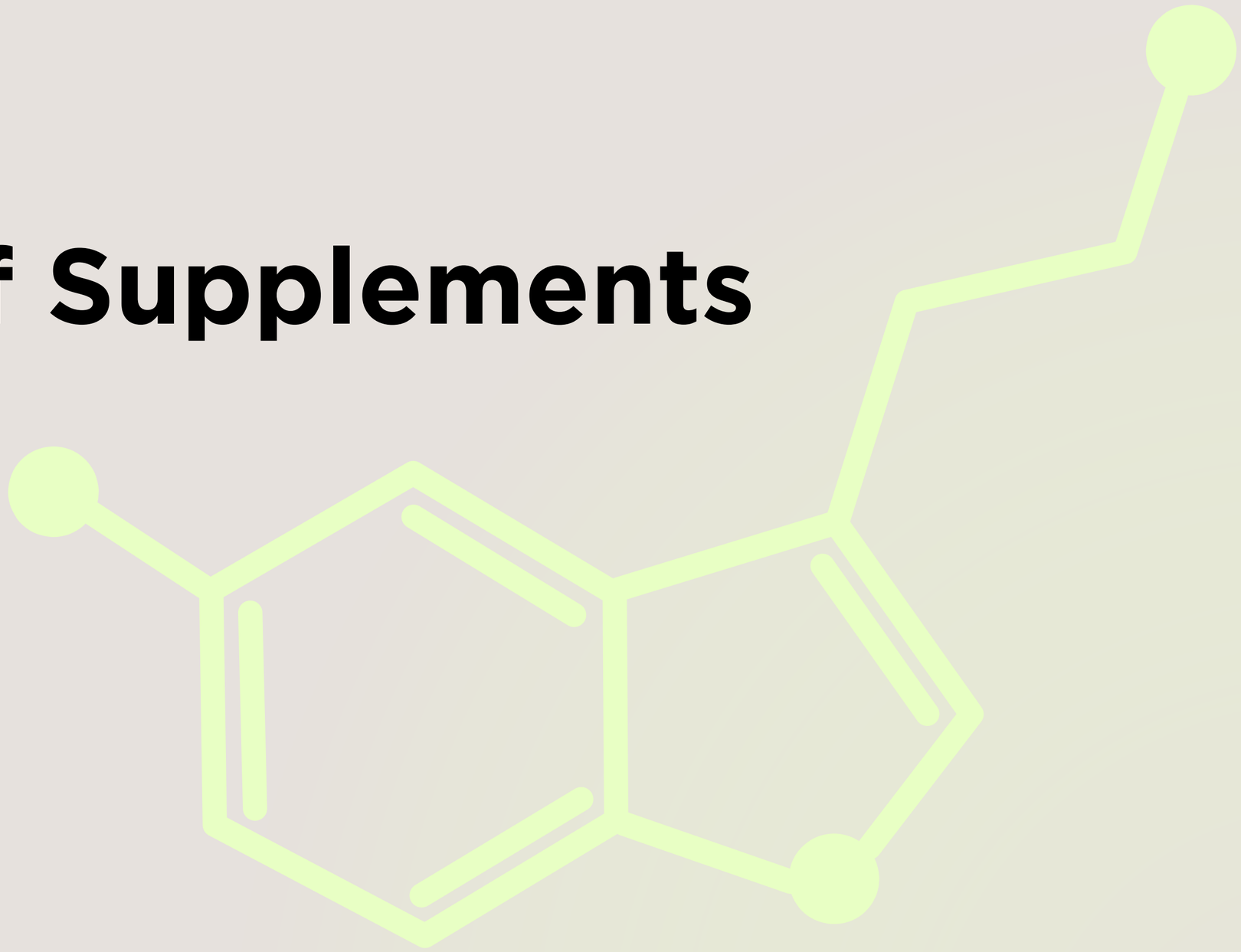
DESCI NYC

Science of Supplements

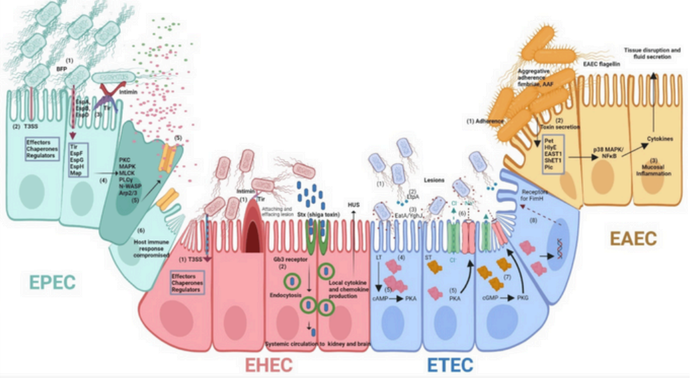


Dr. Kirten Parekh

February 2025

01

A HEALTH EQUATION



Impression:

- Colitis, as described above. Rule out infectious (including viral) or chronic inflammatory bowel disease.

Plan:

- Resume previous diet
- Continue with current medication
- Follow up biopsy results

Repeat colonoscopy is recommended, the timing interval to be determined following review of pathology results.

Duodenum: Moderate erythema in bulb and 2nd portions suggestive of duodenitis, biopsies taken with cold forceps and sent to laboratory.

Impression:

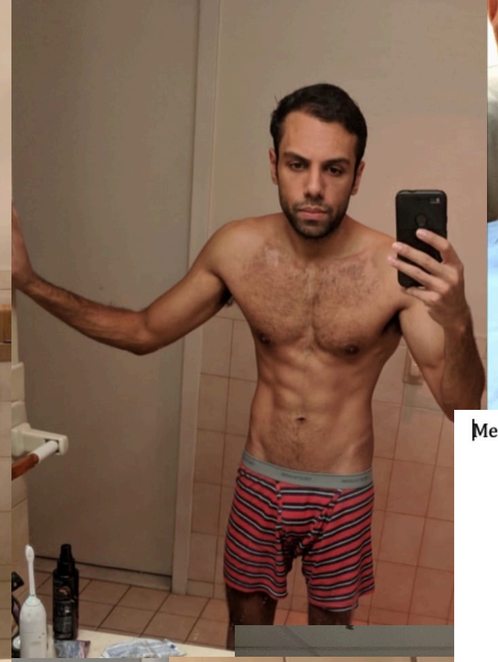
- Gastritis
- Duodenitis

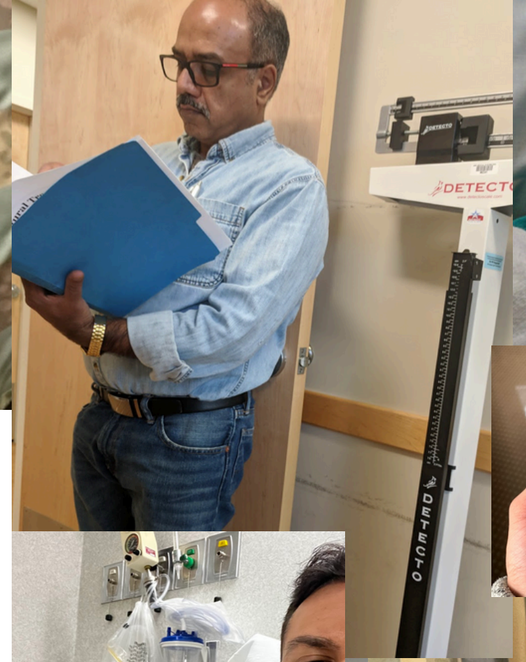
Plan:

- Resume previous diet
- Continue current medications

Timeline:

- Oct 2017 1lb per week weight loss
  - Started UCERIS- no results after 6 weeks
  - Also tried Ijalda no results after 2 months
  - Positive blastocystis hominis
- January 2018 lost 30 lbs down to 110lbs
  - Positive Giardia stool sample (questionable)- took Alinia
- Feb 2018
  - Negative CT scan
- Feb 2018
  - Negative Scope showed absolutely no inflammation, but I was down 30 lbs
  - During this time I had numerous stool samples, blood work etc and testing all negative- one showed Candida- blasto
- March 2018
  - Sibo test inconclusive, went on xiafaxin for 12 days
  - No weight gain
- April 2018
  - Pill test- showed SEVERE duodenoal inflammation, otherwise inconclusive
- May 2018
  - Started phlebotomy to lower ferritin to levels before infusion to see if its related. As of April 2019 it is now at 130,
- July 2018
  - Loose stool and severe pain after hike in Canada
  - Scope showed pan colitis
- August 2018
  - Went on flagyl
    - No results, no weight gain
  - Started Huimera as per doc rec for CHRONS based on original path slides sent to Sinai to be looked at by specialist who said I might have chrons in colon
- Feb 2019
  - No results from humera after 8 months, no weight gain so stopped Huimera
- March 2019
  - Scope showed very mild inflammation in transverse and descending colon, mild
- March 2019
  - Prometheus test showed negative for chrons or any sort of IBD
- April 2019
  - Spontaneous stool test showed ecoli infection
  - Went on Bactrim ds
  - No weight gain
- Feb 2020 started prednisone and xelianz which brought me out of "flare" and helped me gain weight up to 132lbs but then after 6 months kept having symptoms of weight loss despite therapy
- May 2022- listeria infection went on abx and went away
- March 2023- started bile acid binder- gained 5lbs but couldn't hold it but felt decent
- March 2023- Clear scope on upper and lower
- May 2023- flare with bleeding with severe weight loss over 2 weeks .3lbs per day



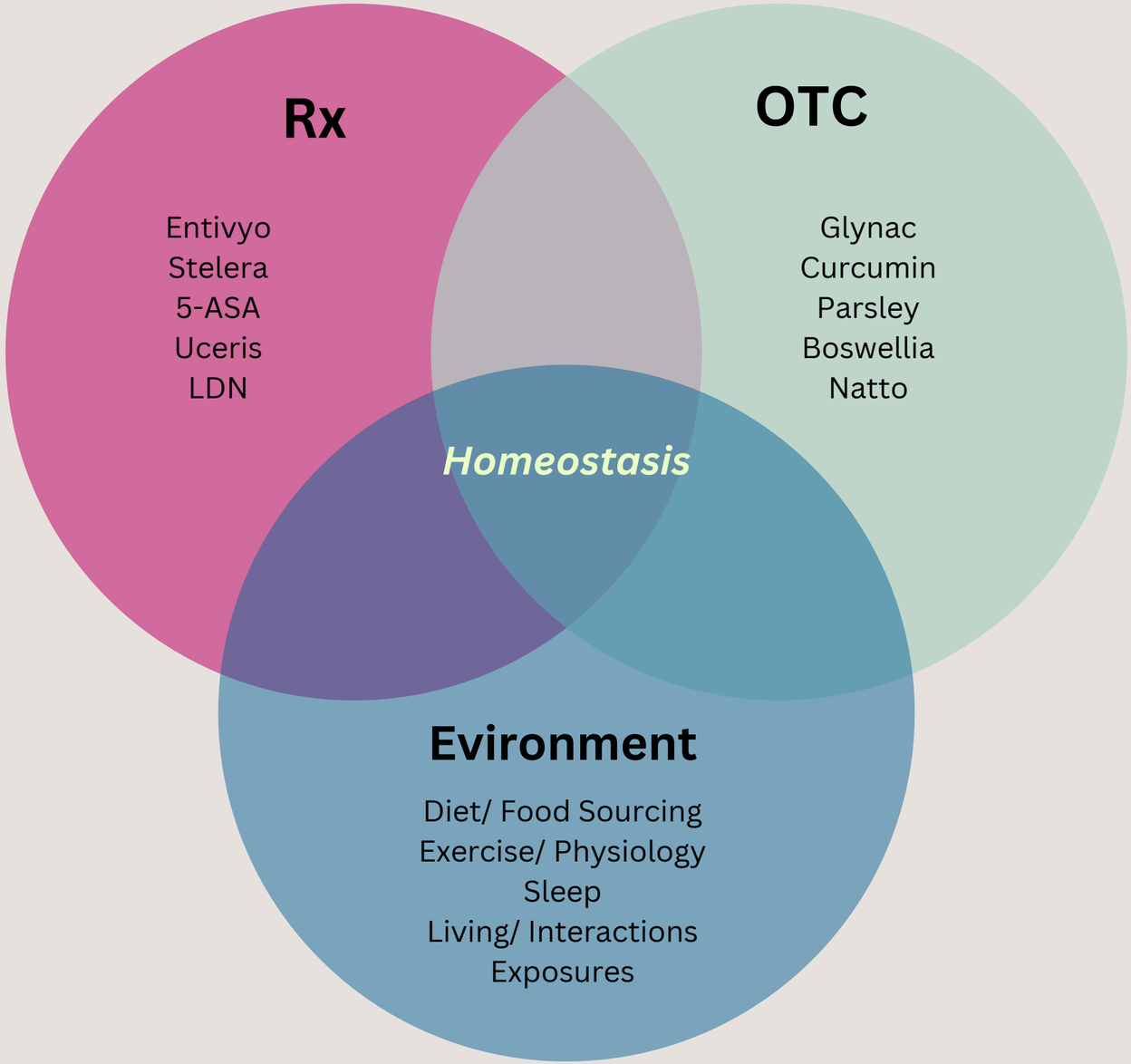






Medications/ supplements I have tried

- Mesalamine oral/ enema
- Pancreatic enzymes
- OTC digestive enzymes
- Bile acid promotors
- Humera 8 months
- Uceris 6 weeks
- Every probiotic known to man
- Pre biotics
- Kate farms formula for weight gain
- Rutin, butyrate, turmeric, colostrum, NAC, NAG, l-Glutamine, Collagen
- Xiafaxin 14 days
- Flagyl 5 days x 2 -2019; 2023 (for 3 days)
- Bactrim DS 7 days
- Ivermectin
- 2'fl
- Pantoprazole- 2 weeks
- Dexilant- 2 weeks
- Famotodine 4 weeks
- Zinc l-carnosine
- Carafate
- Xeljanz 16 months
- Stelera 6 months


Rx
Entivyo
Stelera
5-ASA
Uceris
LDN
OTC
Glynac
Curcumin
Parsley
Boswellia
Natto
Homeostasis
Evironment
Diet/ Food Sourcing
Exercise/ Physiology
Sleep
Living/ Interactions
Exposures

