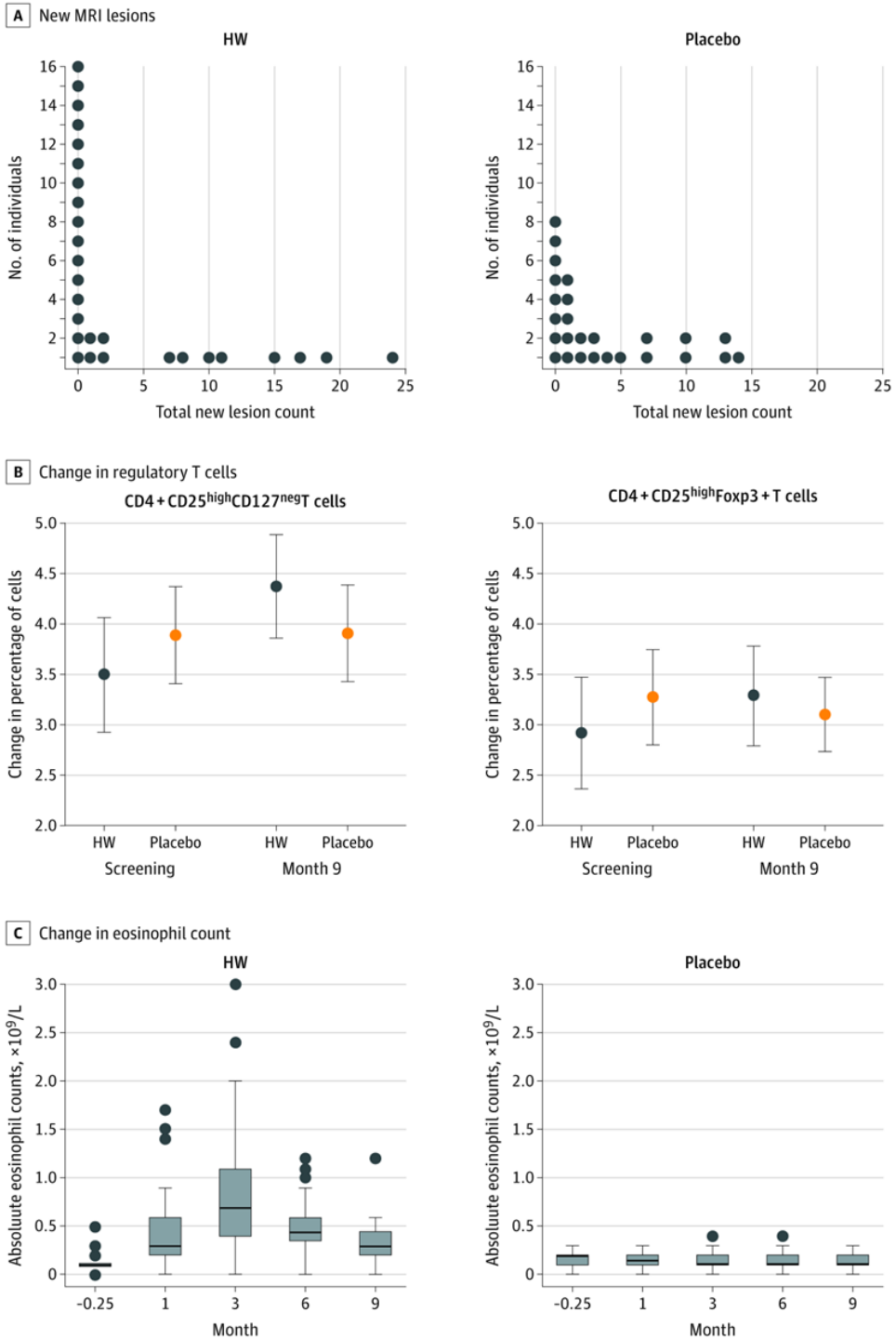
Hookworms



Hookworm Treatment for Relapsing Multiple Sclerosis

A Randomized Double-Blinded Placebo-Controlled Trial

Radu Tanasescu, MD, PhD[1,2,3,4]; Christopher R. Tench, PhD[1,5]; Cris S. Constantinescu, MD, PhD[1,2] ; et al



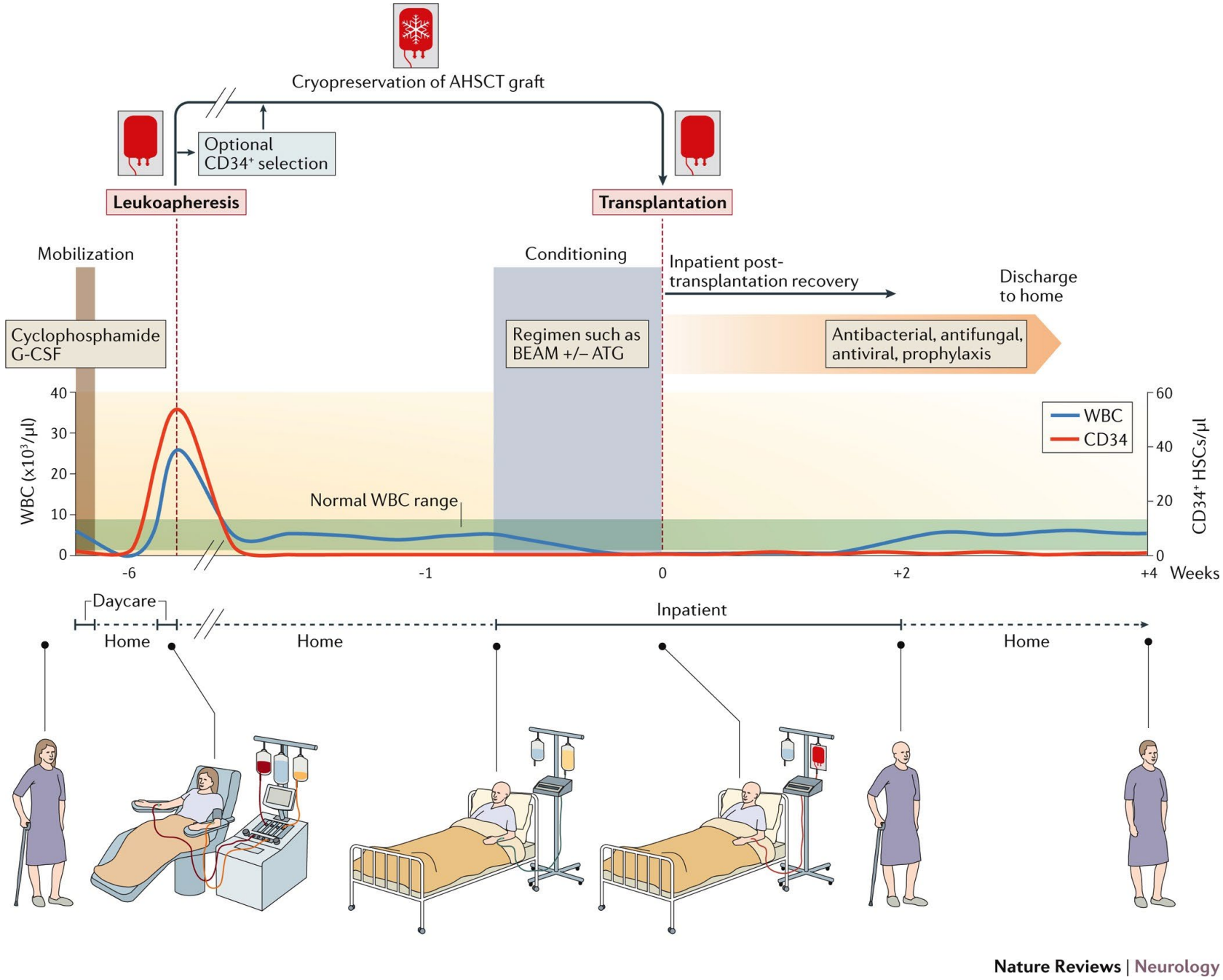
The Advanced Potential of Stem Cell Therapy in Treating Multiple Sclerosis at The Regenerative Center

At The Regenerative Center, with over 12 years of pioneering experience in regenerative medicine, we are at the forefront of employing stem cell therapy for the treatment of Multiple Sclerosis (MS). Our innovative approach is built on the scientific rationale that stem cell therapy, particularly the use of Mesenchymal Stem Cells (MSCs), holds significant promise for those battling MS.