Problem & Solution

Factor	Description	Key Studies	Key Interconnections	Potential Interventions	Stratification Approach
Genetic Contribution	Multiple genome-wide association studies (GWAS) have identified >200 IBD risk loci.	de Lange et al., Nature Genetics (2017); Huang et al., Nature (2017); Jostins et al., Nature (2012)	Links to autophagy, barrier function, ER stress response	Genetic screening, Gene editing, Pathway-specific targeting	NOD2 status, ATG16L1 variants, Risk allele burden score
Inflammatory Cytokine Production	Overproduction of pro-inflammatory cytokines.	Friedrich et al., Nature Medicine (2021); West et al., Nature (2017); Neurath et al., Nature Reviews (2020)	Impacts T cell differentiation, barrier function	Anti-TNF, IL-23 inhibitors, JAK inhibitors	Serum cytokine profiles, TNF response signature
Environmental Factors	Smoking, stress, sleep, pollution impact.	Ananthakrishnan et al., Cell (2020); Ni et al., Nature (2017); Monteleone et al., Nature Reviews (2020)	Affects microbiome, oxidative stress	Lifestyle modifications, Stress management	Environmental exposure score, Stress levels
Dysbiosis	Altered microbiome composition.	Lloyd-Price et al., Nature (2019); Franzosa et al., Nature Microbiology (2019); Chu et al., Nature (2016)	Influences SCFA, immune regulation	FMT, Probiotics, Diet modification	Microbiome signature, Metabolomic profile
Metabolic Reprogramming	Shifts in cellular metabolism.	Buck et al., Cell (2015); Czarnewski et al., Cell Metabolism (2019); Russell et al., Nature Communications (2019)	Links to immune function, mitochondria	Metabolic modulators, AMPK activators	Metabolomic profiling, Glycolytic index
TH17/Treg Balance	Immune homeostasis disruption.	Britton et al., Cell (2019); Omenetti et al., Nature Medicine (2019); Hazenberg et al., Immunity (2019)	Connected to cytokines, microbiome	IL-23 inhibitors, RORγt antagonists	Th17/Treg ratio, IL-17 levels
Mucosal Integrity	Breakdown of barrier function.	Zéissig et al., Nature Reviews (2019); Blander et al., Nature Reviews (2017); Nowarski et al., Nature Immunology (2017)	Connected to microbiome, immune response	Barrier enhancers, Junction modulators	Permeability testing, Barrier protein expression
ILC Dysregulation	Disrupted innate lymphoid cells.	Castellanos et al., Science (2018); Melo-Gonzalez et al., Nature Reviews (2019); Geremia et al., Nature Immunology (2019)	Affects barrier function, cytokines	IL-22 pathway modulators	ILC subset analysis, IL-22 response
Tissue Resident Memory T Cells	Inflammatory memory in gut.	Park et al., Cell (2019); Zundler et al., Nature Immunology (2019); Kumar et al., Science Immunology (2019)	Links to trained immunity, cytokines	Memory T cell depletion	TRM phenotyping, Response history
Autophagy Dysregulation	Impaired bacterial handling.	Matsuzawa-Ishimoto et al., Nature (2017); Conway et al., Nature Medicine (2019); Larabi et al., Nature Communications (2020)	Connected to mitochondria, ER stress	Autophagy enhancers, mTOR inhibitors	ATG16L1 status, Autophagy flux
SCFA Production	Reduced short-chain fatty acids.	Smith et al., Science (2013); Parada Venegas et al., Nature Communications (2019); Fachi et al., Nature Communications (2020)	Affects Tregs, barrier function	Butyrate supplementation, Fiber	Fecal SCFA levels, Fiber response
[illegible]	[illegible]	Agostini et al., Nature Communications [illegible]	[illegible]	Neuromodulators, Vagal	[illegible]

Problem & Solution

Rank	Name	Tier	Reasoning
1	Curcumin	1	Multiple RCTs in both UC/CD, comprehensive anti-inflammatory
2	Vitamin D	1	Strong correlation studies, clear deficiency links, multiple RCTs,
3	Boswellia	1	Multiple UC trials, comparable to mesalamine, specific 5-LOX in
4	NAC	1	Strong antioxidant/mucosal data, good clinical trials, glutathione
5	Omega-3s	1	Substantial evidence base, clear resolution pathways, mixed but
6	LDN	1	Growing clinical evidence, unique immune modulation, good safet
7	Zinc	2	Clear deficiency correlation, barrier support, Paneth cell functio
8	EGCG	2	Several trials, strong mechanisms, broad pathway effects
9	Tributyrin	2	Multiple trials, direct colonocyte fuel, strong barrier evidence, es
10	Statins	2	Multiple trials, clear mechanisms, immune modulation, requires
11	Sulforaphane	2	Strong Nrf2 activation, good mechanistic data, antioxidant supp
12	Berberine	2	Growing evidence, microbiome effects, AMPK activation
13	L-Glutamine	2	Primary enterocyte fuel, barrier support, multiple trials, mixed r
14	Andrographis	2	Several UC trials, traditional use, clear mechanisms
15	Beta-glucans	2	Strong immune data, growing IBD evidence, barrier support
16	Quercetin/Luteolin	3	Strong preclinical, limited clinical trials, mast cell effects
17	TUDCA	3	Growing evidence, unique bile mechanism, ER stress support
18	Phosphatidylcholine	3	Several UC trials, barrier specific, membrane support
19	Bromelain	3	Enzyme activity, moderate trials, proteolytic effects
20	BPC-157	3	Strong healing effects, limited trials, peptide-based

Name	Description	Brand	Food	Dose	Time of Day	Drivers
Parsley	Parsley leaf, contains luteolin and apigenin among other flavonoids.	Nature's Way	Empty Stomach	900mg,	Night	**Luteolin:** Reduces TNF-α, IL-6, IL-1β Inhibits NF-κB Mast cell stabilizer Reduces oxidative stress Reduces IL-17, Modulates T cell d Strengthens tight junctions Supports barrier function Reduces ER stress markers Supports protein folding **Apigenin:** Suppresses TNF-α and IL-6 Inhibits COX-2 expression Improves mitochondrial biogenesis Promotes autophagy Promotes TREG development, Re
Zinc	Zinc (picolonate); zinc plays a crucial role in maintaining intestinal barrier integrity, modulating the immune response, and reducing inflammation, potentially helping to improve symptoms and promote mucosal healing.	Now Trace Minerals	With Food	15mg	Morning	**Paneth cell function** Essential for defensin production Supports antimicrobial peptide sec **Mucosal integrity** Strengthens tight junctions Supports epithelial repair Essential for barrier protein format **Inflammatory cytokines** Reduces TNF-α and IL-6 Modulates NF-κB signaling **Supporting Mechanisms:** **ER stress** Acts as chemical chaperone Supports proper protein folding **Oxidative stress (ROS/H2O2)** Component of SOD enzyme Supports antioxidant systems **Autophagy** Supports autophagy pathways Helps cellular cleanup processes **Immune System Effects:** **T cell balance** Supports TREG development Modulates TH17 responses **Dendritic cells** Affects DC maturation Modulates antigen presentation **Additional Benefits:** **Intestinal regeneration** Supports stem cell renewal Essential for tissue repair **Mucin production** Required for proper mucin synthes Supports goblet cell function

“Discomfort is the Price of Admission to a meaningful Life”

Susan David Ph.D., HMS

02

FEEDING THE DECLINE:
MODERN HARVEST, HUMAN TOLL

Norman Borlaug

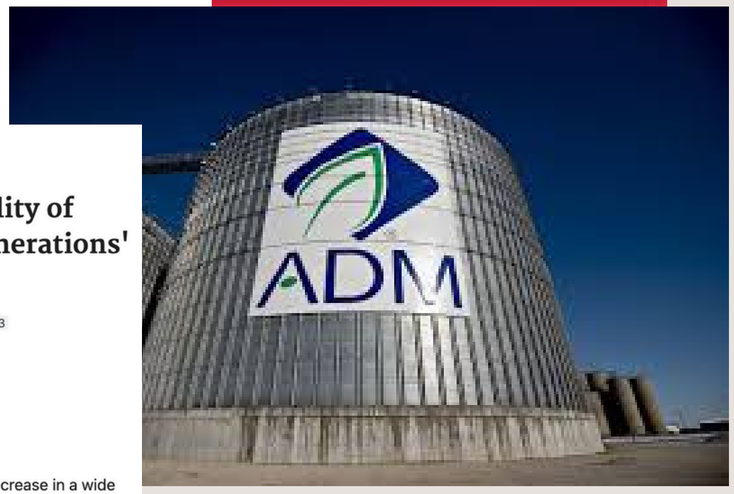
The crossing of genetic barriers; the inability of a single crop to fulfill all nutritional requirements; the decreased biodiversity from planting few varieties.

The environmental and economic effects of inorganic fertilizer and pesticides; the side effects of large amounts of herbicides sprayed on fields of herbicide-resistant crops

1. Health Issues: Decline in nutritional quality, increased gluten-related disorders, and promotion of processed foods.
2. Environmental Harm: Soil degradation, biodiversity loss, and reliance on chemical inputs.
3. Agricultural Impacts: Loss of crop diversity, monoculture dominance, and consolidation of farming industries.

Tyson Foods

syngenta



Review > Foods. 2024 Mar 14;13(6):877. doi: 10.3390/foods13060877.

An Alarming Decline in the Nutritional Quality of Foods: The Biggest Challenge for Future Generations' Health

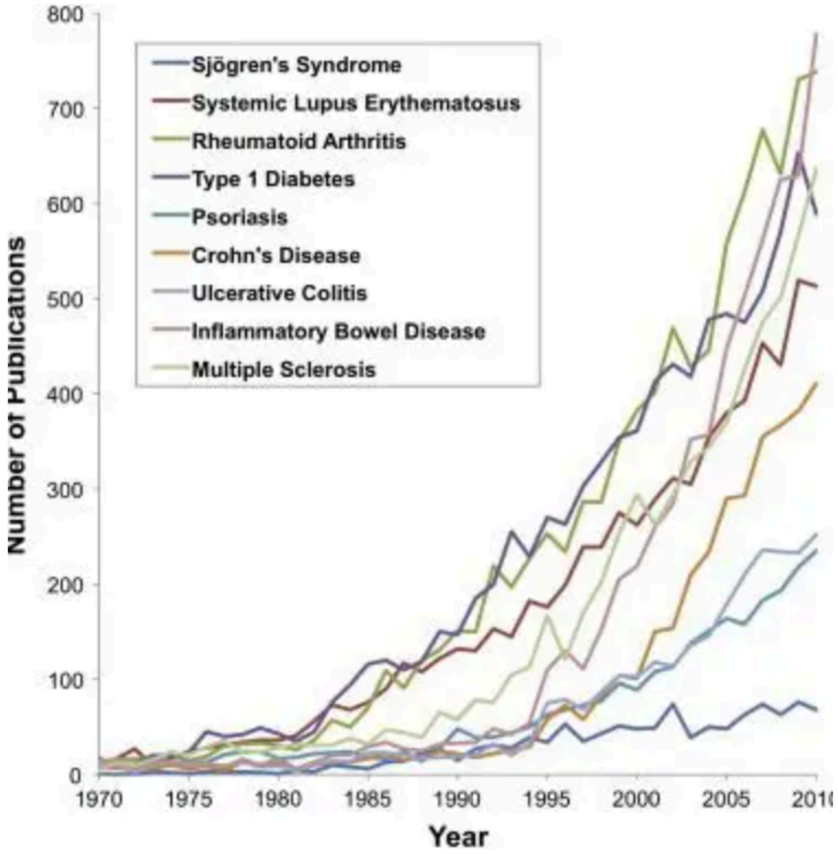
Raju Lal Bhardwaj [1], Aabha Parashar [2], Hanuman Prasad Parewa [1], Latika Vyas [3]

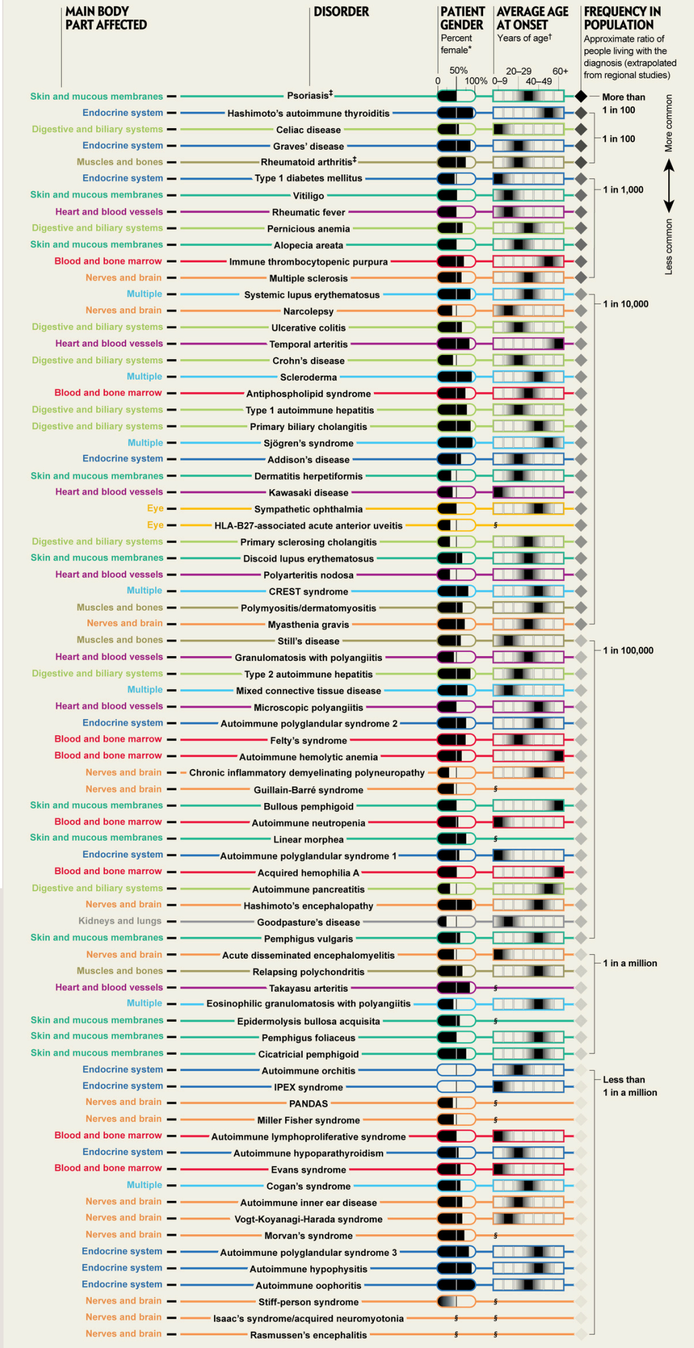
Affiliations + expand

PMID: 38540869 PMCID: PMC10969708 DOI: 10.3390/foods13060877

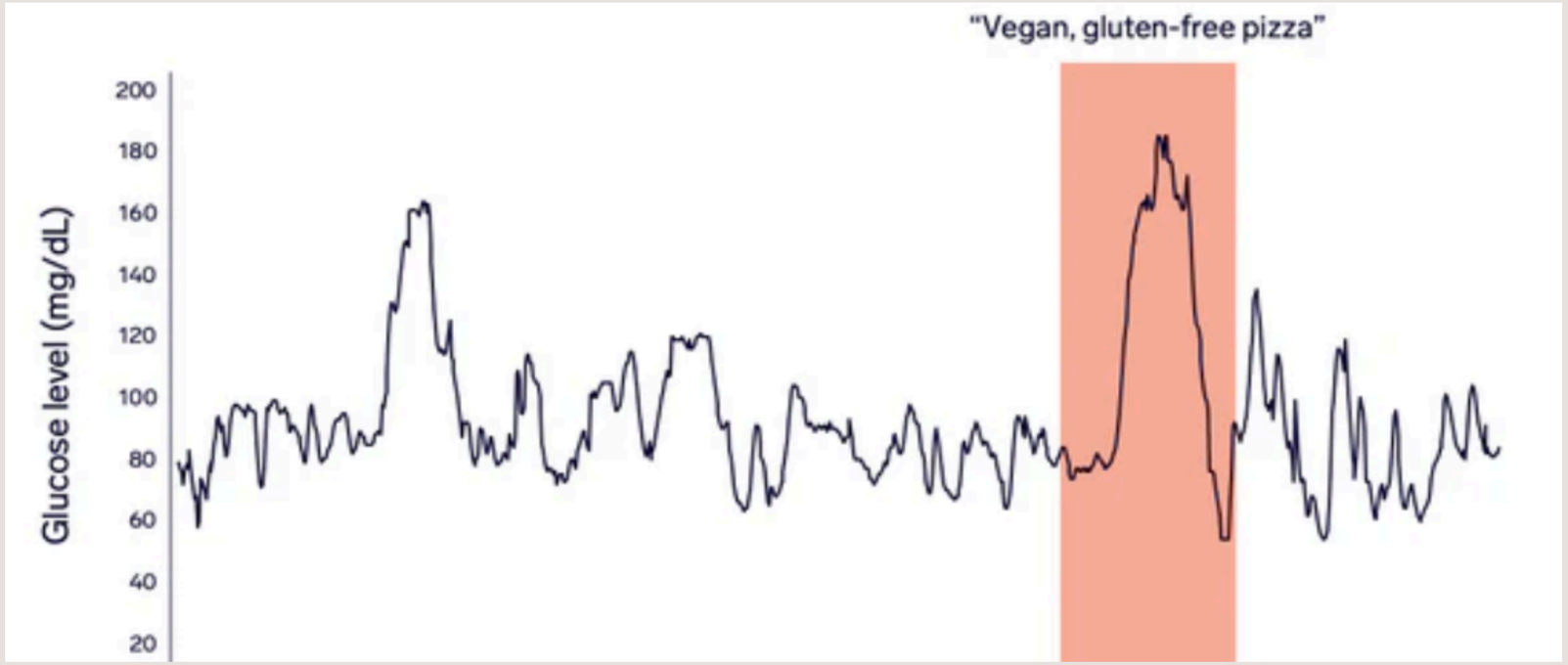
Abstract

In the last sixty years, there has been an alarming decline in food quality and a decrease in a wide variety of nutritionally essential minerals and nutraceutical compounds in imperative fruits, vegetables, and food crops. The potential causes behind the decline in the nutritional quality of foods have been identified worldwide as chaotic mineral nutrient application, the preference for less nutritious cultivars/crops, the use of high-yielding varieties, and agronomic issues associated





* Prevalence data may reflect biological sex or gender identity. Information on nonbinary categories was not published.
† Data to support the age for most autoimmune diseases are spotty, and a number of diseases peak at more than one age. This column presents the mean age of onset as published in 2012.
‡ Psoriasis and rheumatoid arthritis data used here are more recent than the rest of the diseases.
§ Data not available.



ANTI-FRAGILE

03

POST PANDEMIC:
“THE WELLNESS PIVOT”

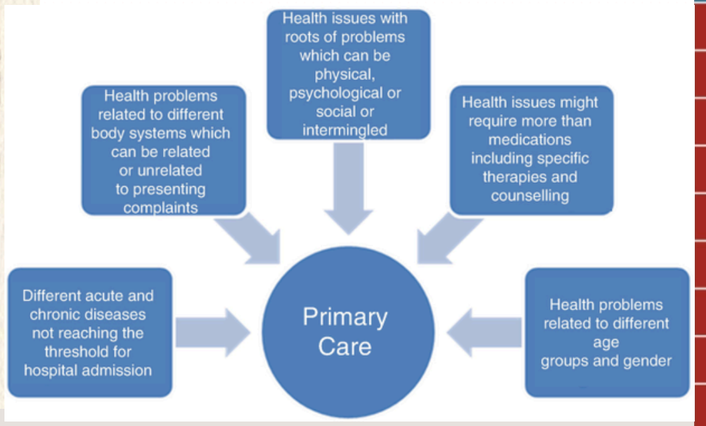
BUSINESS

Profits Over Patients

How nonprofit hospitals lost their way.

New AAMC Report Shows Continuing Projected Physician Shortage

March 21, 2024



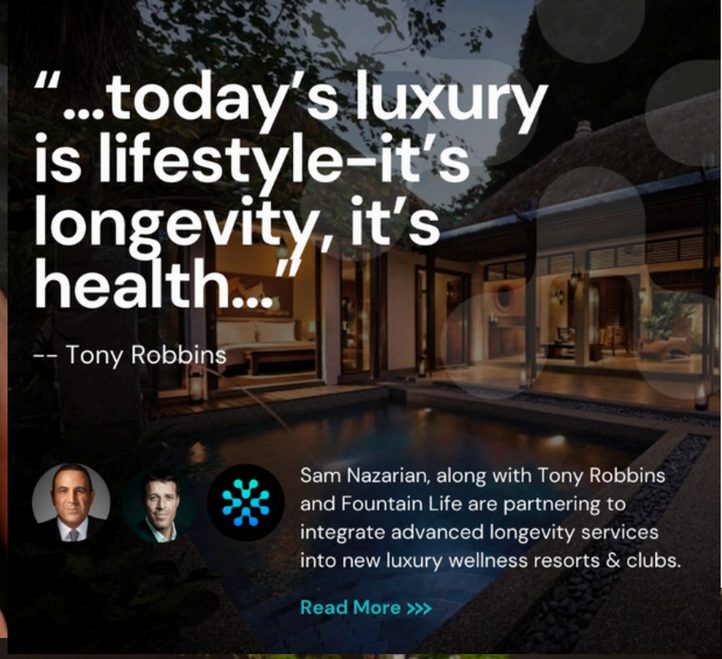
Percentile	Total Compensation	wRVUs
25	$252,460	3,514
30	$263,220	3,792
35	$272,785	4,064
40	$280,714	4,309
50	$302,827	4,779
60	$327,365	5,343
65	$345,599	5,644
70	$362,277	6,004
75	$380,603	6,379

PE Firm	Health Systems	# of Hospitals
Apollo Global Management	LifePoint Health, ScionHealth	224
Equity Group Investments	Ardent Health Services	32
One Equity Partners	Ernest Health	31
Webster Equity Partners	Oceans Healthcare	20

DESCRIPTION OF SERVICES	CHARGES
Parekh 972811	
	DATE OF SERVICE: 4/5/2022
IV Therapy	$4,930.00
Pharmacy	$83,387.02
TOTAL CHARGES:	$88,317.02
INSURANCE PAYMENTS:	-$49,060.70
PATIENT PAYMENTS:	$0.00
ADJUSTMENTS:	-$36,946.20
BALANCE:	**$2,310.12**
BALANCE DUE	**$2,310.12**


WEALTH-O-METER


New Wealth


"...today's luxury is lifestyle-it's longevity, it's health..."
-- Tony Robbins
Sam Nazarian, along with Tony Robbins and Fountain Life are partnering to integrate advanced longevity services into new luxury wellness resorts & clubs.
Read More >>>


TREATING DISEASE
CURING DISEASE
PREVENTING DISEASE

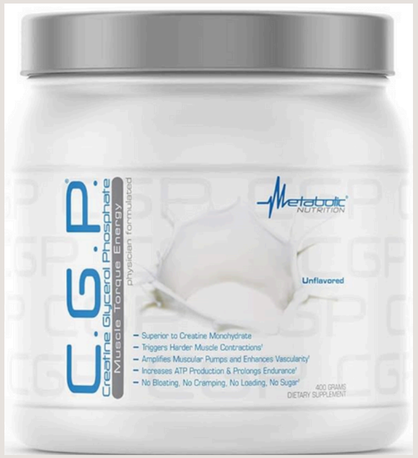

OMNILUX

04

“Five” Supplements

1. Creatine

- **Topline benefits:** Enhances muscle strength, cognitive function, and cellular energy (ATP) production; may reduce age-related muscle loss.
- **Dose:** 3–5 g/day (no loading phase needed for maintenance).
- **Duration:** Long-term use safe; benefits sustained with consistent intake.
  - **Best brand: CGP**



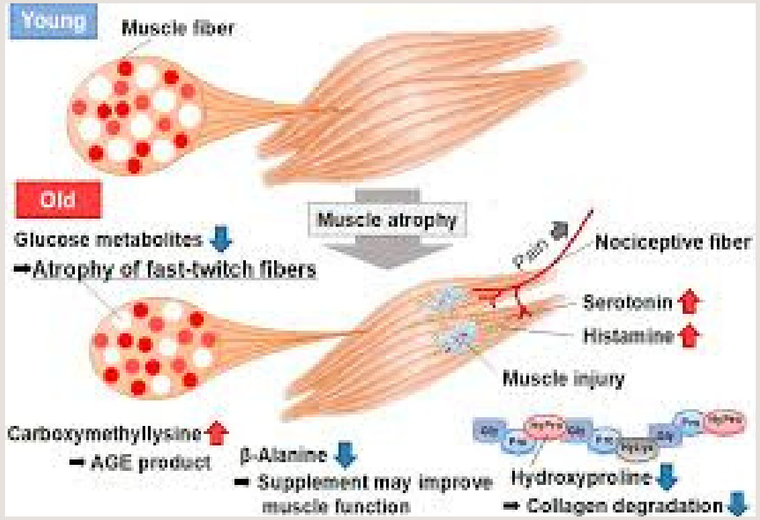
Article | Open access | Published: 28 February 2024

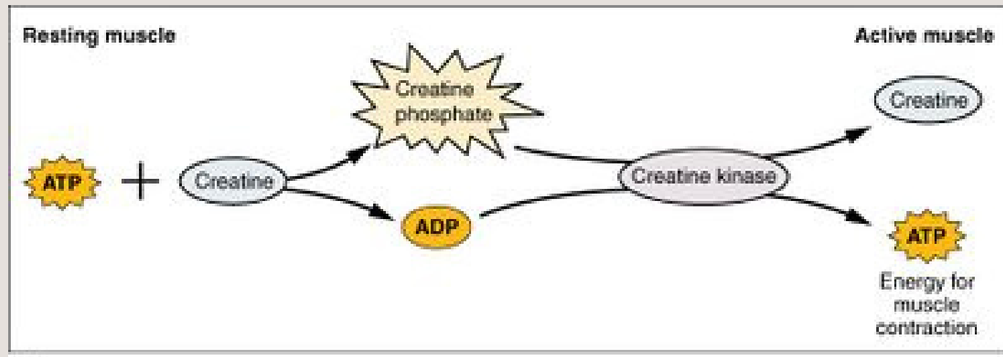
Single dose creatine improves cognitive performance and induces changes in cerebral high energy phosphates during sleep deprivation

Ali Gordji-Nejad, Andreas Matusch, Sophie Kleedörfer, Harshal Jayeshkumar Patel, Alexander Drzezga, David Elmenhorst, Ferdinand Binkofski & Andreas Bauer

Scientific Reports **14**, Article number: 4937 (2024) | Cite this article

162k Accesses | **12** Citations | **921** Altmetric | Metrics





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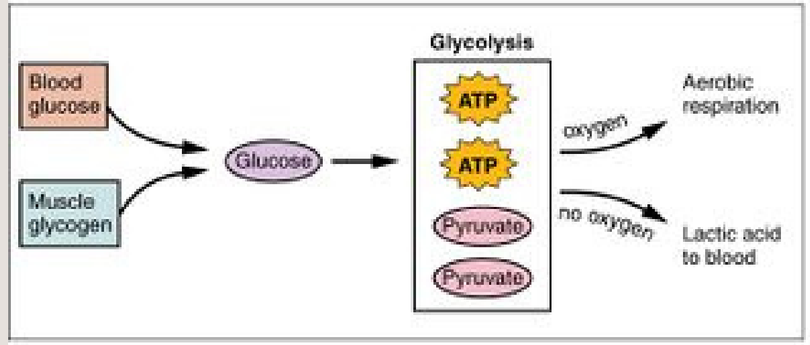
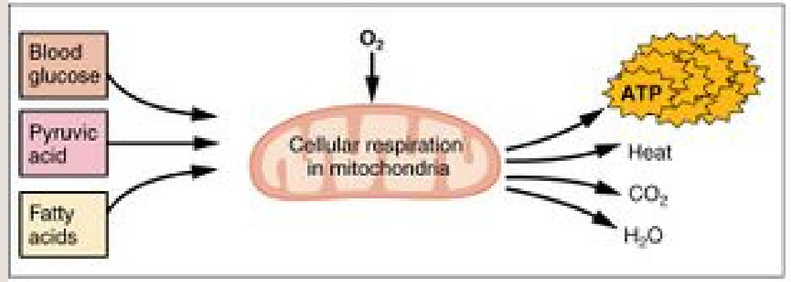
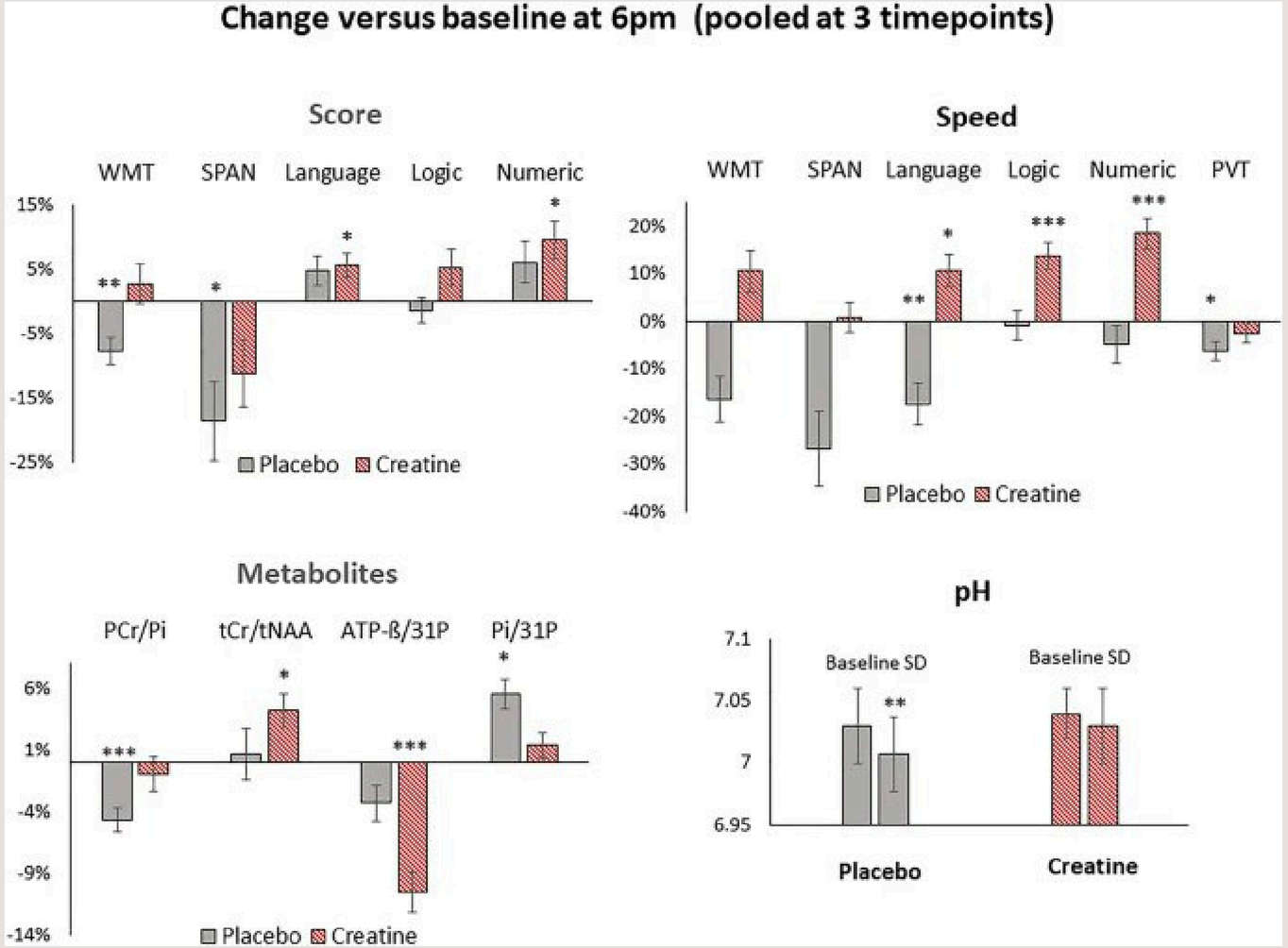
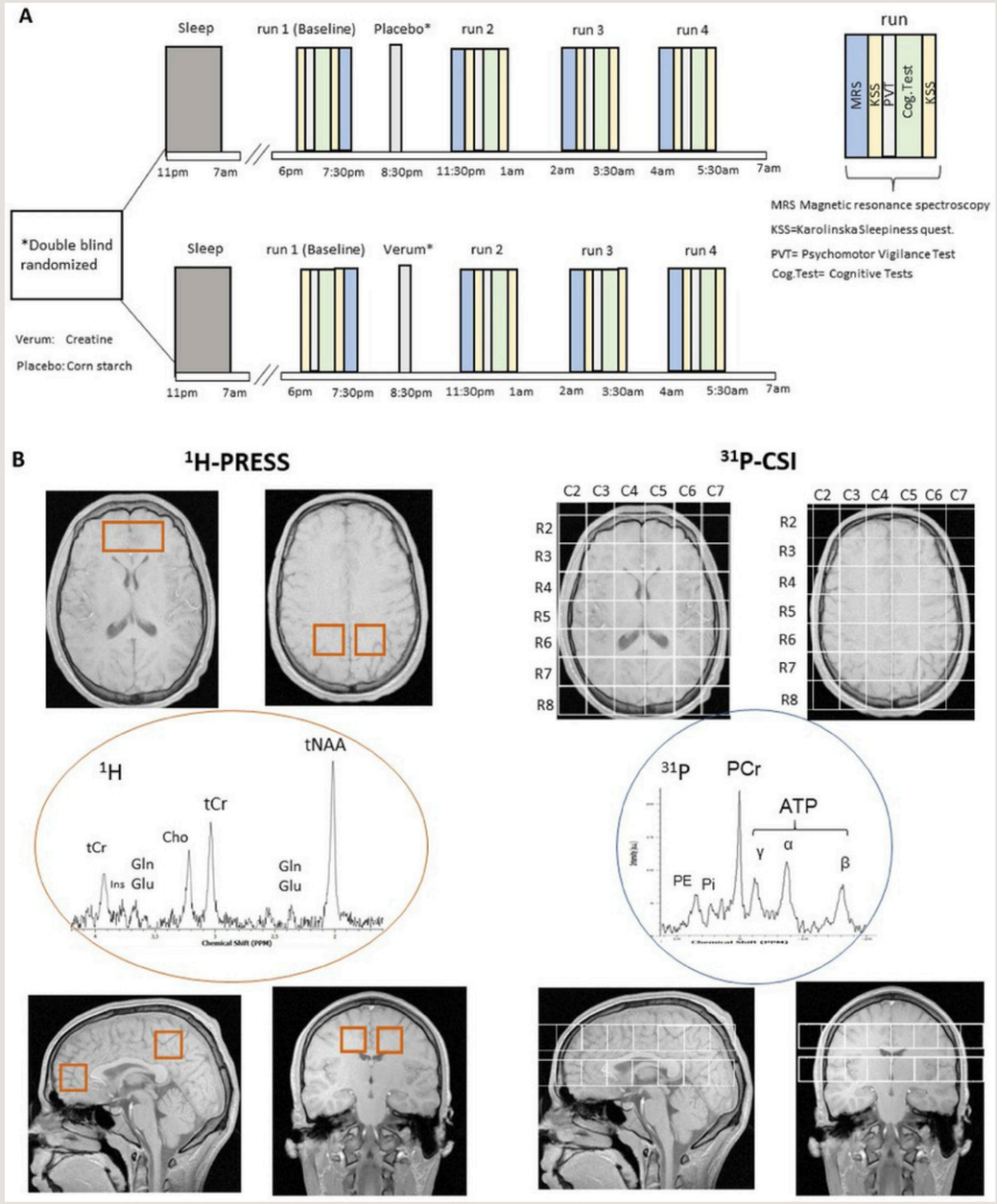