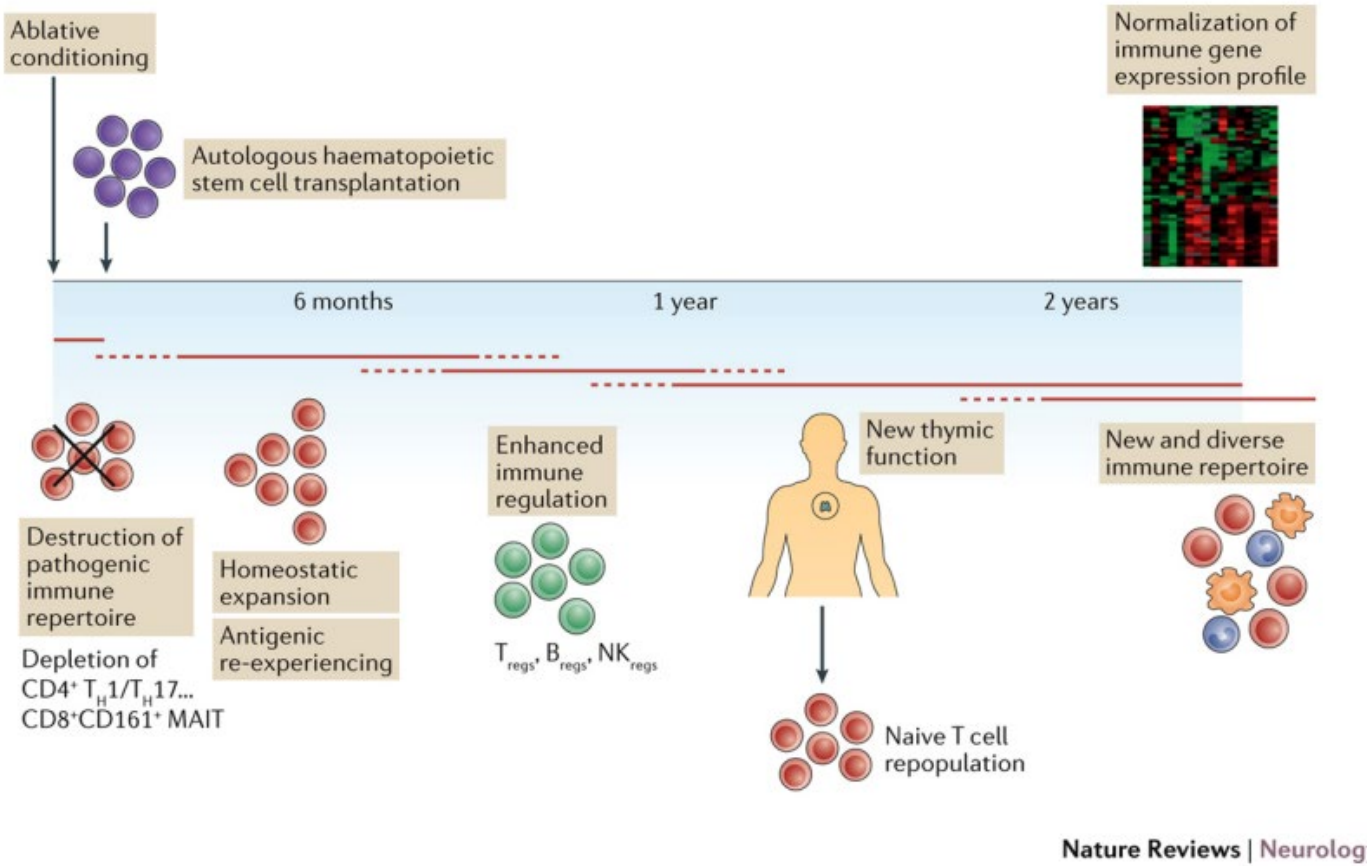
(C)

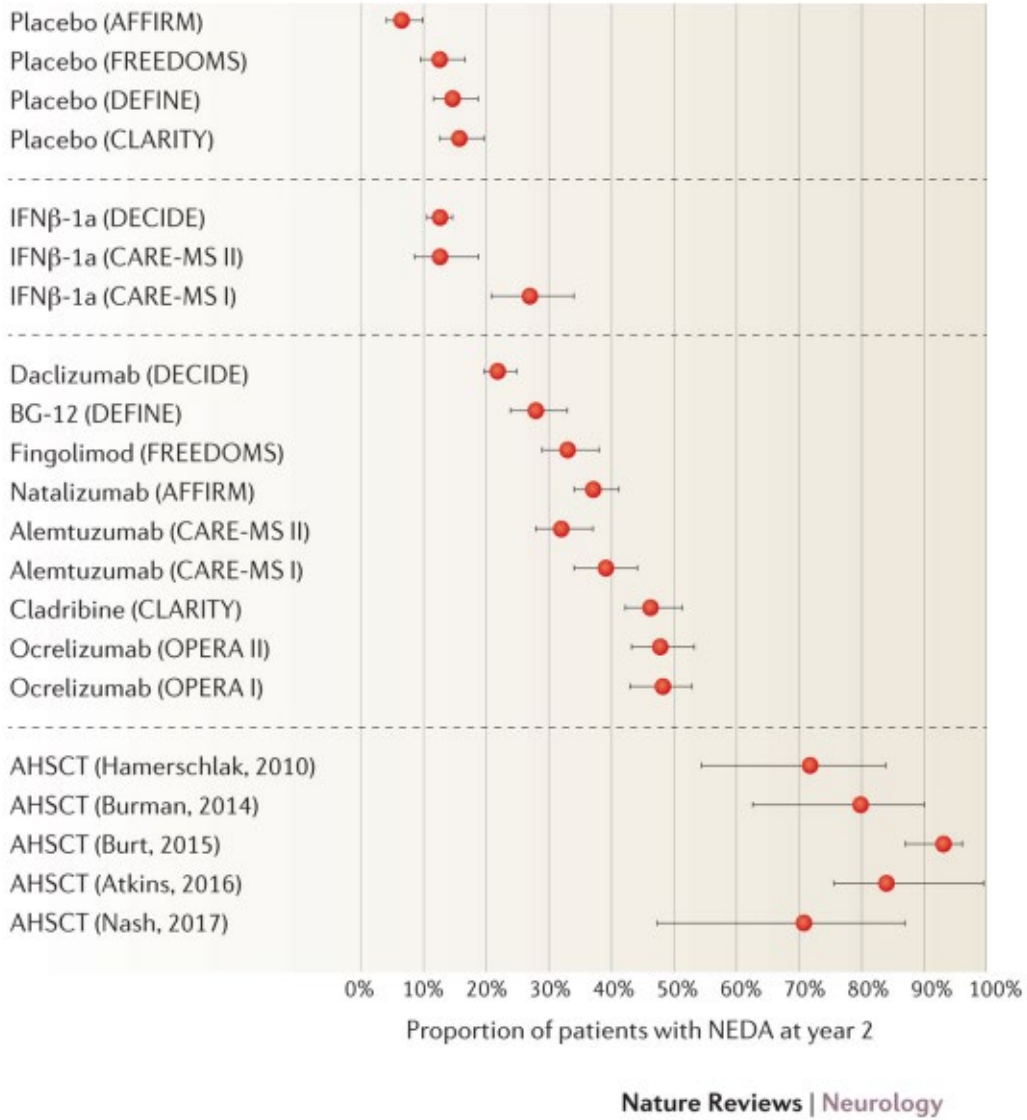
Autologous Hematopoietic Stem Cell Transplantation

Eliminate aberrant adaptive immune system and achieve immune reconstitution with AHSCT → immune tolerance