(b)



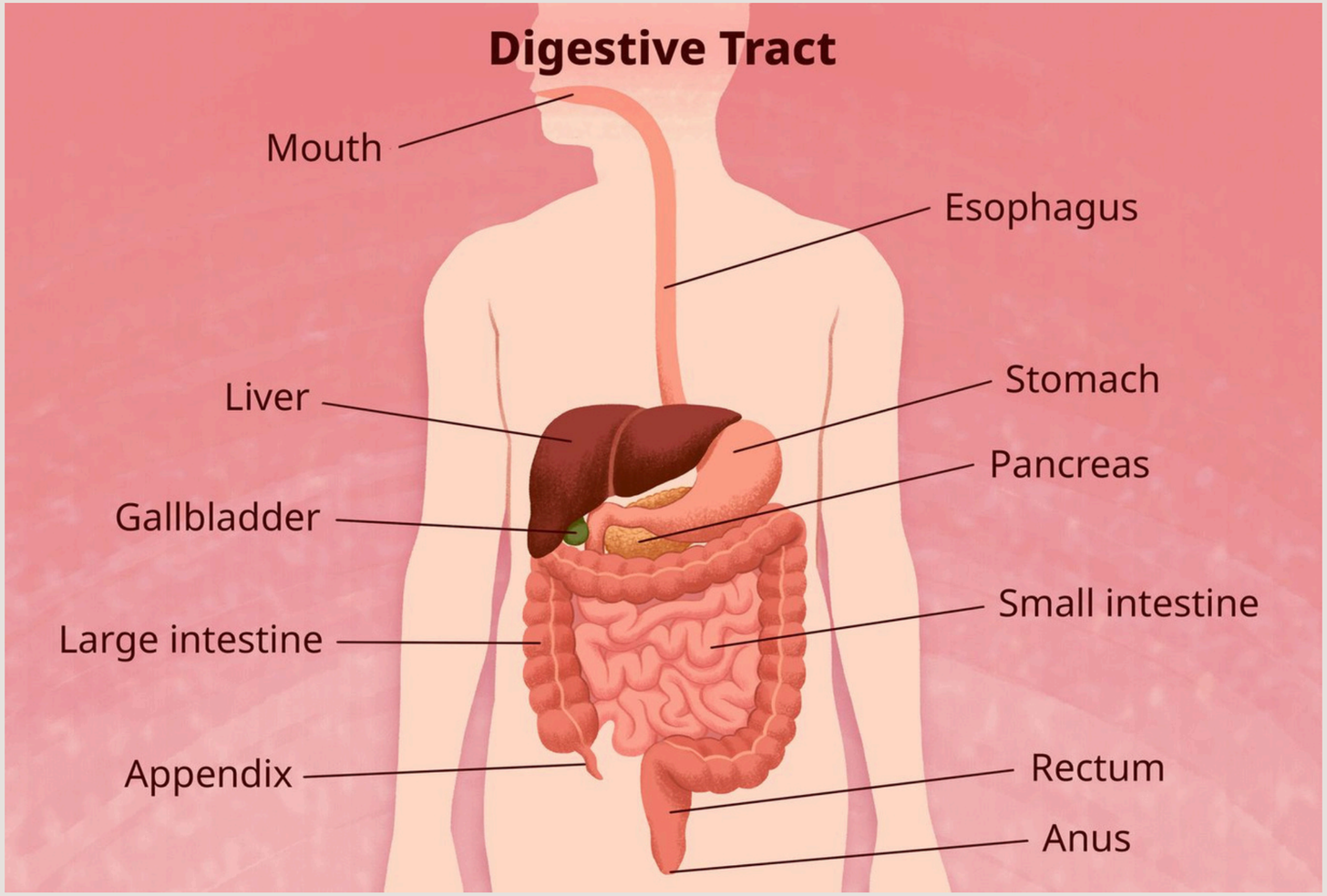
(c)

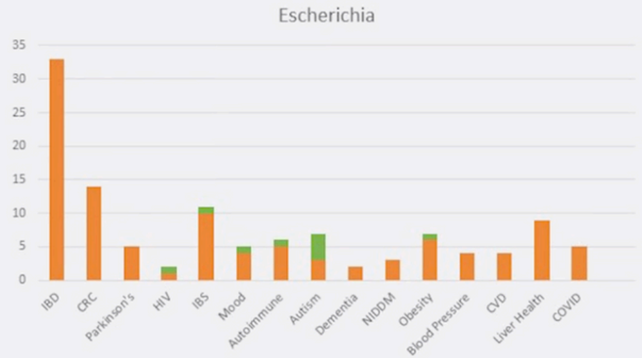

Change versus baseline at 6pm (pooled at 3 timepoints)
Score
WMT
SPAN
Language
Logic
Numeric
15%
5%
-5%
-15%
-25%
Placebo
Creatine
Speed
WMT
SPAN
Language
Logic
Numeric
PVT
20%
10%
0%
-10%
-20%
-30%
-40%
Placebo
Creatine
Metabolites
PCr/Pi
tCr/tNAA
ATP-ß/31P
Pi/31P
6%
1%
-4%
-9%
-14%
Placebo
Creatine
pH
7.1
7.05
7
6.95
Baseline SD
Baseline SD
Placebo
Creatine

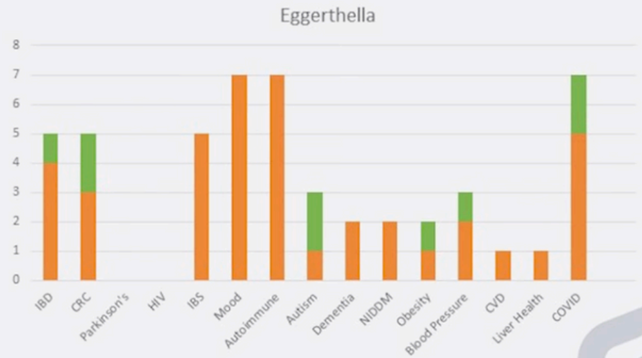

A
Sleep
run 1 (Baseline)
Placebo*
run 2
run 3
run 4
11pm
7am
6pm
7:30pm
8:30pm
11:30pm
1am
2am
3:30am
4am
5:30am
7am
run
MRS
KSS
PVT
Cog.Test
KSS
MRS Magnetic resonance spectroscopy
KSS=Karolinska Sleepiness quest.
PVT= Psychomotor Vigilance Test
Cog.Test= Cognitive Tests
*Double blind randomized
Verum: Creatine
Placebo: Corn starch
Sleep
run 1 (Baseline)
Verum*
run 2
run 3
run 4
B
1H-PRESS
31P-CSI
C2 C3 C4 C5 C6 C7
R2
R3
R4
R5
R6
R7
R8
1H
tNAA
tCr
Cho
Gln
Glu
tCr
Ins
Chemical Shift (PPM)
31P
PCr
ATP
PE
Pi
γ
α
β

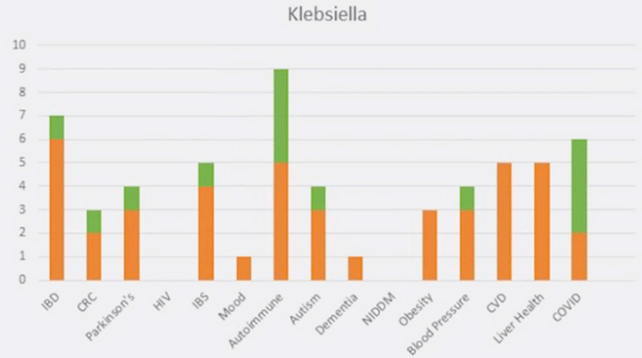
2. Prebiotics/ Fiber

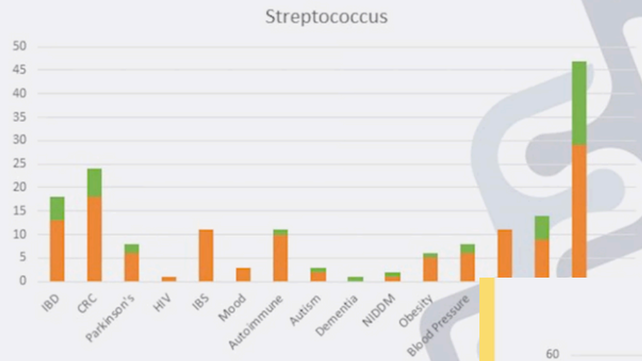
- Arabinoxylan
- Galactooligosaccharides (GOS)
- Pectin (Apple vs Citris)
- Partially Hydrolyzed Guar Gum (PHGG)
- Psylium Husk
- Inulin and Fructooligosaccharides (FOS)
- Carnivore diet?





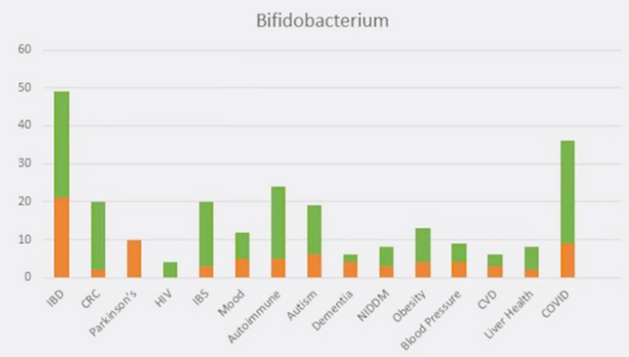


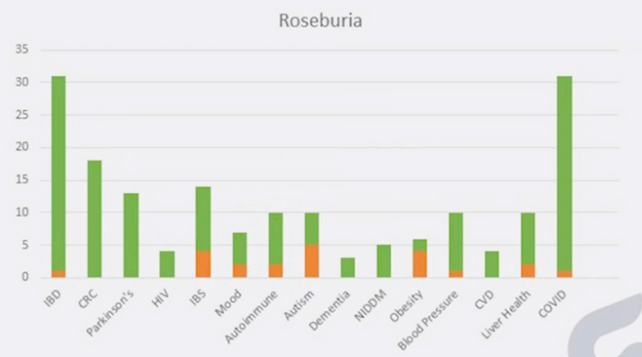


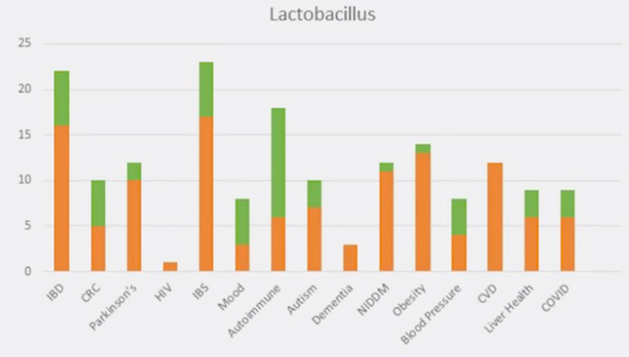


probiotics: foe?

prebiotics: friend?