Muraro et al. Nature Reviews Neurology. 2017



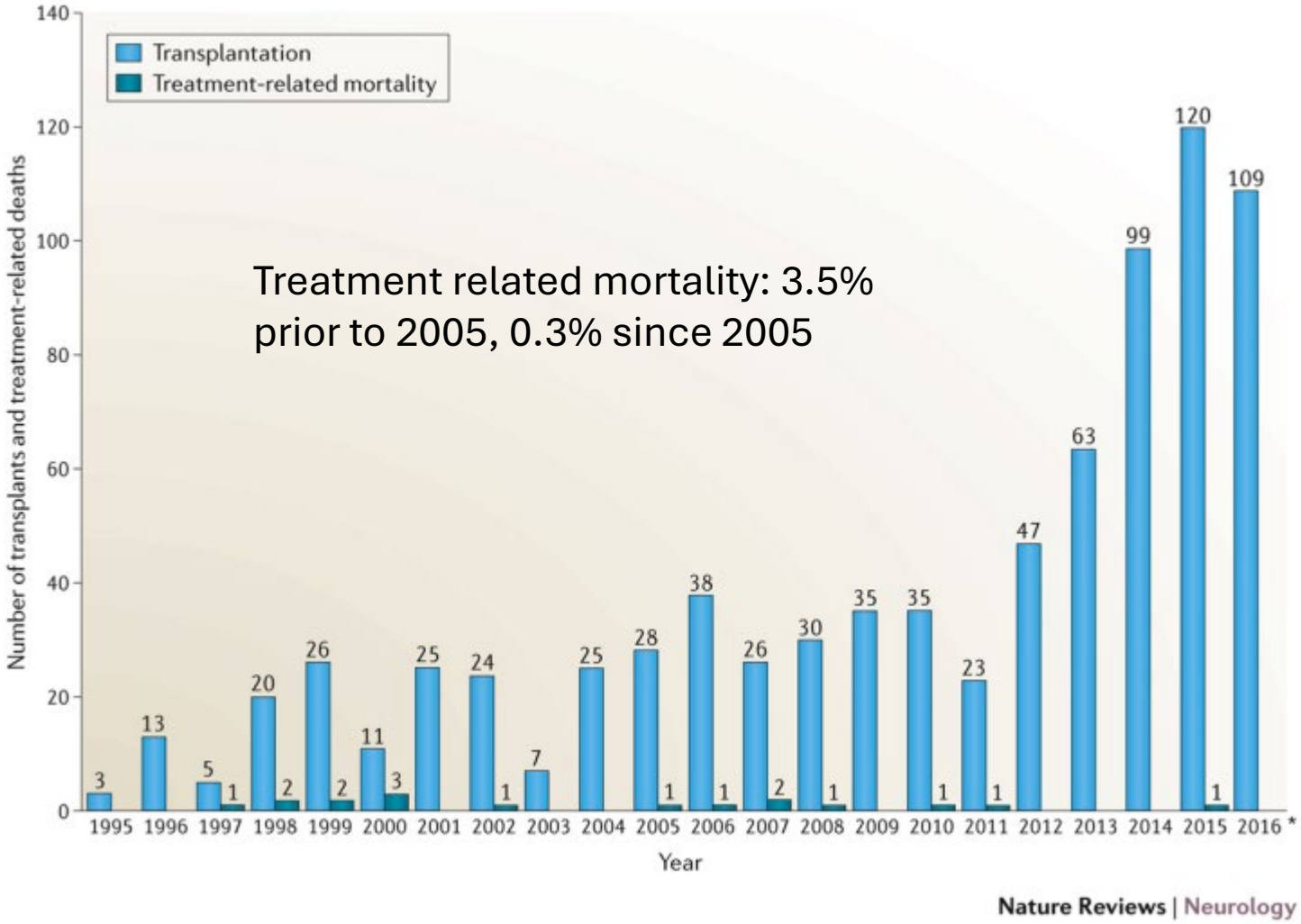


Muraro et al. Nature Reviews Neurology. 2017

Risk

- Chemotherapy during HSC mobilization
- Conditioning regimen

  Neutropenic fever, sepsis, UTI, viral reactivations
  Neurotoxicity

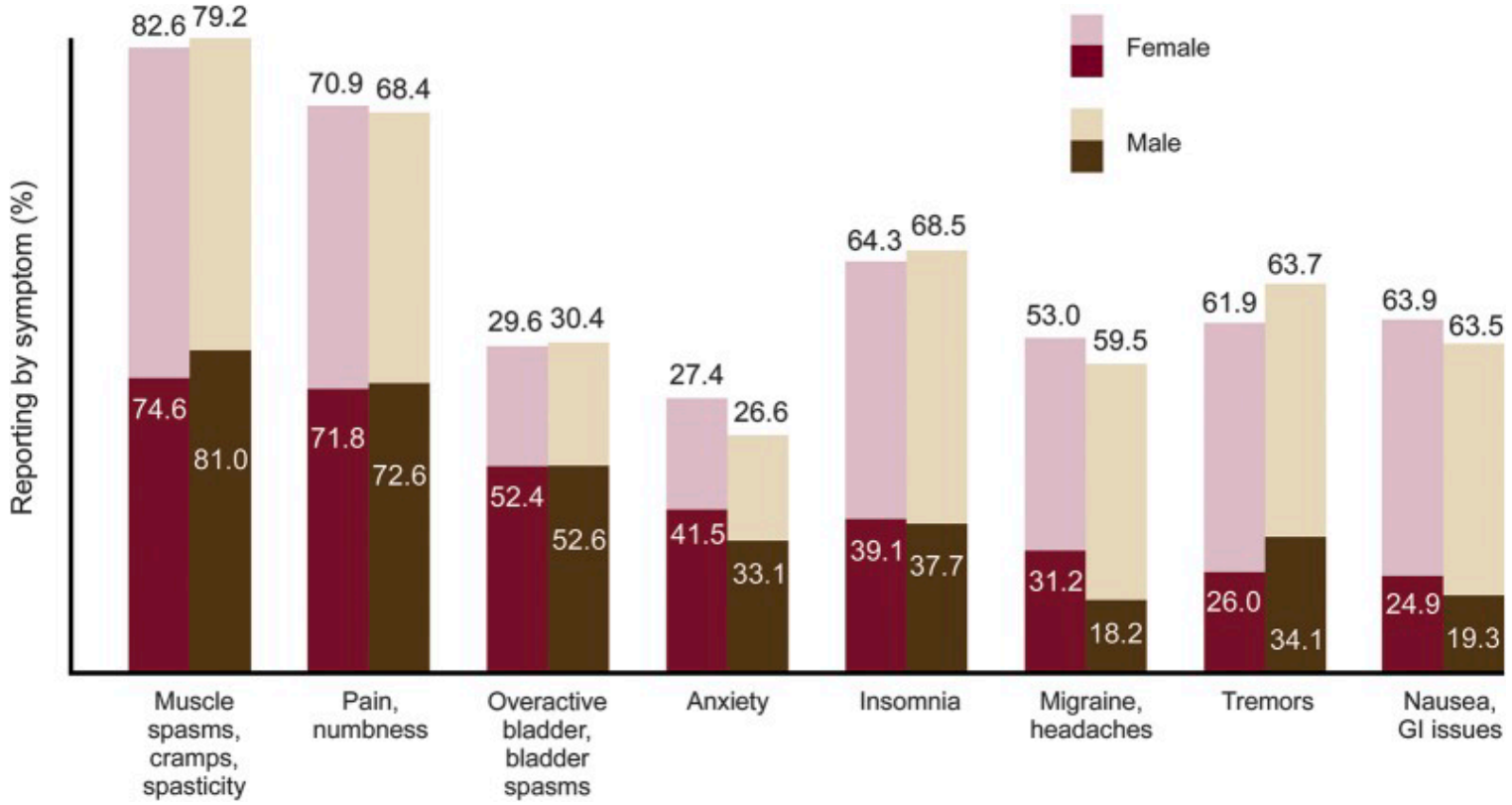


Treatment related mortality: 3.5% prior to 2005, 0.3% since 2005

Muraro et al. Nature Reviews Neurology. 2017

Cannabis

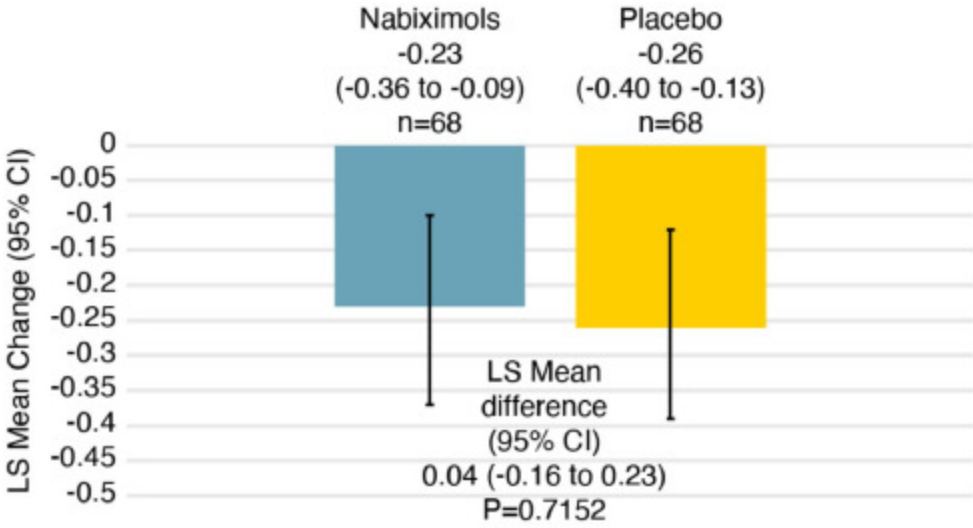
- 25.5% used for MS
- 16.1% currently use for MS
- 62% have not discussed use with their doctors
- 91% think marijuana should be legal



Cofield et al. Neurol Clin Pract. 2017 Aug;7(4):333-343

- Mechanism of action:
  - Cannabinoid receptor 1, expressed in brain, inhibit neurotransmitter release (glutamate, GABA)
  - Cannabinoid receptor 2, expressed in immune cells, mediate cytokine release
  - CBD protect oligodendrocyte progenitor cells, and decreased T-cell activation

- Clinical trial results
  - Mix results regarding objective measures of spasticity, but did help with mobility and perception of spasticity.
  - No US FDA approval for nabiximol (Sativex)



- Common side effects: Headache, nausea, somnolence, dizziness, cough, amnesia, paranoia.

Mecha et al. Cell Death Dis. 2012 Jun 28;3(6):e331; Basu et al. J Immunol. 2011 Nov 2;187(11):5720–5732; Zajicek et al. Lancet 2003; 362: 1517–26; Bethoux et al. MSARD. Volume 89, September 2024

Supplements

matt11126 • 1y ago

Here's a list of what my father has been taking.

All of these have been approved by one of his neurologists at one of the larger MS centers in the states.

Let me know if you have any questions !

Turmeric 1G - 2-0-2 (Anti inflammatory/AntiOxidant)

B Complex 1-0-0 (Some were low/May help with remyelination)

d3/K2 1-0-0 20,000 IU(Was low/ Potentially reduces symptoms)

magnesium 500MG, 1-0-1 (Spasticity/Restless Leg, Helps process D3)

cq10 300MG, 1-0-0 (Mitochondrial health/Antioxidant)

alpha lipoid acid/l-carnite 225MG/510MG, 1-0-1 (Anti oxidative/Reduces brain atrophy/Fatigue) - 600 mg twice daily

omega 3 1200MG 1-0-1 (Anti Inflammatory)

NAD+ 1,000MG 1-0-1 (Mitochondrial health / regulating cell apoptosis)

choline cdp 500 MG 1-0-1 (Potentially remyelinating)

ursolic acid 250MG 1-0-2 (Potentially remyelinating)

lions mane 5.5G 1-0-2 (Boosts NGF)

NAC 1G 1-0-1 (Anti Inflammatory)

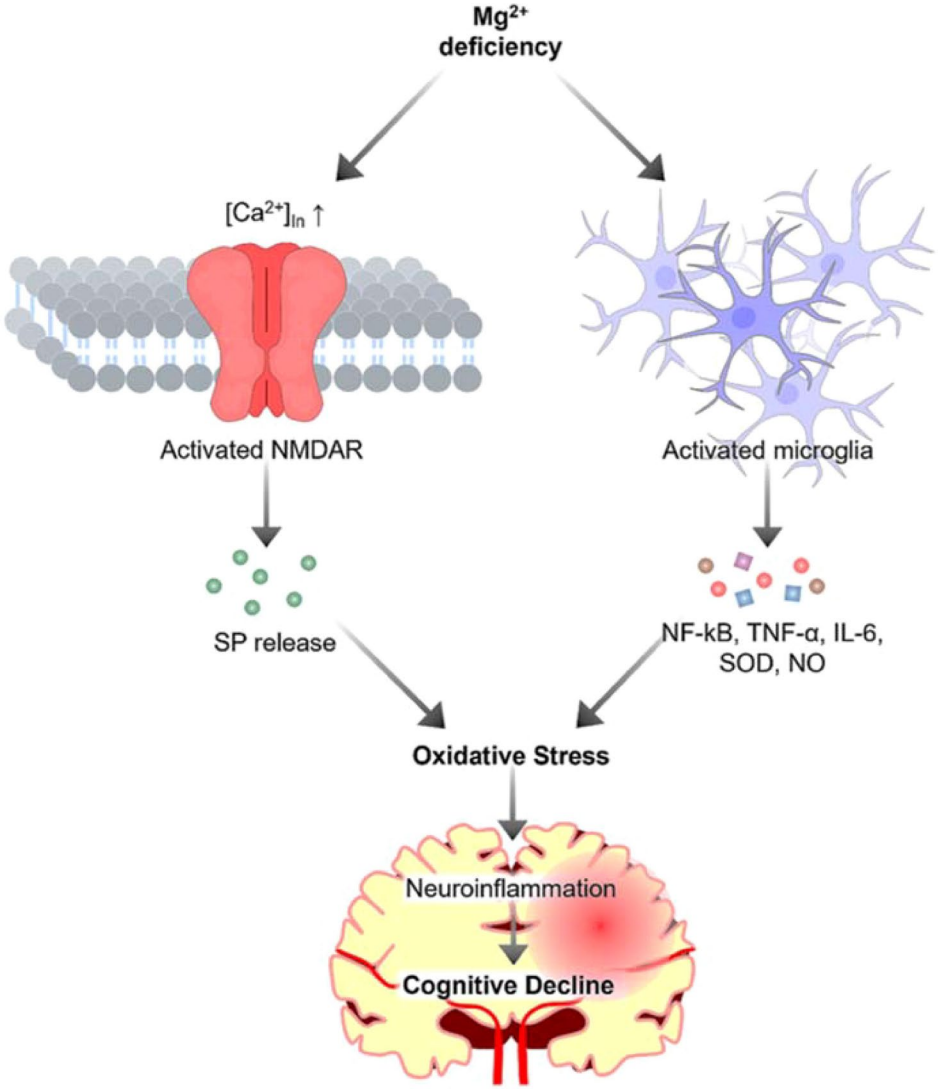
PQQ 20MG 1-0-0 (Mitochondrial health)

Creatine 2.5G 1-0-1 (Mitochondrial health / muscle strength)

Magnesium

- Contributes to energy production, nerve signal transmission, muscle contraction
- High in green leafy vegetables, legumes, nuts, seeds.

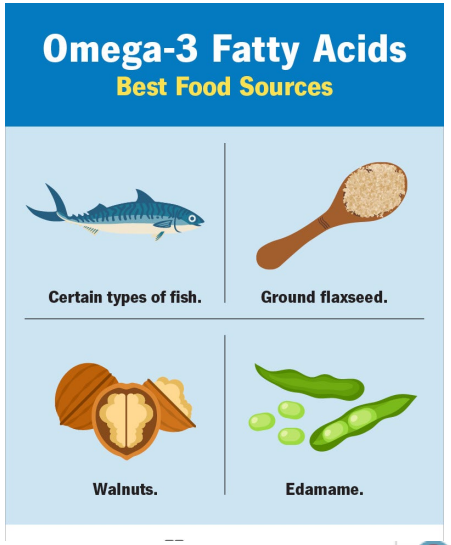
- In MS:
  - Helps with constipation, muscle spasms
  - Topical magnesium helps with muscle soreness and sleep
  - Citrate and glycinate have lower GI side effects
  - L-threonate may improve brain aging *in rats*
- Side effects: nausea/diarrhea, cardiac

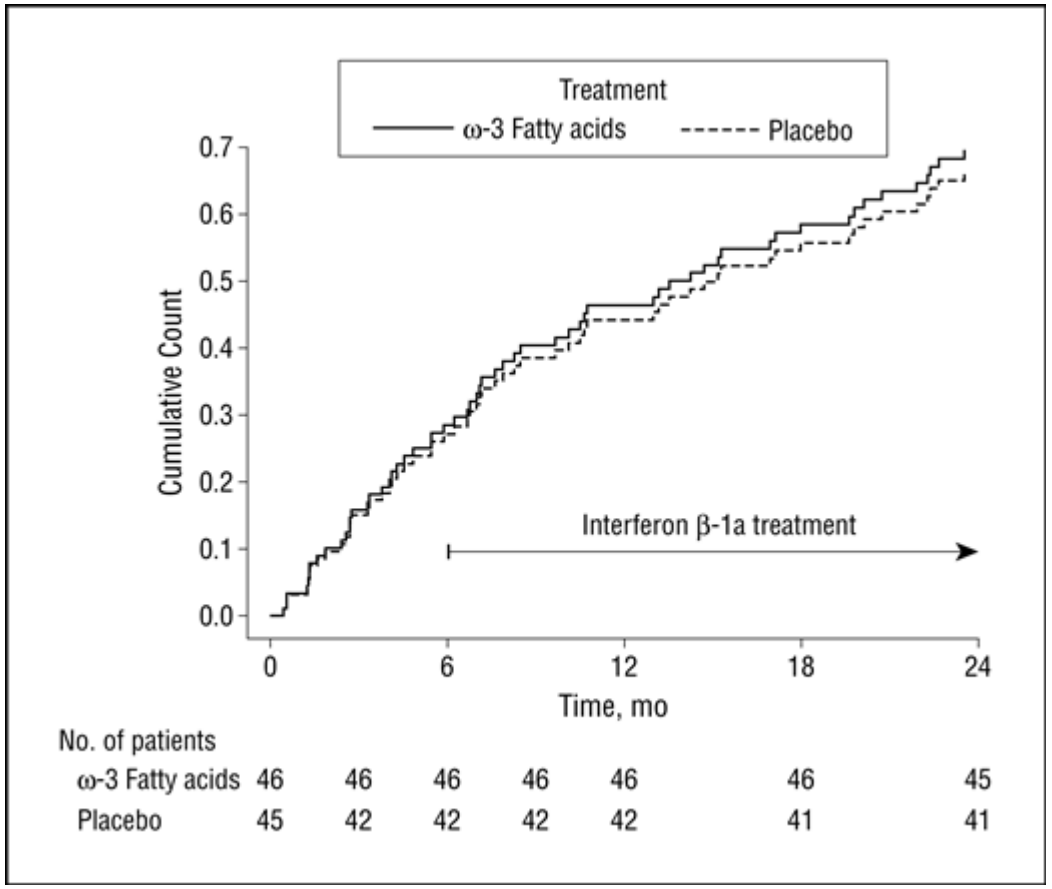


Patel et al. Front. Endocrinol. 24 Sept 2024 (Vol 15)

Omega-3 fatty acids

- Essential fatty acid with anti-inflammatory and neuroprotective effects.
- Mild side effects: bad breath, heartburn, diarrhea





Torkildsen et al. JAMA Neurol. 2012; 69; (8): 1044-1051

Diet and omega-3 and vitamin D supplement use predict five-year fatigue and disability trajectories in people with multiple sclerosis

Xin Lin [a,b], Amin Zarghami [b,c], George A Jelinek [a], Steve Simpson-Yap [a,b,d], Sandra Neate [a], Nupur Nag [a,*]

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[b] Menzies Institute for Medical Research, University of Tasmania, Hobart, TAS, Australia
[c] Royal Hobart Hospital, Hobart, TAS, Australia
[d] Clinical Outcomes Research Unit, Royal Melbourne Hospital, Melbourne, VIC, Australia

ARTICLE INFO

Keywords:
Multiple sclerosis
Lifestyle
Group-based trajectory modelling
Health outcomes
Prospective study