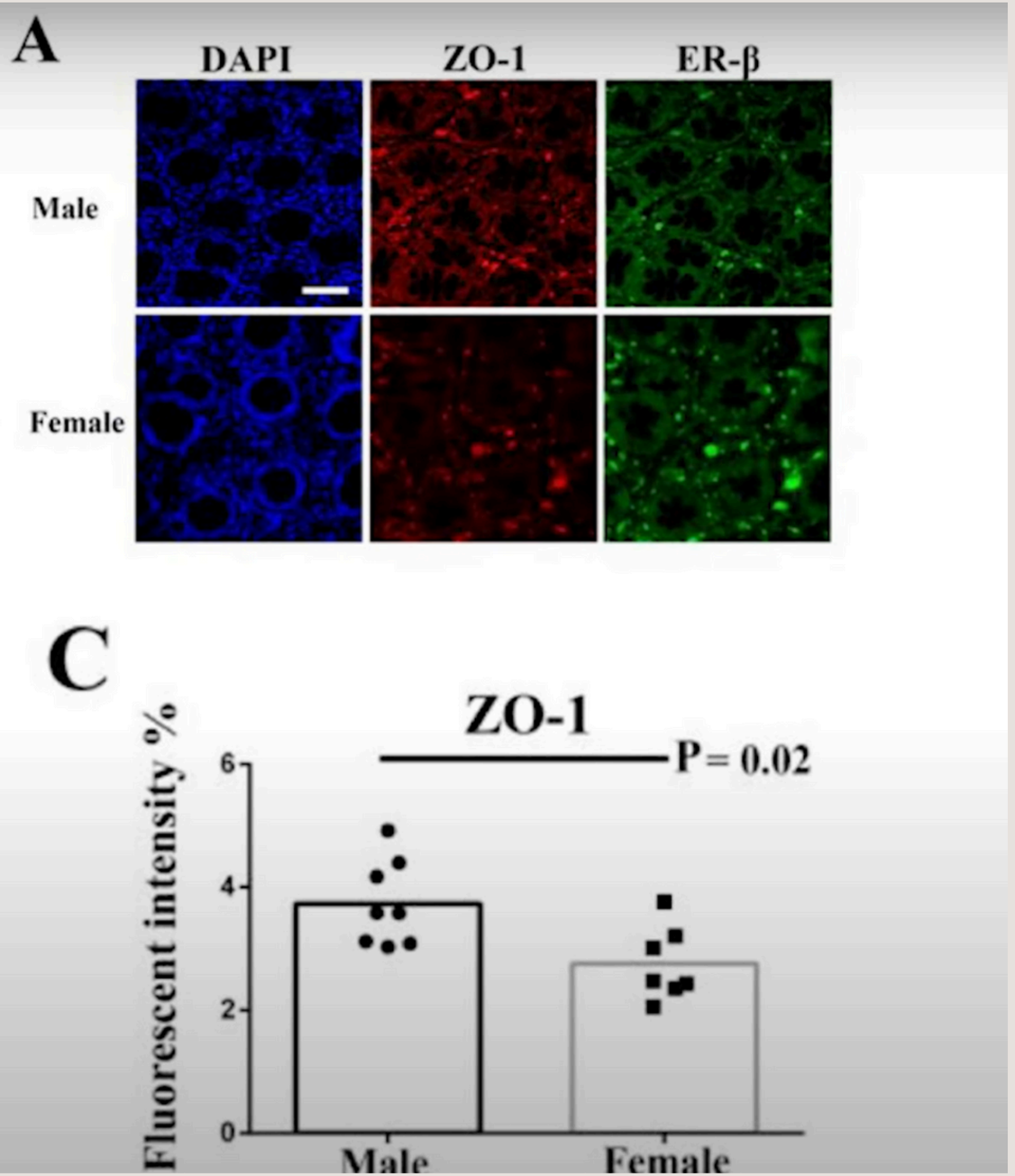






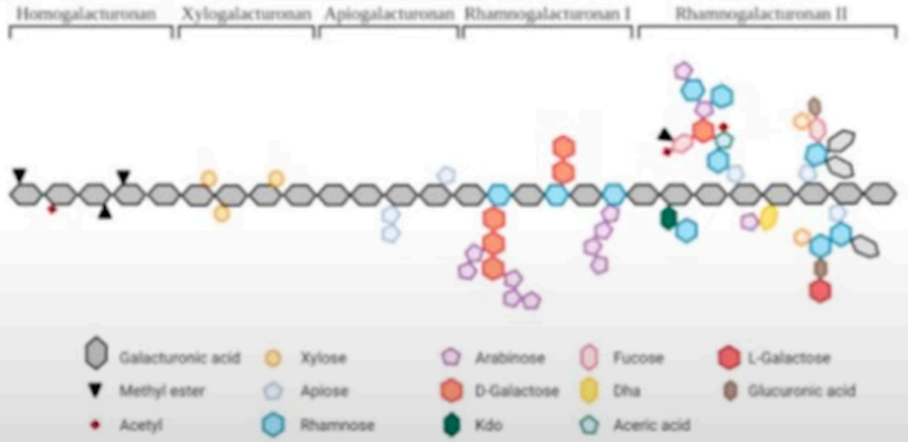
Estrogen decreases tight junction protein ZO-1 expression in human primary gut tissues

- Several autoimmune diseases, including celiac disease, type 1 diabetes, multiple sclerosis, and rheumatoid arthritis, are characterized by increased intestinal permeability that allow the translocation of antigens (e.g., microbial products) from the intestinal flora, challenging the immune system to produce an aberrant immune responses and inflammation



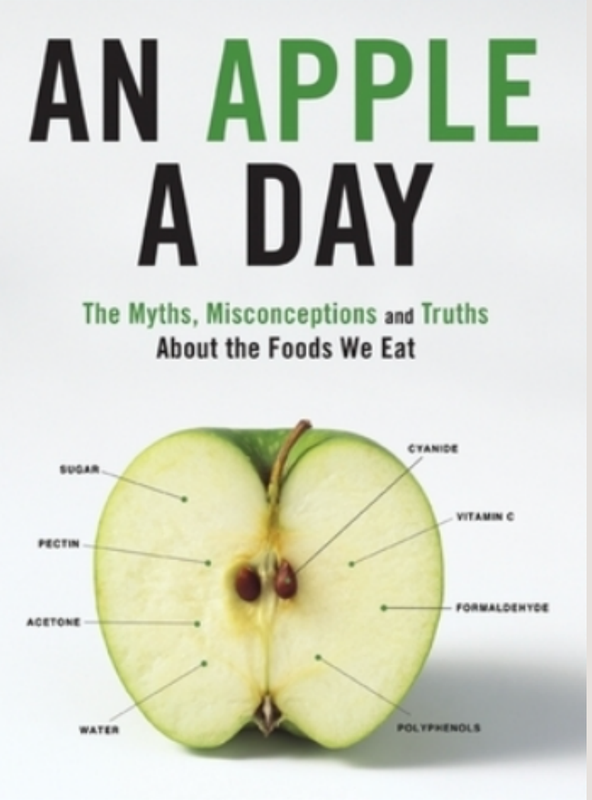
Diversity= Good

Potential of Pectins to Beneficially Modulate the Gut Microbiota Depends on Their Structural Properties



Gal	Rha	Xyl	Glc	Ara	RG	GalA	DE	DBr	
0.71	0.59	0.48	0.42		0.61	-0.54	-0.68		*g_Oscillospira*
0.46	0.40	0.40	0.44		0.48	-0.45			*g_Blautia*
0.38	0.35				0.47	-0.42			*g_Blautia;Other*
0.55	0.53		0.41		0.57	-0.54			*g_Dorea*
0.59	0.52	0.41	0.47		0.53	-0.47	-0.50		*f_Lachnospiraceae*
0.45	0.48				0.41		-0.53		*f_Lachnospiraceae;Other*
0.52	0.35				0.41		-0.55		*g_Ruminococcus*
0.60	0.46				0.59	-0.46	-0.57		*o_Clostridiales*
0.36	0.38				0.41	-0.41			*s_[Ruminococcus] torques*
0.57	0.38				0.41				*g_[Ruminococcus]*
0.44	0.52				0.36		-0.82	0.48	*g_Coprococcus*
				-0.53			-0.48	0.58	*g_Coprococcus;Other*
				-0.50	-0.41		-0.51	0.68	*g_Lachnospira*
-0.70	-0.63	-0.51	-0.47		-0.69	0.65	0.59		*s_Faecalibacterium prausnitzii*
-0.64	-0.75	-0.42	-0.42		-0.72	0.67	0.43		*f_Ruminococcaceae*
0.70	0.43	0.52	0.44		0.60	-0.54	-0.46		*s_Bacteroides uniformis*
0.47		0.49		-0.56	0.36		-0.59		*s_Bacteroides ovatus*
0.42	0.57				0.49	-0.42			*g_Paraprevotella*
0.38		0.37					-0.37		*s_Parabacteroides distasonis*
	0.38						-0.57		*g_Prevotella*
				0.61			0.77	-0.49	*s_Prevotella copri*

Correlation coefficient



Effects of Commercial Apple Varieties on Human Gut Microbiota Composition and Metabolic Output Using an In Vitro Colonic Model

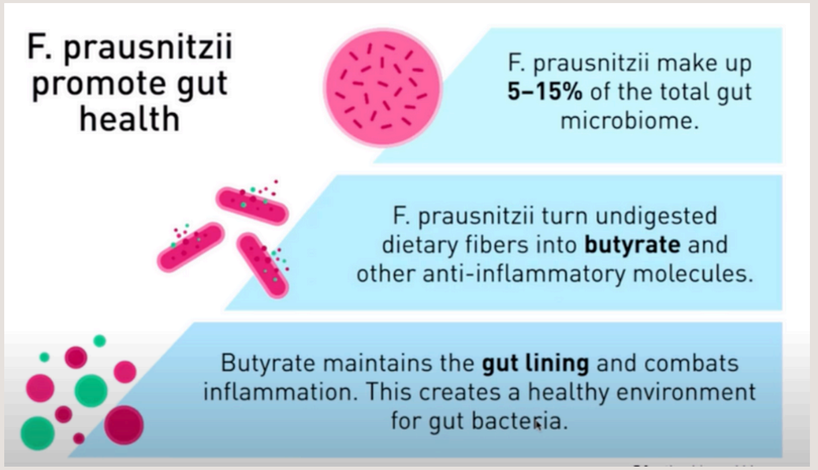
At 24 h Faecalibacterium prausnitzii increased significantly with Renetta Canada compared to the other apples. All apple varieties and inulin increased Faecalibacterium prausnitziii compared to cellulose. Inulin and Golden Delicious also had higher Faecalibacterium prausnitziii numbers at 24 hours compared to Pink Lady

Table 1. Composition analysis of Renetta Canada, Golden Delicious and Pink Lady *.

Components	Renetta Canada	Golden Delicious	Pink Lady
Total dietary fiber (AOAC) (g/100 g)	2.6	2.4	2.4
Soluble fiber (AOAC) (g/100 g)	1.6	1.3	0.9
Insoluble fiber (AOAC) (g/100 g)	1.0	1.1	1.5
Polyphenols (mg/100 g)			
Flavanols			
(+)—Catechin	1.07	0.16	0.17
(−)—Epicatechin	10.9	2.8	2.8
Procyanidin B1	6.6	0.95	0.78
Procyanidin B2 + B4 (as B2)	18.3	6.1	4.8
Proanthocyanidin (as cyanidin)	169.2	91.5	62.1

Why Are Low Levels of Faecalibacterium prausnitzii a Problem?

The significance of low levels of Faecalibacterium prausnitzii cannot be understated. This bacterium plays a critical role in sustaining the integrity of the gut lining, reducing inflammation, and fostering a balanced immune response.(*),(*) Consequently, having low levels on stool testing is a significan problem. Low levels can trigger diverse and troubling gastrointestinal symptoms and conditions.

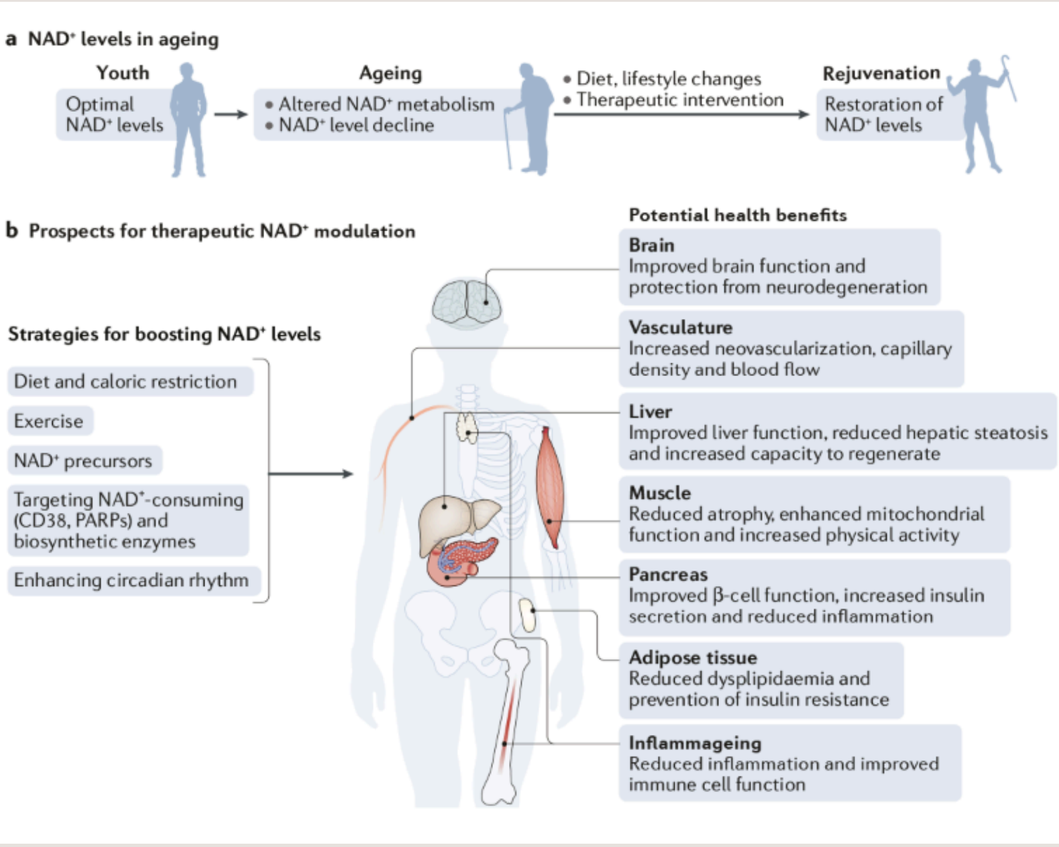


3. NAD+/NMN/NR/Tri

- **Topline benefits:** Boosts NAD+ levels, supporting DNA repair, energy metabolism, and sirtuin activation; linked to lifespan extension in preclinical studies.
- **Dose:** NMN (250–500 mg/day), NR (300–600 mg/day).
- **Duration:** Long-term; human trials ongoing.
  - **Brand:** Tru Niagen (NR), or DoNotAge (NMN).

conducted. Eleven healthy, middle-aged Japanese men received two 125-mg NMN capsules once daily before breakfast. The 8-week NMN supplementation regimen was well-tolerated; NAD^+ levels in peripheral blood mononuclear cells increased over the course of NMN administration. In participants with insulin oversecretion after oral glucose loading, NMN modestly attenuated postprandial hyperinsulinemia, a risk factor for coronary artery disease (n = 3). In conclusion, NMN overall safely and effectively boosted NAD^+ biosynthesis in healthy, middle-aged Japanese men, showing its potential for alleviating postprandial hyperinsulinemia.

compared to placebo at day 60. The change of SF-36 scores at day 30 and day 60 indicated statistically significantly better health of all three treated groups when compared to the placebo group ($p < 0.05$), except for the SF-36 score change in the 300 mg group at day 30. NMN supplementation increases blood NAD concentrations and is safe and well tolerated with oral dosing up to 900 mg NMN daily. Clinical efficacy expressed by blood NAD concentration and physical performance reaches highest at a dose of 600 mg daily oral intake. This trial was registered with ClinicalTrials.gov, NCT04823260, and Clinical Trial Registry - India, CTRI/2021/03/032421.



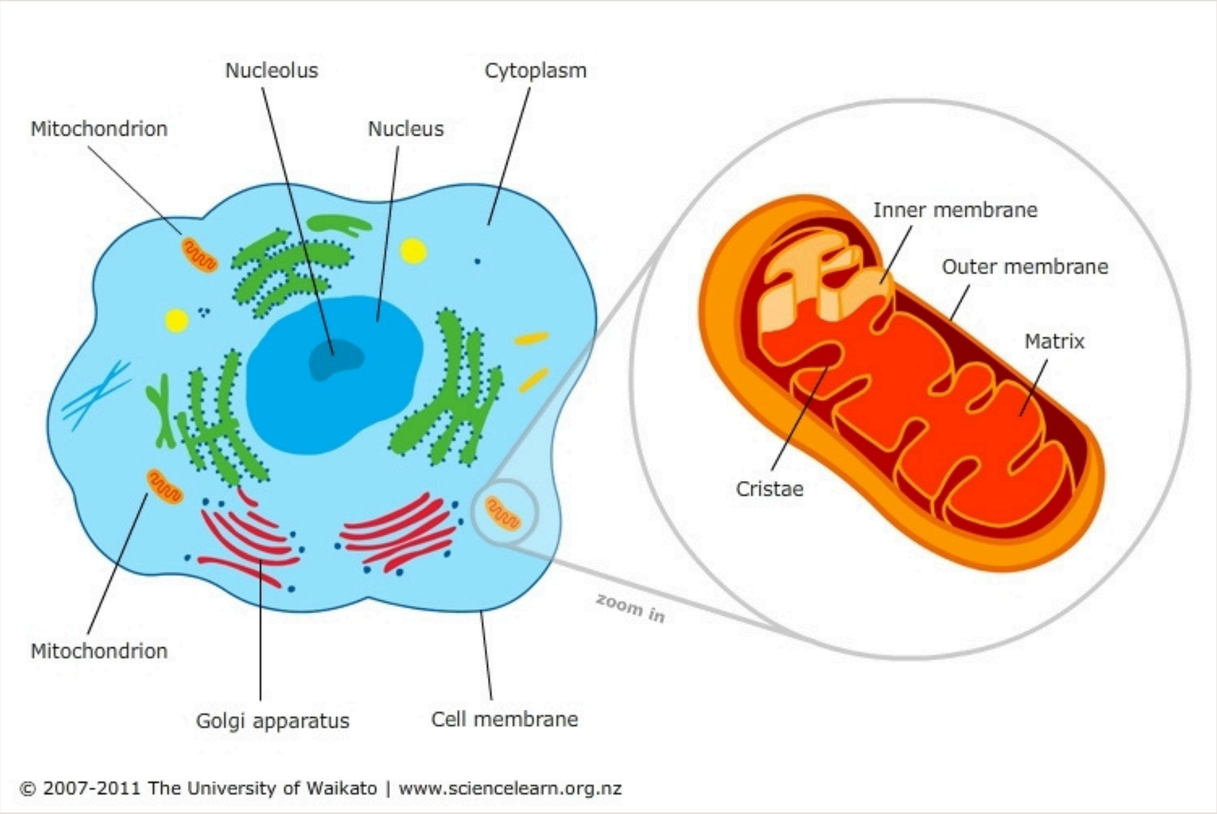
Randomized Controlled Trial > Geroscience. 2023 Feb;45(1):29-43.
doi: 10.1007/s11357-022-00705-1. Epub 2022 Dec 8.

The efficacy and safety of β-nicotinamide mononucleotide (NMN) supplementation in healthy middle-aged adults: a randomized, multicenter, double-blind, placebo-controlled, parallel-group, dose-dependent clinical trial

Lin Yi [1], Andrea B Maier [2 3 4], Rongsheng Tao [5], Zhigang Lin [6], Aditi Vaidya [7], Sohal Pendse [7], Sornaraja Thasma [7], Niranjan Andhalkar [7], Ganesh Avhad [8], Vidyadhar Kumbhar [9]

Affiliations + expand

PMID: 36482258 PMCID: PMC9735188 DOI: 10.1007/s11357-022-00705-1


Nucleolus
Cytoplasm
Mitochondrion
Nucleus
Inner membrane
Outer membrane
Matrix
Cristae
zoom in
Mitochondrion
Golgi apparatus
Cell membrane
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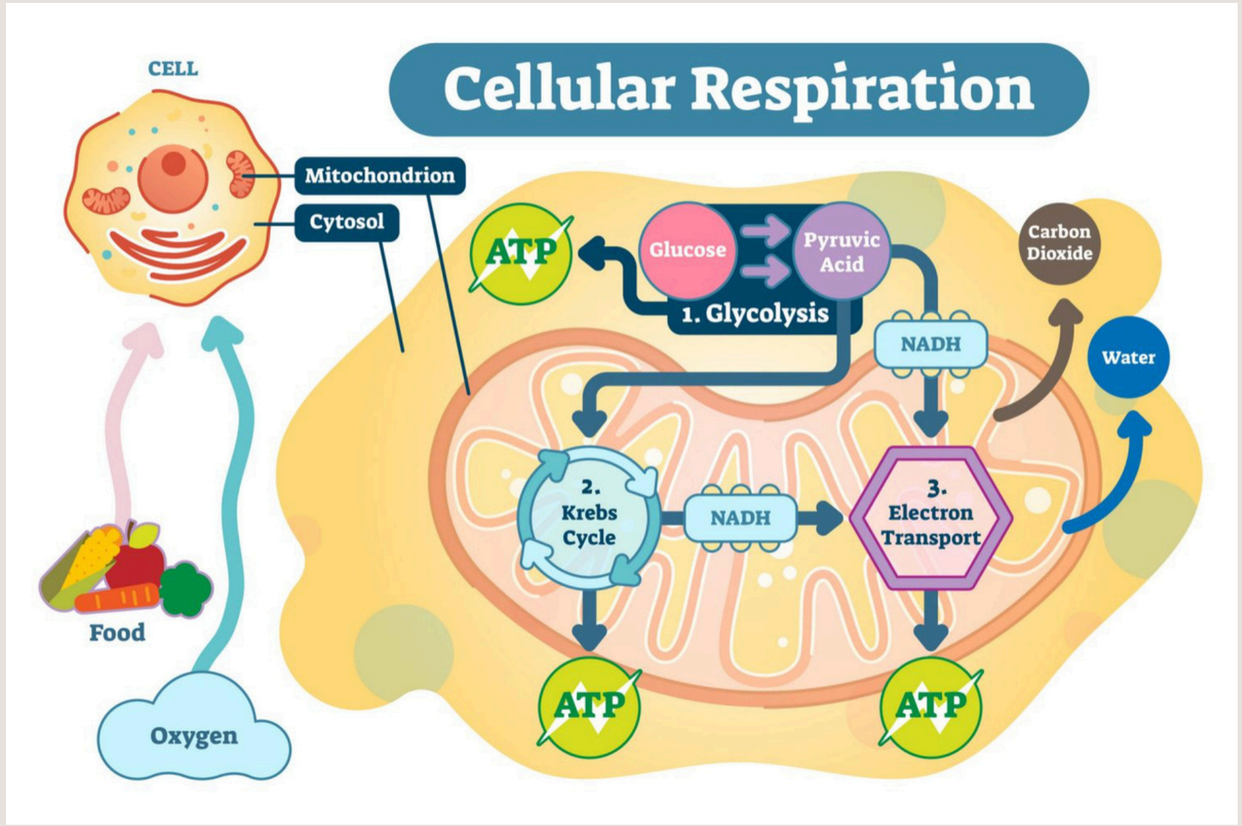

Cellular Respiration
CELL
Mitochondrion
Cytosol
ATP
Glucose
Pyruvic Acid
1. Glycolysis
Carbon Dioxide
NADH
Water
2. Krebs Cycle
NADH
3. Electron Transport
ATP
ATP
Food
Oxygen

Which NAD+ Precursor Is Best?

NAD+

This central coenzyme is directly involved in redox reactions and serves as a substrate for energy production enzyme activity, including sirtuins and poly(ADP-ribose) polymerases (PARPs), which regulate cellular metabolism, DNA repair, and epigenetic modifications.

NMN

This NAD+ precursor, which is directly converted to NAD+ through the NMNAT enzyme in the Salvage Pathway, has been shown to effectively increase intracellular NAD+ levels in numerous clinical trials, thereby enhancing mitochondrial function, energy production, and the activity of NAD+-dependent enzymes.

NR

This NAD+ precursor, which is converted to NAD+ through the Preiss-Handler Pathway, has also demonstrated the ability to increase NAD+ levels in cells. It supports cellular repair mechanisms, particularly those involved in DNA damage response and oxidative stress mitigation. By buttressing NAD+ levels, NR promotes the activation of sirtuins and PARPs, which protect genomic stability and regulating cellular metabolism.

Trigonelline

Trigonelline promotes cellular NAD+ production differently than NMN or NR. This methylated form of niacin offers several advantages: exceptional stability in the bloodstream, slow release into target tissues, non-flushing, protection against stomach digestion, and direct NAD+ increase in muscle tissues.

Why is nad+ important for aging and disease prevention?

- fuels mitochondrial function, enabling efficient ATP production, and activates sirtuins, proteins that promote longevity by enhancing stress resistance, metabolic regulation, and genomic stability.

- Declining NAD+ levels with age impair these functions, contributing to mitochondrial dysfunction, chronic inflammation, oxidative stress, and accumulated DNA damage—factors linked to aging and diseases like neurodegeneration, diabetes, and cancer.

4. Anti-Virals

- **Monolaurin:** Disrupts viral/bacterial membranes (e.g., cold sores, flu).
- **Oregano Oil:** Antiviral (carvacrol), antifungal, anti-inflammatory.
- **Sulforaphane:** Activates Nrf2 pathway (detox, antioxidant), may inhibit viral replication.

- **Brands:**
  - Monolaurin: Lauricidin.
  - Oregano Oil: ADP
  - Sulforaphane: Broc Shot

Review > Front Oncol. 2023 Jun 16:13:1168321. doi: 10.3389/fonc.2023.1168321. eCollection 2023.

Anticancer properties of sulforaphane: current insights at the molecular level

Muhammad Asif Ali [1], Noohela Khan [2], Nabeeha Kaleem [1], Waqas Ahmad [1], Salem Hussain Alharethi [3], Bandar Alharbi [4], Hassan H Alhassan [5], Maher M Al-Enazi [6], Ahmad Faizal Abdull Razis [7 8], Babagana Modu [8 9], Daniela Calina [10], Javad Sharifi-Rad [11]

Affiliations + expand

PMID: 37397365 PMCID: PMC10313060 DOI: 10.3389/fonc.2023.1168321

> J Appl Microbiol. 2014 May;116(5):1149-63. doi: 10.1111/jam.12453. Epub 2014 Feb 12.

Antiviral efficacy and mechanisms of action of oregano essential oil and its primary component carvacrol against murine norovirus

D H Gilling [1], M Kitajima, J R Torrey, K R Bright

Affiliations + expand

PMID: 24779581 DOI: 10.1111/jam.12453

Results: *In vitro* experiments showed that monolaurin inhibited viral replication by up to 80%, while *in vivo* studies showed that monolaurin reduced clinical manifestations, viral load, and organ damage in SVV-infected piglets. Monolaurin significantly reduced the release of inflammatory cytokines and promoted the release of interferon-γ, which enhanced the viral clearance activity of this type of MCFA.

5. Lithium

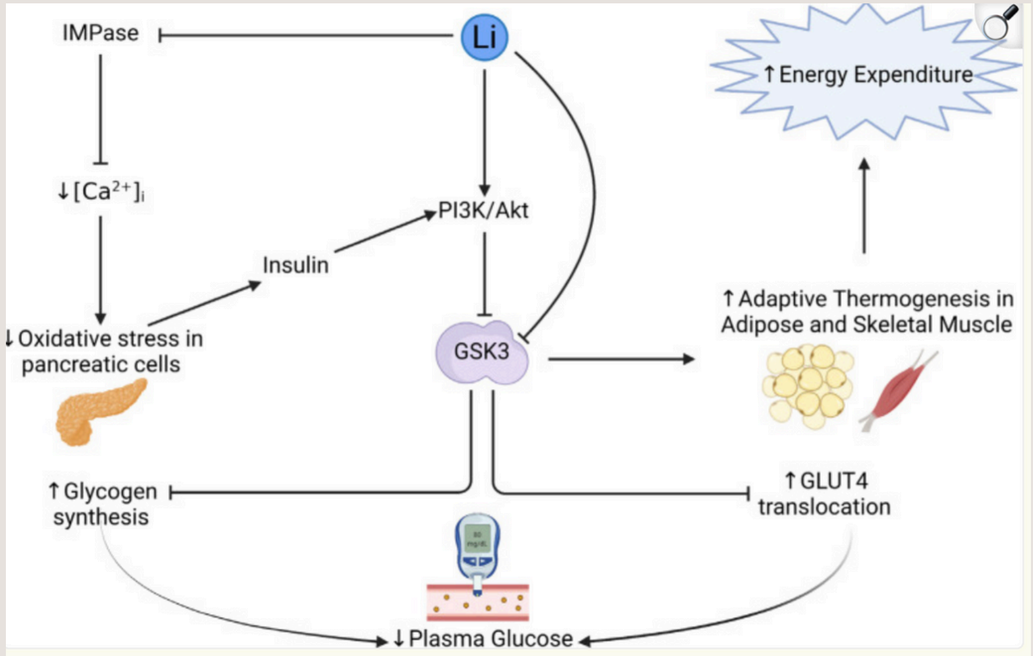
- **Benefits:** Neuroprotective, supports mood stability, may reduce dementia risk; enhances BDNF.
- **Dose:** 1mg/day (low-dose orotate).
- **Duration:** Long-term
- **Brand?:** Blueprint, NOVOS