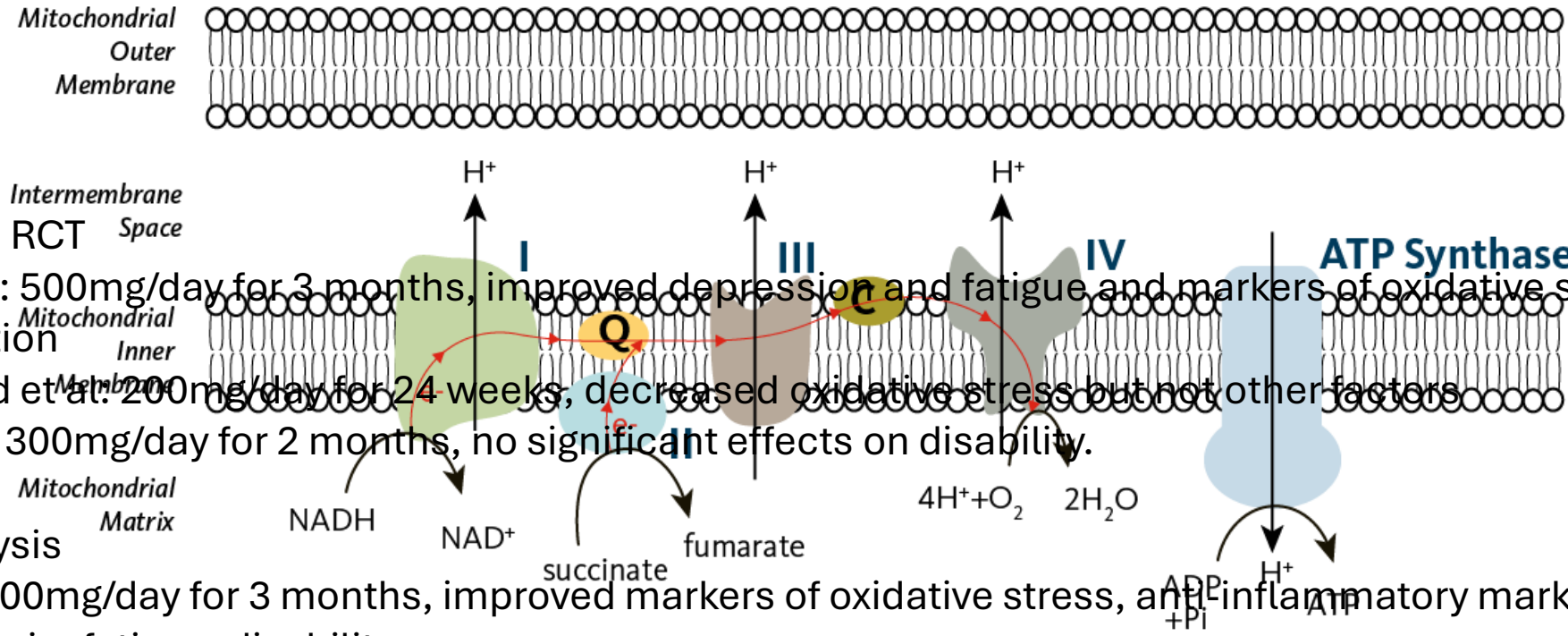
ABSTRACT

Background: Fatigue and disability are indicators of disease progression experienced by many people with multiple sclerosis (pwMS). Understanding trajectories of these outcomes, and their predictors, may provide insight to potential interventions for MS management.
Methods: Survey data from 839 pwMS from the Health Outcomes and Lifestyle in pwMS study were analysed. Fatigue was defined as mean Fatigue Severity Scale >5, and severe disability as Patient Determined Disease Steps >5. Group-based trajectory modelling was used to identify fatigue and disability trajectories over five-years. Dietary predictors associated with outcome trajectory group membership were assessed using log-binomial regression. Demographic and clinical characteristics were considered in multivariable models.
Results: Distinct trajectories for fatigue and disability were identified. For fatigue, 58 % of pwMS were assigned to low-, and 42 % to high-, fatigue trajectory groups. For disability, 85 % of pwMS were assigned to low-, and 15 % to high-, disability groups. Baseline high-quality diet, and omega-3 and vitamin D supplement use, were associated with reduced risk of being in high-fatigue and high-disability trajectories, while meat and dairy consumption were associated with increased risk.
Conclusions: A high-quality diet, avoiding meat and dairy, and omega-3 and vitamin D supplement use, individually predict better fatigue and disability trajectories. Dietary modifications should be considered in MS management.

CoQ10

- Placebo-controlled RCT
  - Sanoobar et al: 500mg/day for 3 months, improved depression and fatigue and markers of oxidative stress and inflammation
  - OmranWaheed et al: 200mg/day for 24 weeks, decreased oxidative stress but not other factors
  - Ebrahimi et al: 300mg/day for 2 months, no significant effects on disability.
- Retrospective analysis
  - Moccia et al: 200mg/day for 3 months, improved markers of oxidative stress, anti-inflammatory markers, symptoms of pain, fatigue, disability
- Semi-experimental
  - Ahmadi et al: 200mg/day for 2 months, no significant changes in serum level of inflammatory markers
  - Nakhzari Khodakheir et al: 200mg/day for 2 months, no significant change in BDNF and NGF
- Side effects: digestive upset, headaches, insomnia

Figure 2. Mitochondrial Electron Transport Chain



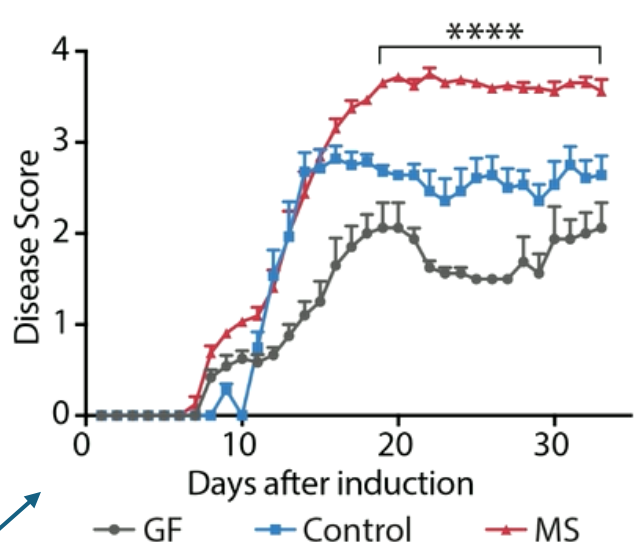
Coenzyme Q_{10} is a lipid-soluble component of the mitochondrial inner membrane that is critical to electron transport (in red) in the mitochondrial respiratory chain. Coenzyme Q_{10} carries electrons from complex I and complex II to complex III in the electron transport chain. *C, cytochrome C; e-, electron; H+, protons; Q, coenzyme Q.*

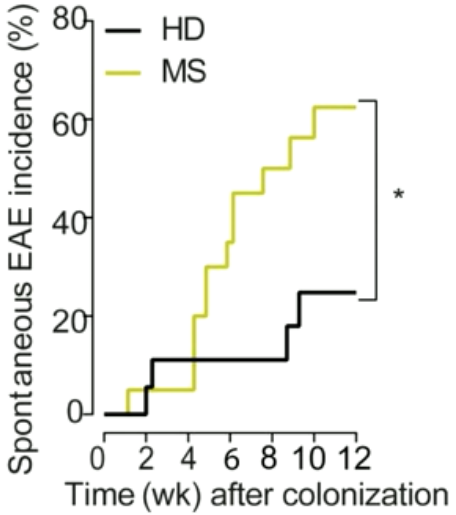
OSU Linus Pauling Institute. Micronutrient Information Center

Salekzamani et al. MSARD. 93 (2025)

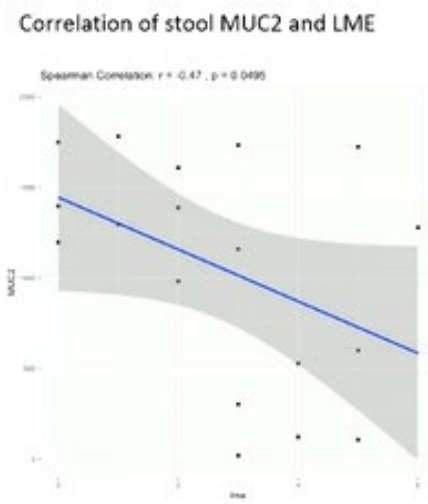
Microbiome

- Human microbiome helps balance immune response
  - Dysbiosis → increases inflammatory immune response
- Transplanting microbiota into mice can induce EAE
- Gut microbiota are associated with brain MRI measures in MS
- Trials evaluation probiotics and fecal-transplantation ongoing

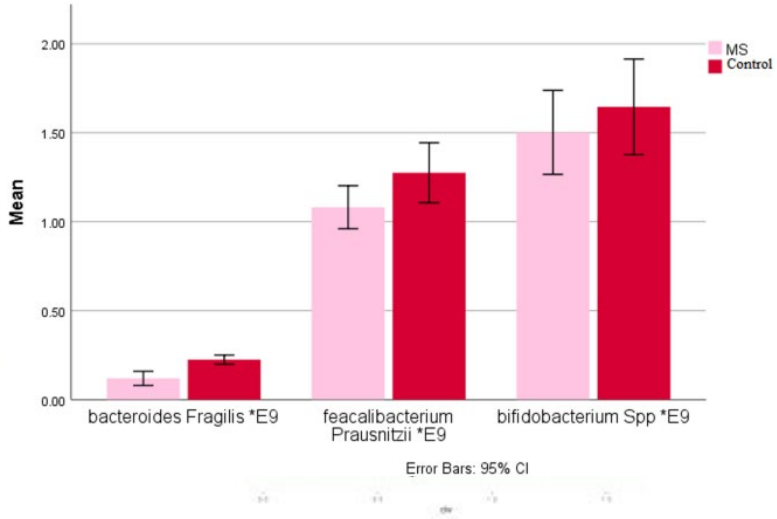




Cekanaviciute et al. PNAS 2017



Berer et al. PNAS 2017



Baranzini et al. ECTRIMS 2024; Rasoulian et al. Sci Rep 15, 36009 (2025)

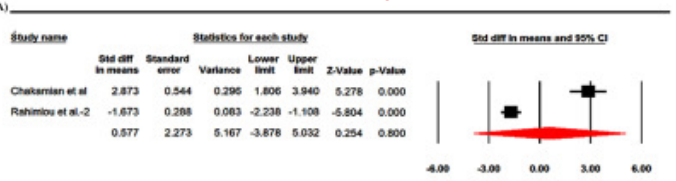
Probiotic supplements

The effect of probiotic supplementation on the clinical and para-clinical findings of multiple sclerosis: a randomized clinical trial

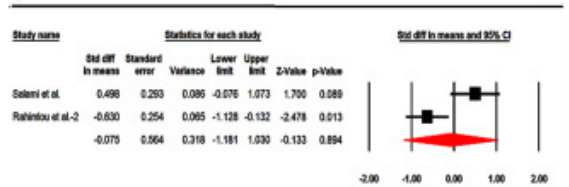
Kimia Motlagh Asghari[1], Neda Dolatkhah[1]✉, Hormoz Ayromlou[2], Fatemeh Mirnasiri[2], Taher Dadfar[2] & Maryam Hashemian[3]