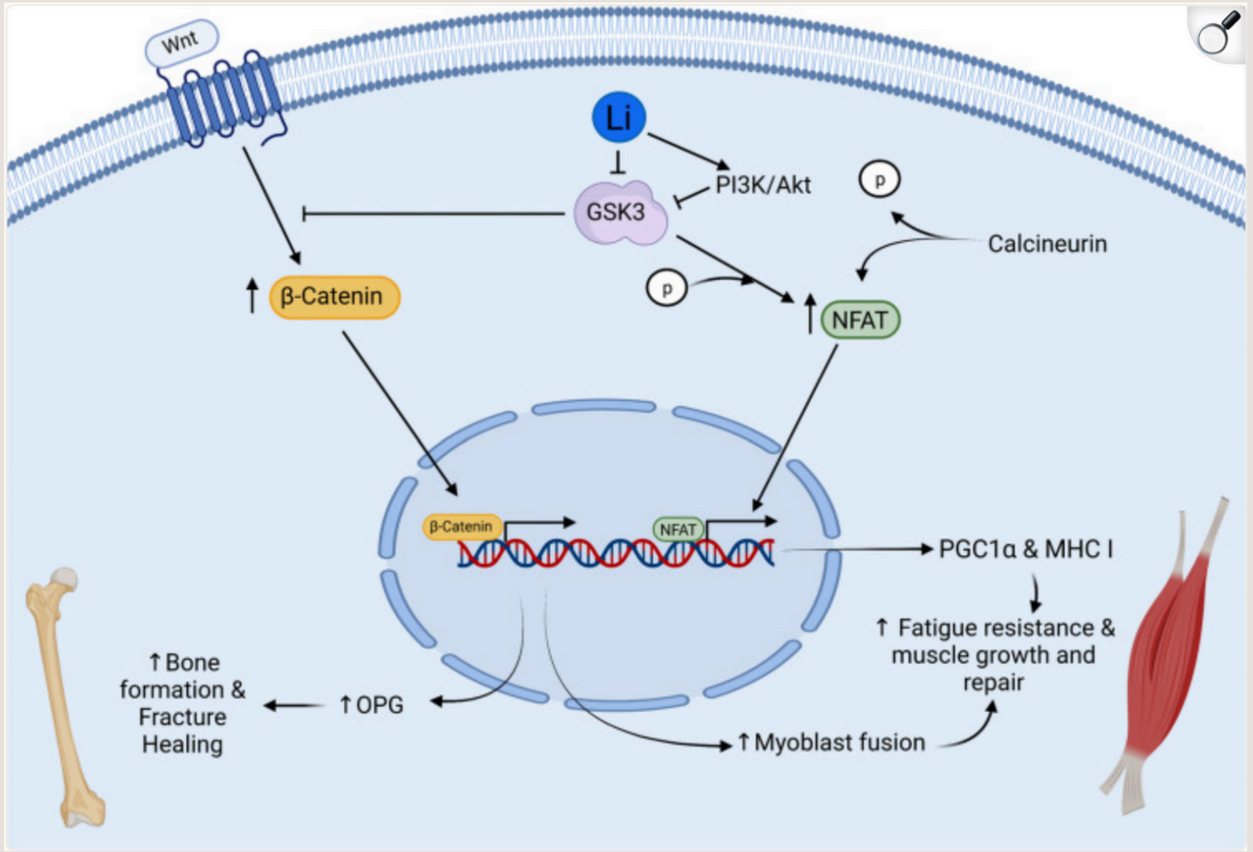
Beyond its Psychiatric Use: The Benefits of Low-dose Lithium Supplementation

Sophie I Hamstra [1 2], Brian D Roy [1 2], Peter Tiidus [1], Adam J MacNeil [3], Panagiota Klentrou [1 2], Rebecca E K MacPherson [3 4], Val A Fajardo [1 2 4]

Affiliations + expand

PMID: 35236261 PMCID: PMC10227915 DOI: 10.2174/1570159X20666220302151224



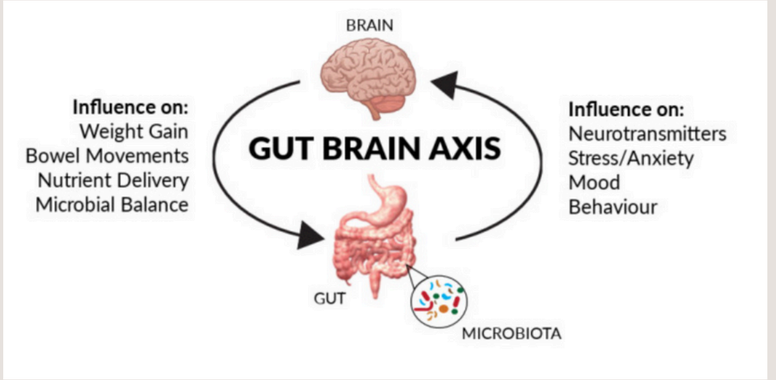


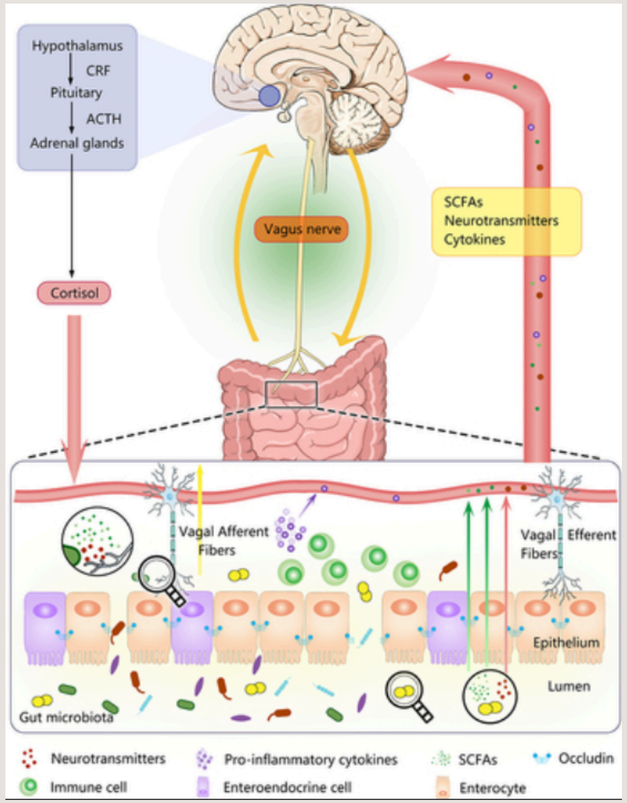
05

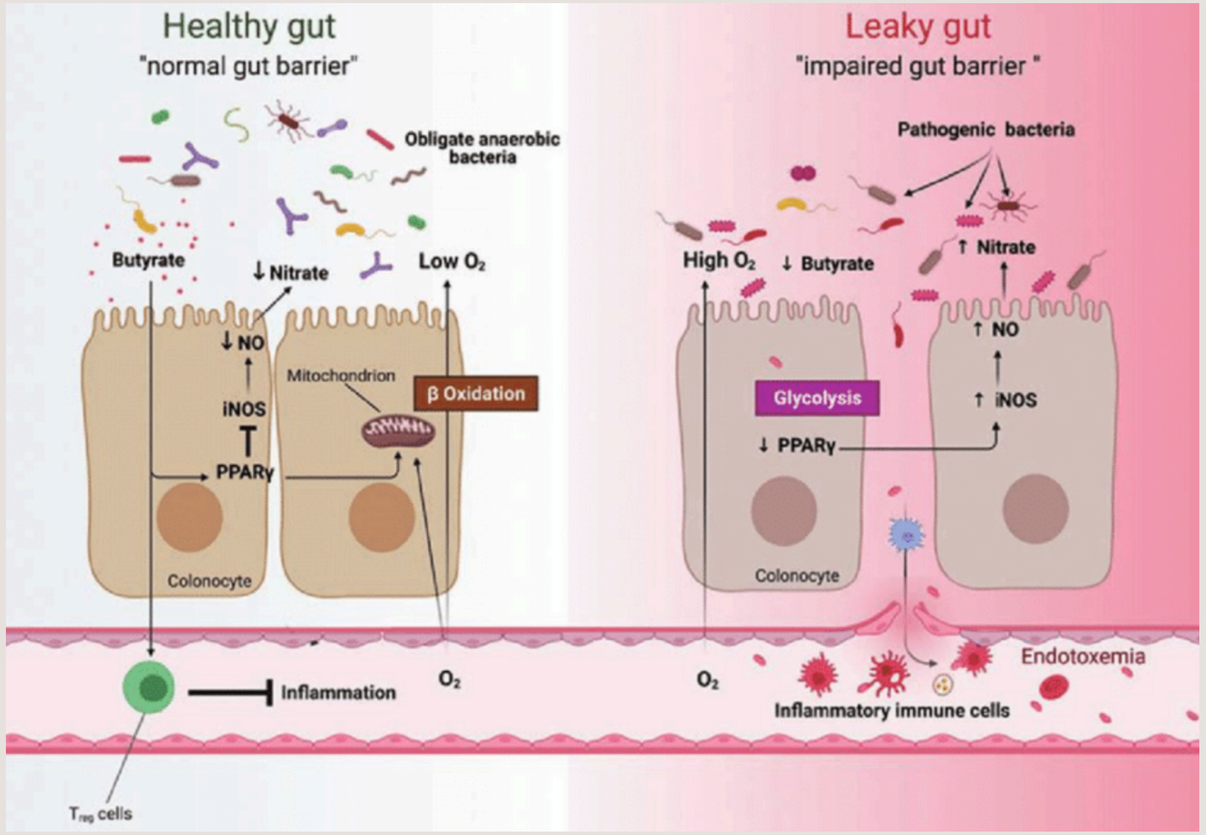
Beyond the Basics

1. Butyrate/ SCFA

- Dose: 600-1000mg per day
- Duration: 6-8 weeks
- Brand:
  - Tesseract Medical Research ProButyrate
  - Tributryin Max (sodium butyrate vs tri)

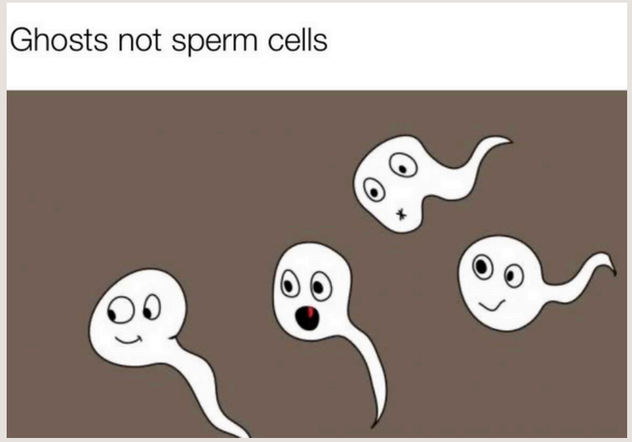


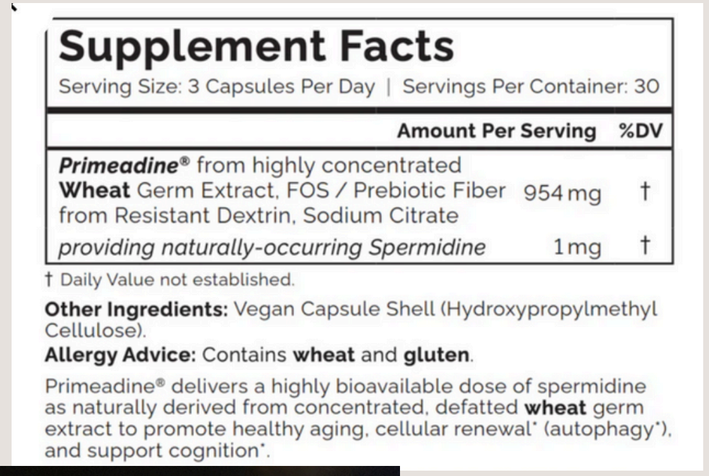




2. Spermidine

- Dose: 1-2mg per day (wheat germ or plant source) NOT speridine HCL
- Duration: long term
- Brand:
  - Primeadine





Supplement Facts

Serving Size: 3 Capsules Per Day | Servings Per Container: 30

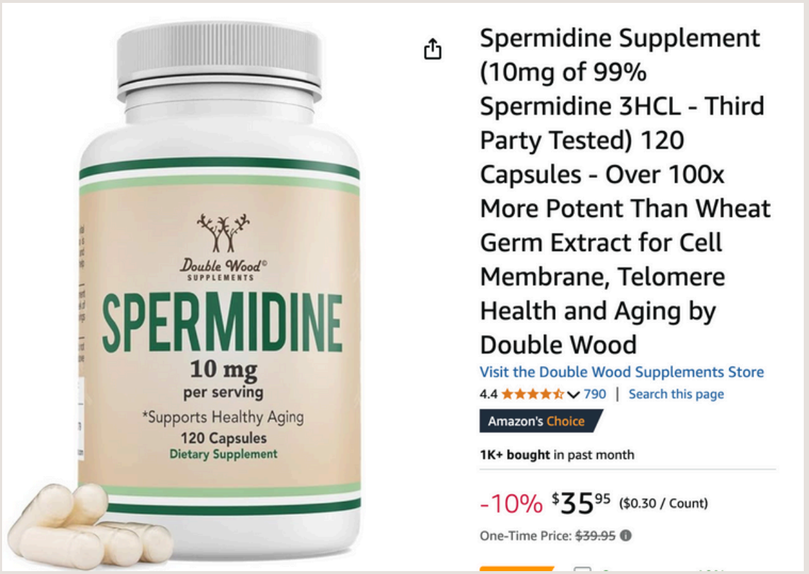
	Amount Per Serving	%DV
Primeadine® from highly concentrated **Wheat** Germ Extract, FOS / Prebiotic Fiber from Resistant Dextrin, Sodium Citrate	954 mg	†
providing naturally-occurring Spermidine	1 mg	†

† Daily Value not established.

Other Ingredients: Vegan Capsule Shell (Hydroxypropylmethyl Cellulose).

Allergy Advice: Contains **wheat** and **gluten**.

Primeadine® delivers a highly bioavailable dose of spermidine as naturally derived from concentrated, defatted **wheat** germ extract to promote healthy aging, cellular renewal* (autophagy*), and support cognition*.