Multiple Sclerosis (MS) is a chronic demyelination disease of the central nervous system (CNS). The gut-brain axis involves communication between the nervous, endocrine, and immune systems. Probiotics can positively impact immune and inflammatory responses by regulating gut microbiota. A total of 40 MS patients (average age of 34.38 ± 6.65) were examined to determine the effect of the *Saccharomyces boulardii* supplement for four months compared to a placebo. The results showed that the *Saccharomyces boulardii* significantly decreased the inflammatory marker high-sensitivity C-reactive protein (hs-CRP) compared to the placebo ($P < 0.001$). The serum antioxidant capacity (TAC) also increased significantly in the probiotic group compared to the placebo ($p = 0.004$). Both the probiotic and placebo groups showed a reduction in the oxidative stress indicator malondialdehyde (MDA), but there was no significant difference between the two groups. Pain intensity (measured by Visual Analogue Scale) and fatigue severity (measured by Fatigue Severity Scale) significantly decreased in the probiotic group compared to the placebo ($p = 0.004$ and $p = 0.01$, respectively). The probiotic group experienced significant improvement in some quality of life scales (measured by 36-Item Short Form Survey) and somatic and social dysfunction subscale of General Health Questionnaire scores compared to the placebo group ($p = 0.01$). The study suggests that the *Saccharomyces boulardii* probiotic supplement may benefit inflammatory markers, oxidative stress indicators, pain, fatigue, and quality of life in MS patients.

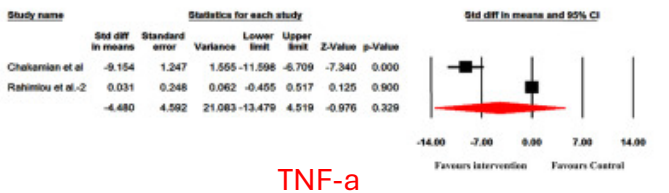
IFN-a



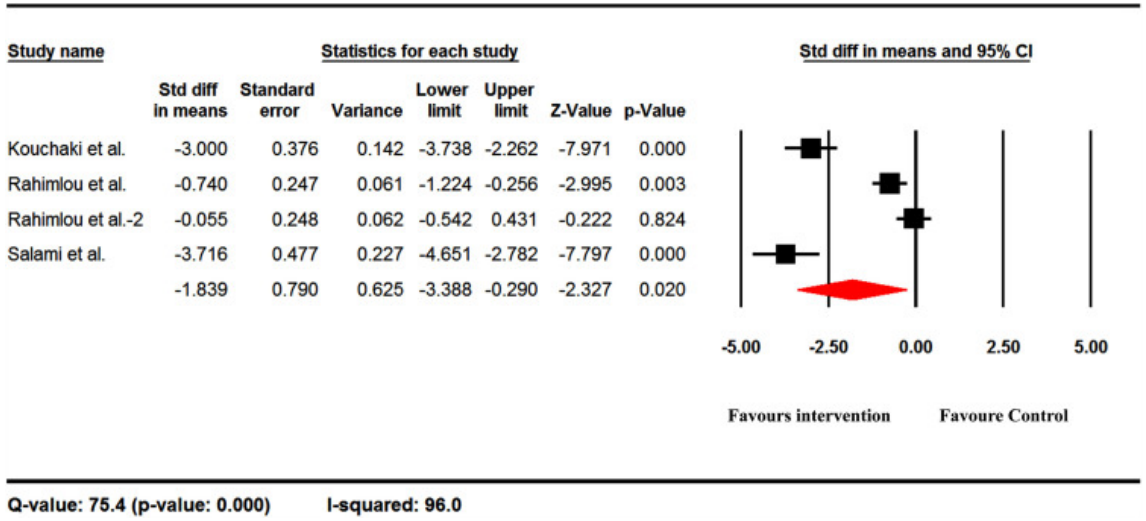
IL-17



TNF-a

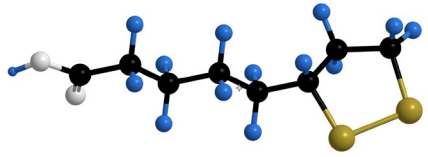


EDSS



Zangeneh et al. PLoS One. 2025 Apr 24;20(4):e0319755

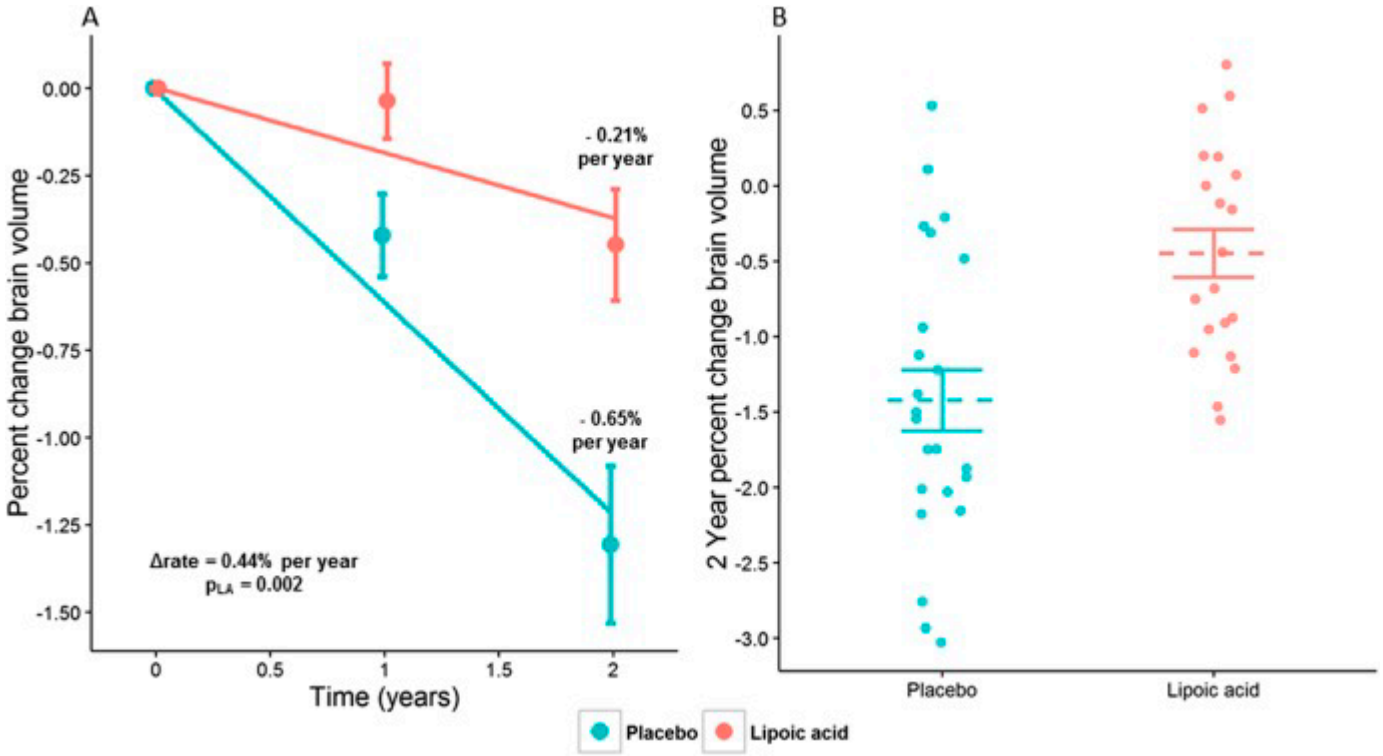
Lipoic acid



alpha lipoic acid

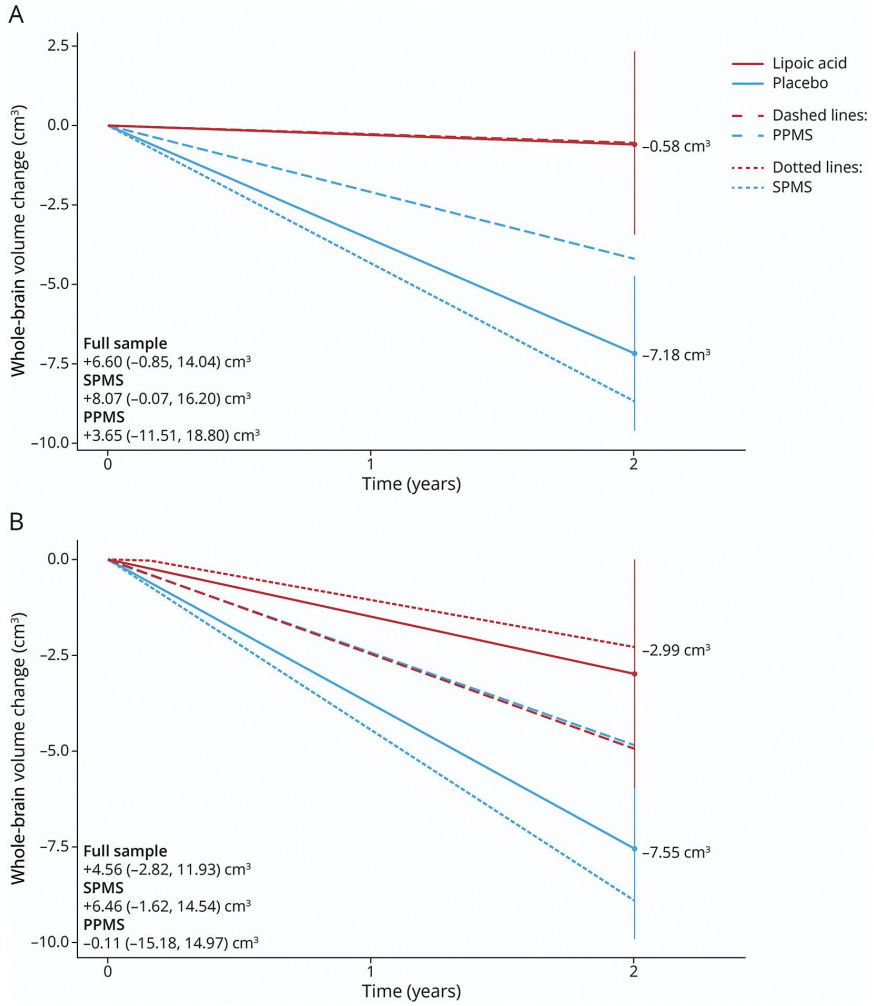
- Endogenous fatty acid, essential co-factor in mitochondrial respiration
- Antioxidant, attenuates microglial activation
- Side effects: GI upset, rash