Spermidine Supplement (10mg of 99% Spermidine 3HCL - Third Party Tested) 120 Capsules - Over 100x More Potent Than Wheat Germ Extract for Cell Membrane, Telomere Health and Aging by Double Wood

Visit the Double Wood Supplements Store

4.4 ★★★★½ 790 | Search this page

Amazon's Choice

1K+ bought in past month

-10% $35.95 ($0.30 / Count)

One-Time Price: $39.95

Nutrients. 2023 Apr 12;15(8):1852. doi: 10.3390/nu15081852

High-Dose Spermidine Supplementation Does Not Increase Spermidine Levels in Blood Plasma and Saliva of Healthy Adults: A Randomized Placebo-Controlled Pharmacokinetic and Metabolomic Study

Stefan Senekowitsch [1,†], Eliza Wietkamp [2,†], Michael Grimm [1], Franziska Schmelter [2], Philipp Schick [1], Anna Kordowski [2], Christian Sina [2], Hans Otzen [2], Werner Weitschies [1], Martin Smollich [2,*]

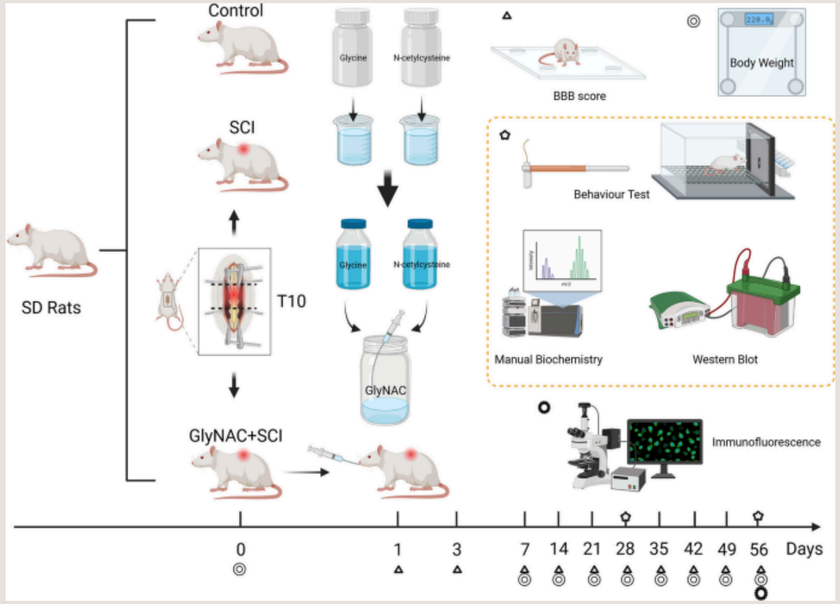
Editor: Hayato Tada

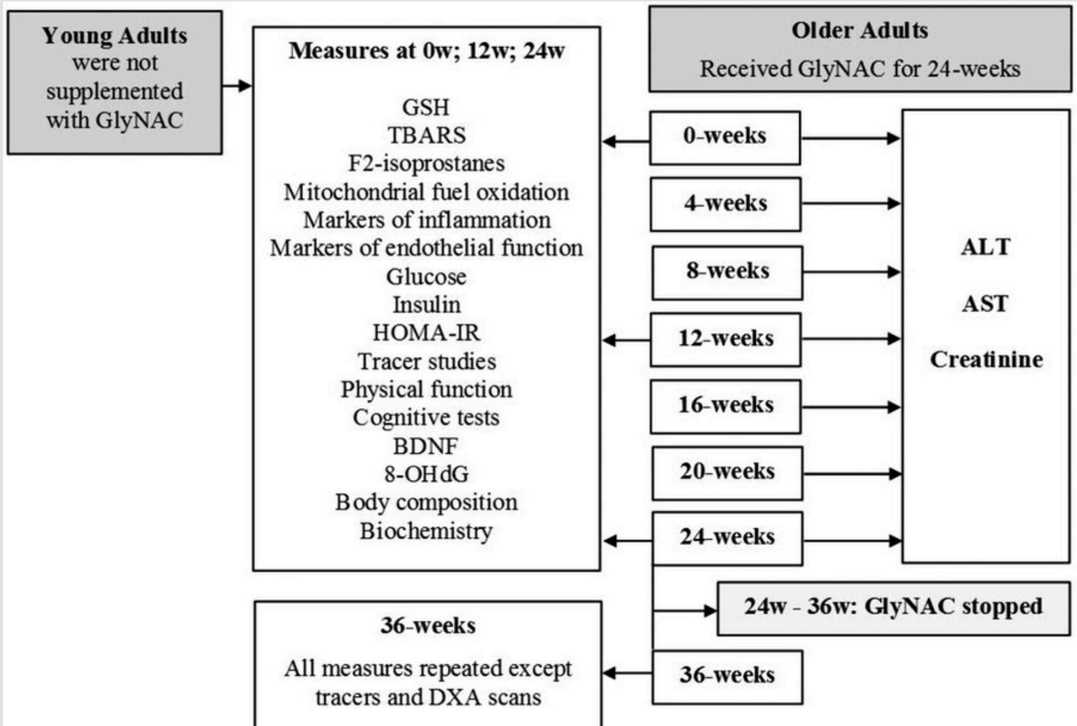
Author information · Article notes · Copyright and License information

PMCID: PMC10143675 PMID: 37111071

3. GlyNac

- Supports glutathione synthesis, the body's master antioxidant, and enhances mitochondrial function.
  - • Improves metabolic health and mitochondrial efficiency.
  - • Reduces oxidative stress and inflammation.
  - • Promotes longevity and combats age-related diseases.
- Clinical trials show GlyNAC can improve biomarkers of aging and mitochondrial function in older adults.
- Duration: long term
- Brand: Vitality Pro





Randomized Controlled Trial > J Gerontol A Biol Sci Med Sci. 2023 Jan 26;78(1):75-89.
doi: 10.1093/gerona/glac135.

Supplementing Glycine and N-Acetylcysteine (GlyNAC) in Older Adults Improves Glutathione Deficiency, Oxidative Stress, Mitochondrial Dysfunction, Inflammation, Physical Function, and Aging Hallmarks: A Randomized Clinical Trial

4. Emoxypine

- Topline Benefits: Enhances cognitive function by improving cerebral blood flow, reducing neuroinflammation, and protecting neurons from oxidative stress.
- Dose: 125-250mg
- Duration: As needed, 2-6 weeks at a time
- Best brand: Mexidol -Cosmic Nootropics

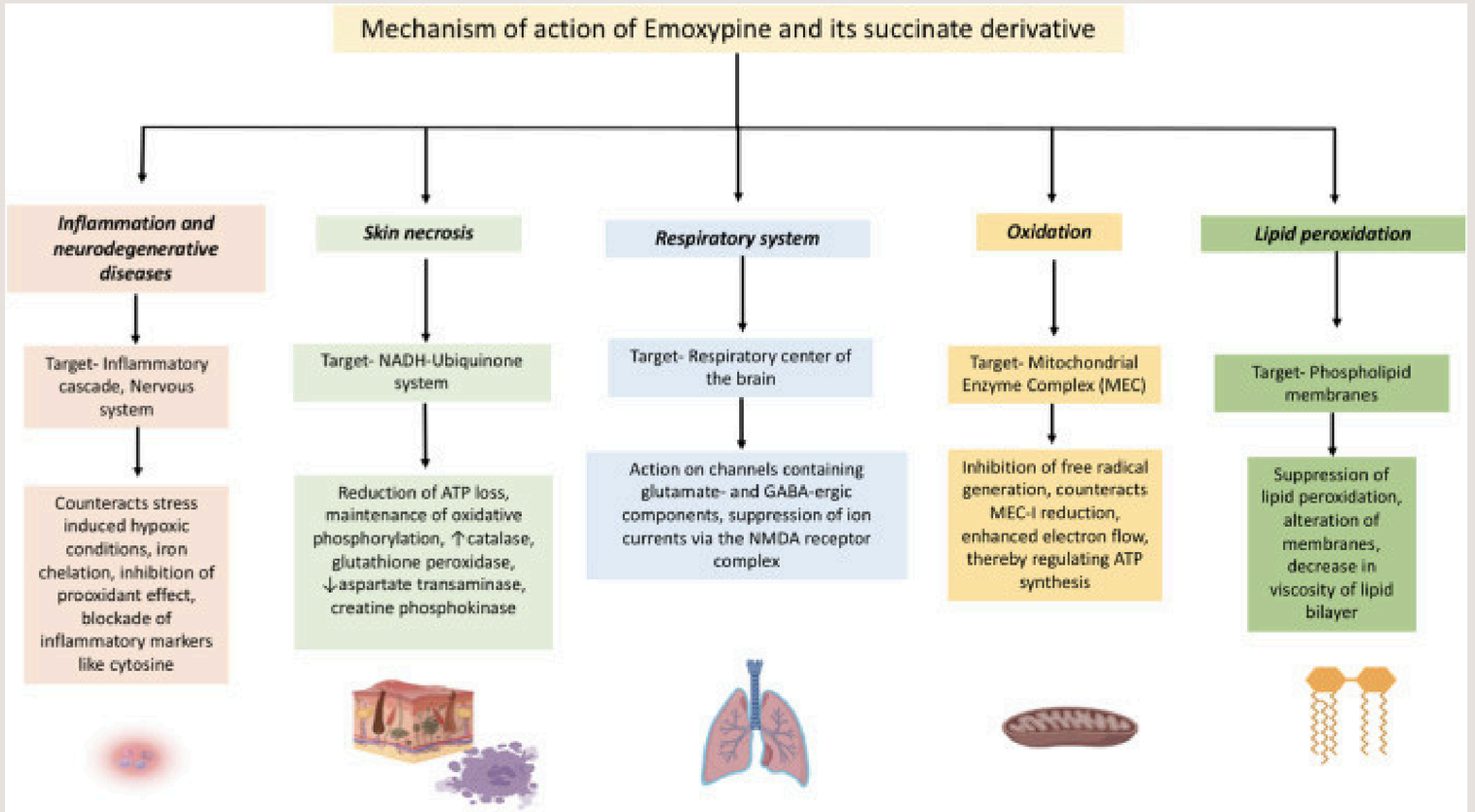
Curr Res Pharmacol Drug Discov. 2022 Aug 1;3:100121. doi: 10.1016/j.crphar.2022.100121

Promising effects of emoxypine and its succinate derivative in th management of various diseases-with insights on recent patent applications

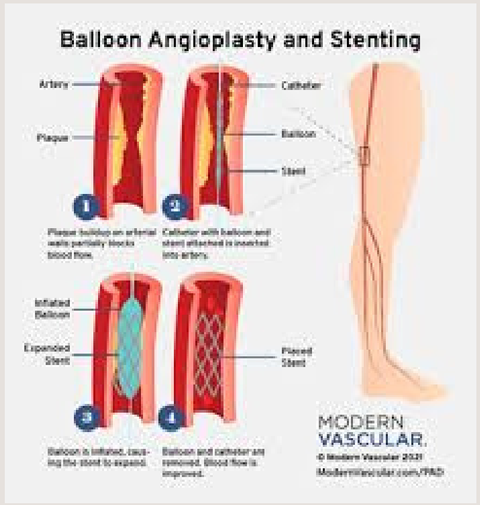
Dhruv Sanjay Gupta [1], Siddhi Bagwe Parab [1], Ginpreet Kaur [1,*]

Author information · Article notes · Copyright and License information

PMCID: PMC9389226 PMID: 35992374

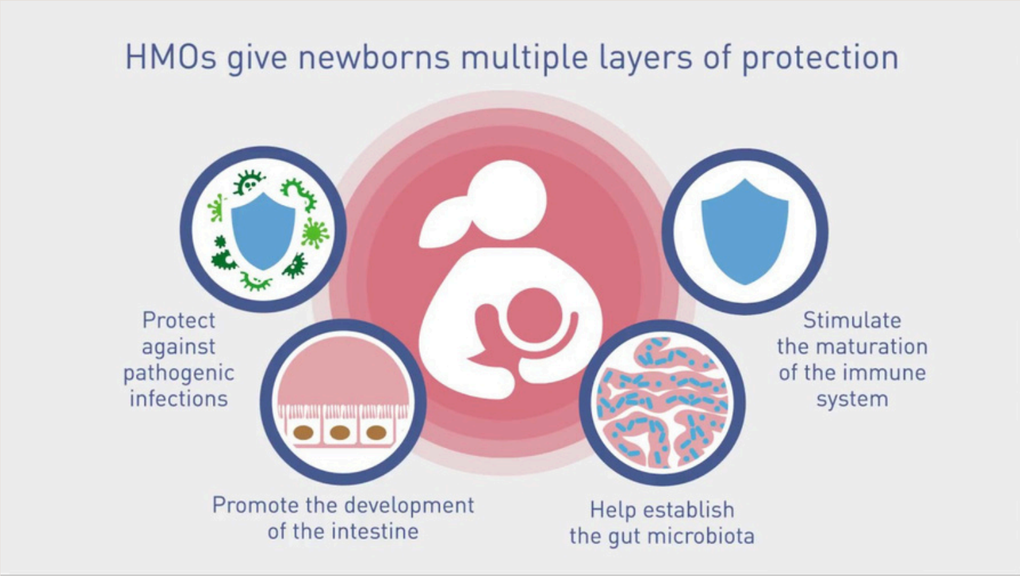


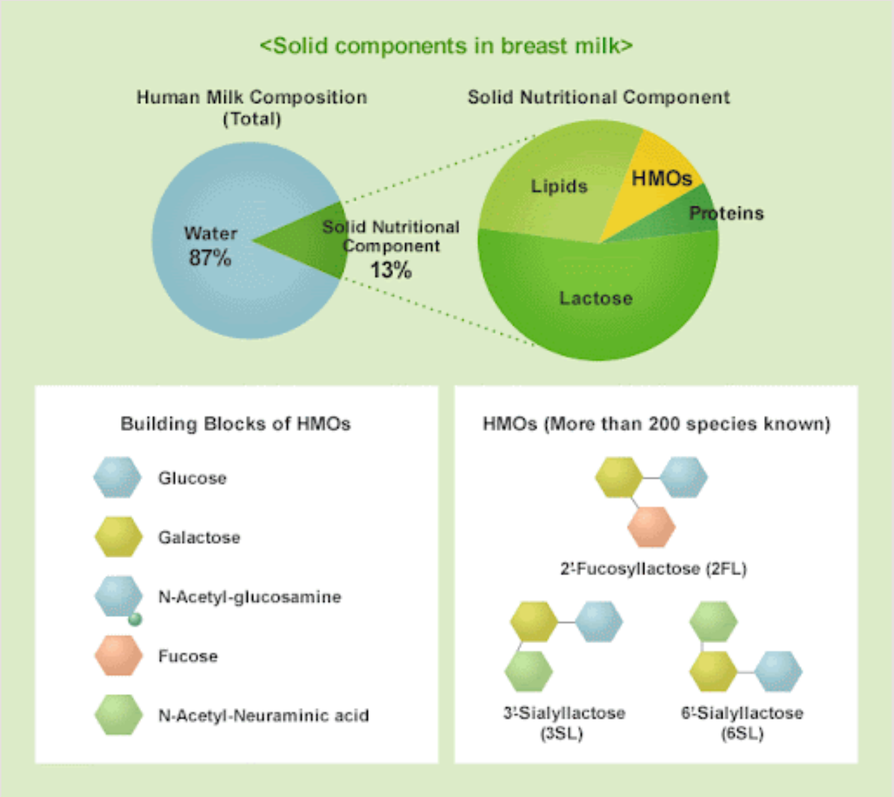
Blood Flow = Healing



5. HMO/ 2'FL

- Topline benefits: Gut microbiome support, immune modulation, pathogen blocking (e.g., norovirus), reduces inflammation.
- Dose: 500 mg–1 g/day.
- Duration: Ongoing for gut health.
- Brand: Layer Origin, Holigos.





BONUS ROUND: PEPTIDES

- **BPC-157:**
  - Peptide promoting tissue repair, gut healing, and anti-inflammation; dose 250–500 mcg/day (cycles: 2–4 weeks).
- **MK-677 (Ibutamoren)**
  - Growth hormone secretagogue enhancing muscle growth and recovery; dose 10–25 mg/day (cycles: 4–12 weeks)
- **Thymosin Alpha-1 (TA-1)**
  - Immune-boosting peptide for viral defense and immune regulation; dose 1–2 mg/week (short-term cycles)
- **Thymosin Beta-4 (TB500):**
  - Accelerates injury recovery and reduces inflammation; dose 2–5 mg/week (4–8 week cycles)
- **Epithalon:**
  - Telomere-lengthening peptide theorized to slow aging; dose 1–10 mg/day (1–2 week cycles annually)
- **CJC-1295 + Ipamorelin:**
  - Growth hormone-releasing combo for muscle growth and fat loss; dose 100–300 mcg/day (8–12 week cycles)
- **Semax:**
  - Neuropeptide enhancing cognition, focus, and stress resilience; dose 200–600 mcg/day (2–4 week cycles); brands
- **Selank:**
  - Anxiolytic peptide reducing anxiety and improving mood; dose 200–600 mcg/day (2–4 week cycles)
- **GHK-Cu:**
  - Copper peptide for collagen synthesis, skin repair, and anti-aging; dose 1–2 mg/day (topical/oral)
- **KPV:**
  - Anti-inflammatory tripeptide for gut health and immune balance; dose 5–10 mg/day (short-term)
- **PEA (Palmitoylethanolamide):**
  - Natural fatty acid for pain relief and neuroprotection; dose 300–1,200 mg/day (ongoing)