Differences in brain atrophy in SPMS



Spain et al. Neurol Neuroimmunol Neuroinflamm. 2017 June 28

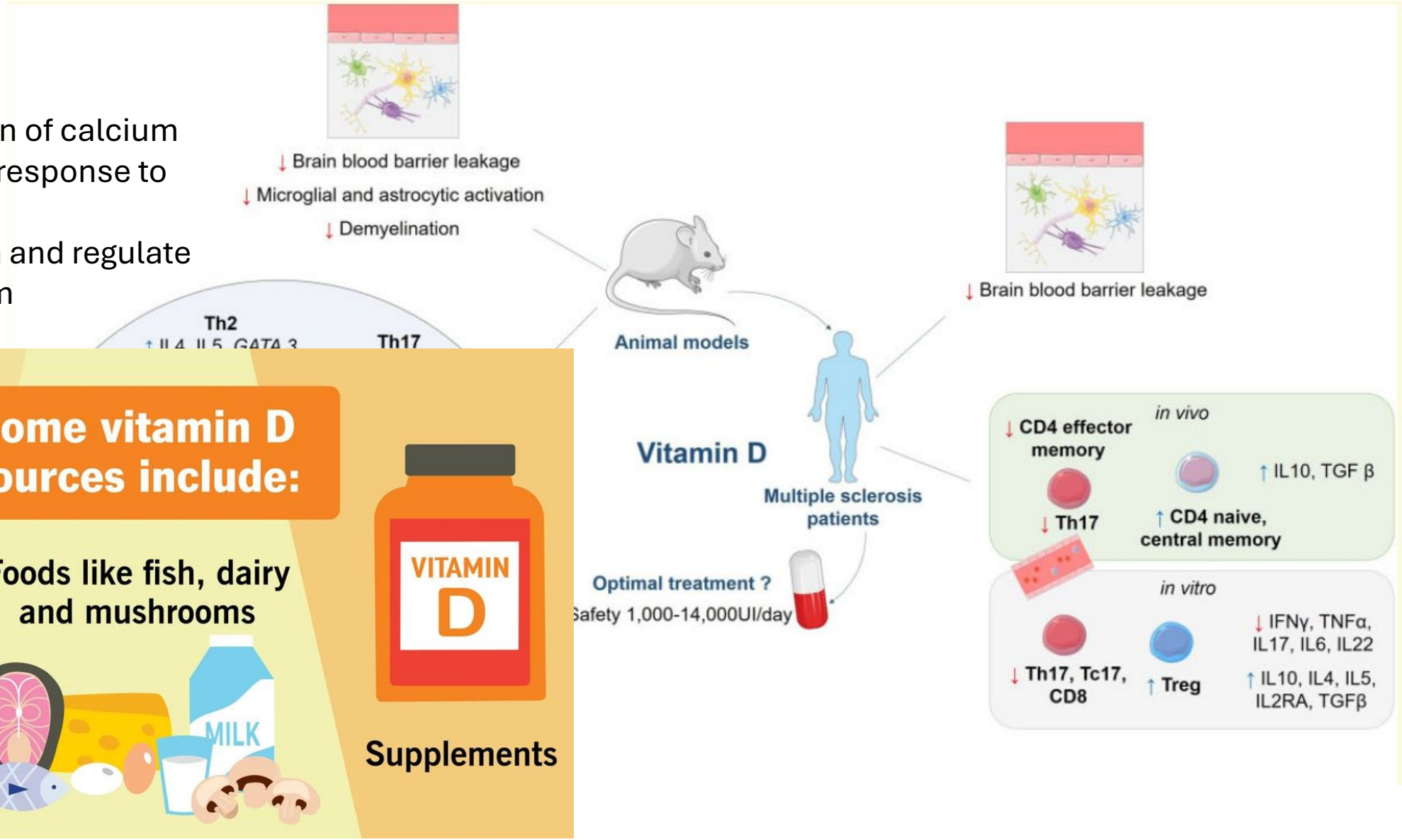
Differences in brain atrophy in PMS



Spain et al. Neurology. 2026 Jan 13

Vitamin

- Promote absorption of calcium
- Supports immune response to infections
- Limit inflammation and regulate the immune system



Galoppin et al. Brain Commun . 2022 Jun 30;4(4):fcac171

JAMA®

QUESTION Does high-dose vitamin D
typical for multiple sclerosis (MS)?

CONCLUSION Oral high-dose choleca

POPULATION

211 Women
92 Men

Untreated patients with CIS aged 18 to 55 years with CIS duration less than 90 days

Median age: 34 years

INTE

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LOCATIONS

36
MS centers
in France

PRIM

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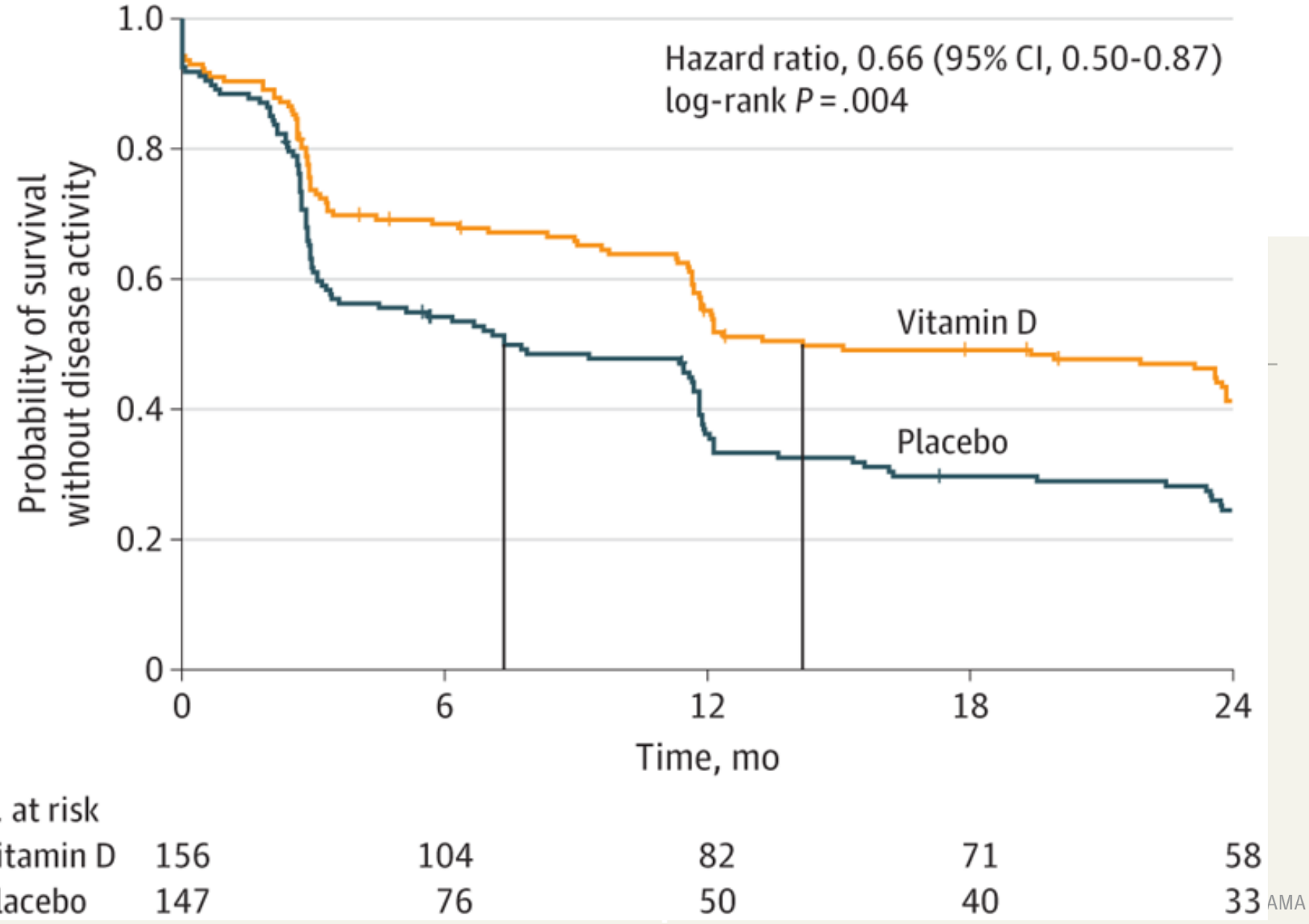


AMA

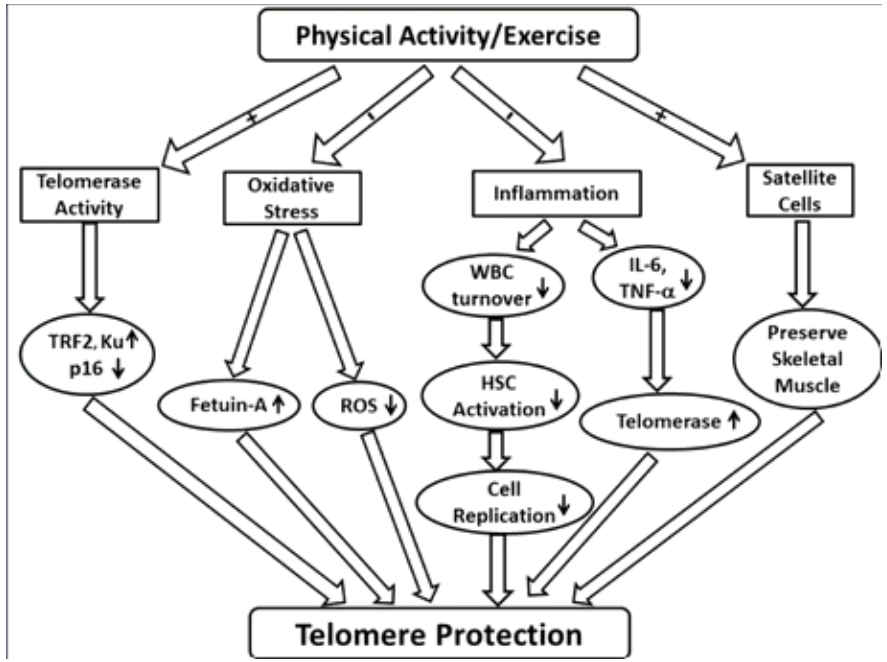
Thouvenot E, Laplaud D, Lebrun-Frenay C, et al; D-Lay MS Investigators. High-dose vitamin D in clinically isolated syndrome typical of multiple sclerosis: the D-Lay MS randomized clinical trial. *JAMA*. Published online March 10, 2025. doi:10.1001/jama.2025.1604

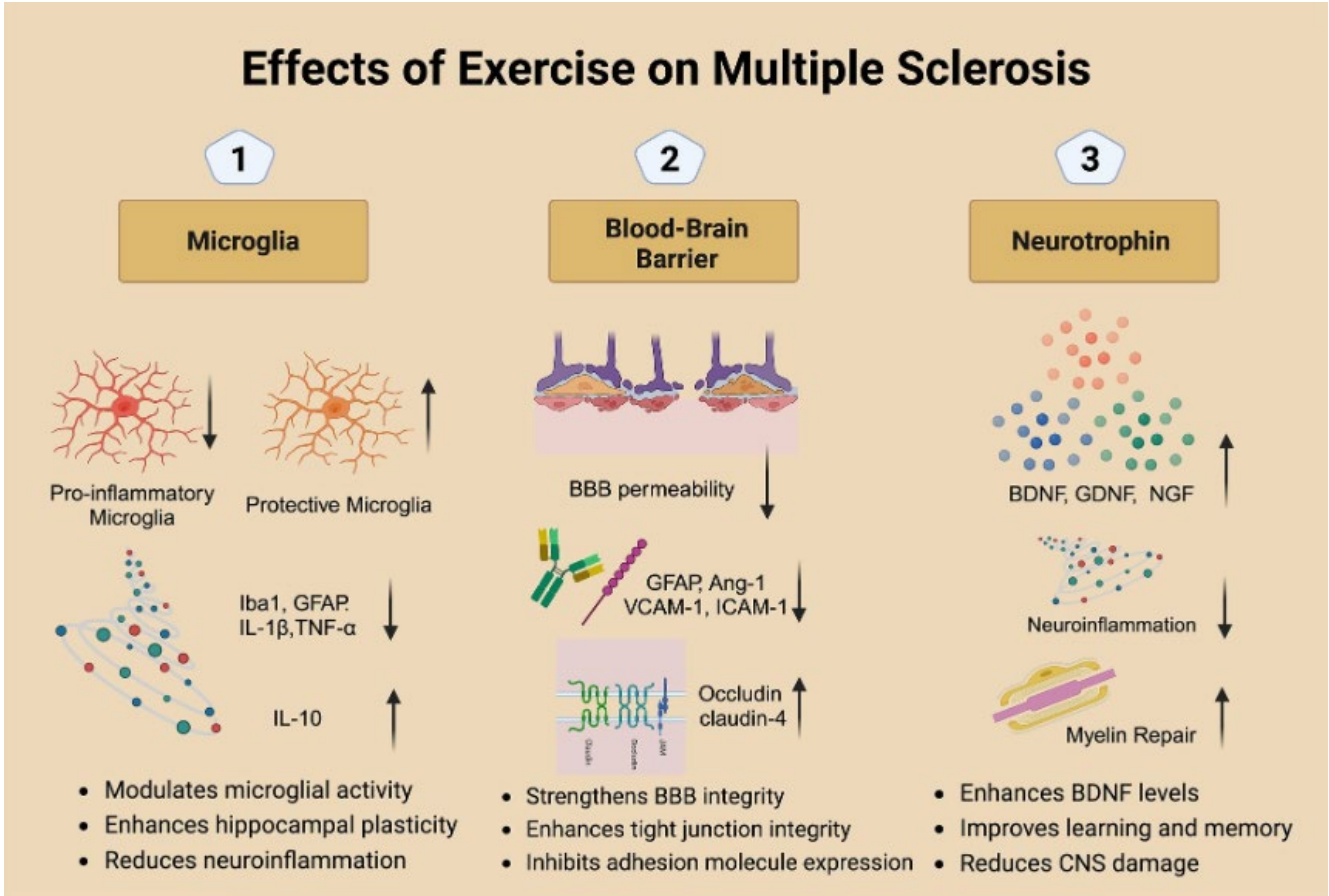
- The U.S. Food and Drug Administration (FDA), which studies medications, does not test supplements before consumers buy them. But they do require supplement manufacturers to adhere to Current Good Manufacturing Practices (CGMP) to ensure the quality and safety of these products.
- To ensure the quality and safety of a product, look for supplements that have been certified by a third-party testing organization such as NSF ↗ , USP ↗ , Banned Substances Control Group ↗ or ConsumerLab ↗ .
- Some supplements (e.g., Echinacea, elderberry), when used regularly, may actually worsen MS by overstimulating the immune system.
- Some supplements may interfere with medications or medical conditions and may not be safe to use.
- Taking high doses of any supplement may cause health issues.

In some cases, scientific information about the actual risks and possible benefits is very limited. These supplements should never replace conventional MS medications or treatments. Before taking any supplement, talk to your doctor to determine what is right for you (e.g., type of supplement, form, dose).


BENEFIT
RISK

Exercise





Du et al. Front. Cell. Neurosci., 15 October 2024; Graves, ECTRIMS 2025

What to do next?

- Emp
  - F
- Diss
  - I
  - C
  - N
- Desi
- Acce
- Succ

medicine

ment

hanges

- Create a safe space
  - Ask about supplements
  - Ask about procedures
  - Avoid dismissing or chastising
- Demonstrate interest and humility
- Shared decision making
  - Prioritize safety
  - Collaborate and negotiate
  - Explore evidence together
- Educate

APPROVED DMTS FOR MS

INJECTION

Avonex
Betaseron
Copaxone
Extavia
Kesimpta
Ocrevus Zunovo
Plegridy
Rebif

ORAL

Aubagio
Bafiertam
Gilenya
Mavenclad
Mayzent
Ponvory
Tascenso ODT
Tecfidera
Vumerity
Zeposia

INFUSION

Briumvi
Lemtrada
Mitoxantrone
Ocrevus
Tysabri

MULTIPLESCLEROSISNEWSTODAY.COM

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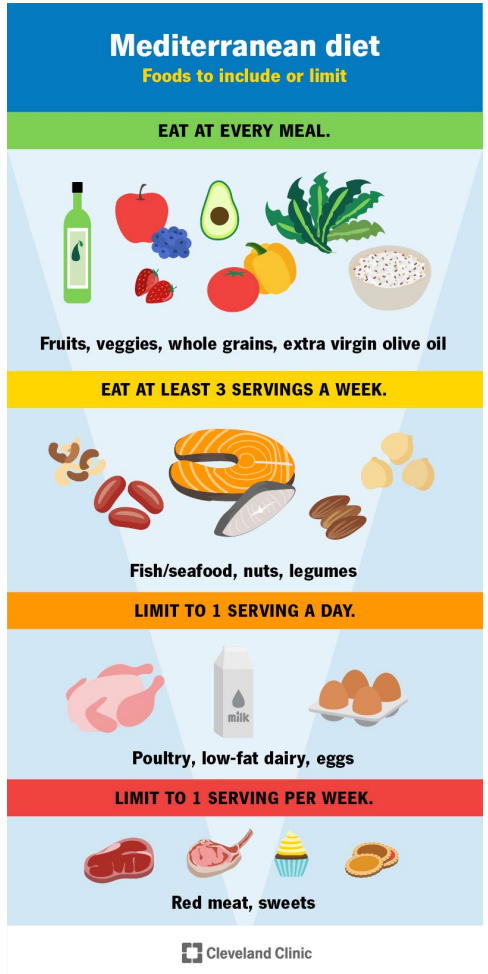

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Questions?

jenny.feng@ochsner.org