FROM MY HEART TO YOUR GUT: LET'S BEAT CANCER (AND OTHER DISEASES) BEFORE THEY EVEN START

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FIU Clinical Associate Professor, Translational Medicine

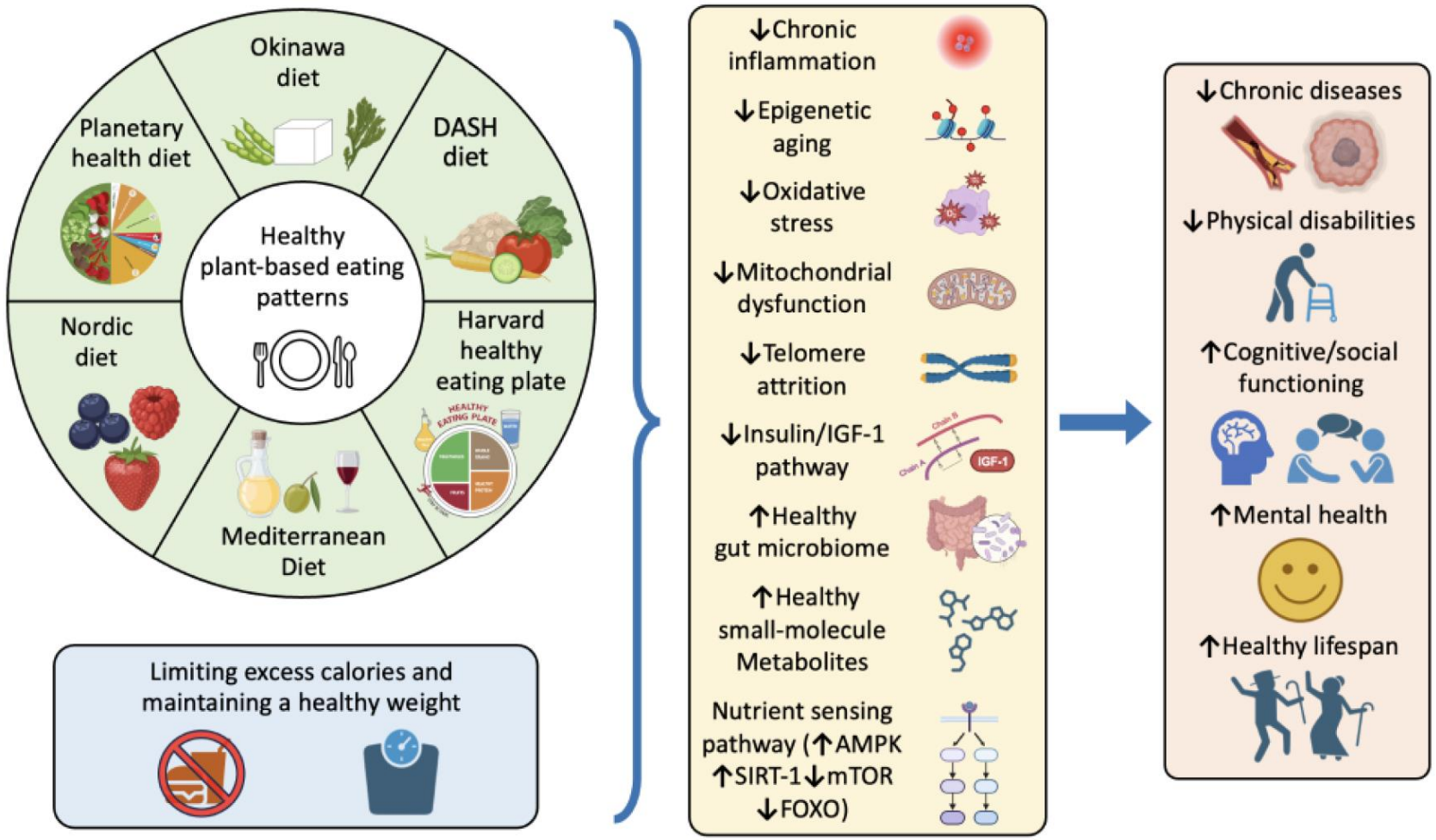
Baptist Health Chief of Lymphoma Services

Stalina

- WWII survivor
- 85 yo
- 2 breast cancers
- 2 knee replacements
- Powered by lentils
- Plant based

https://ageofaesthetics.com/stalinanikolayevna_eng

Diet strategies for promoting healthy aging and longevity



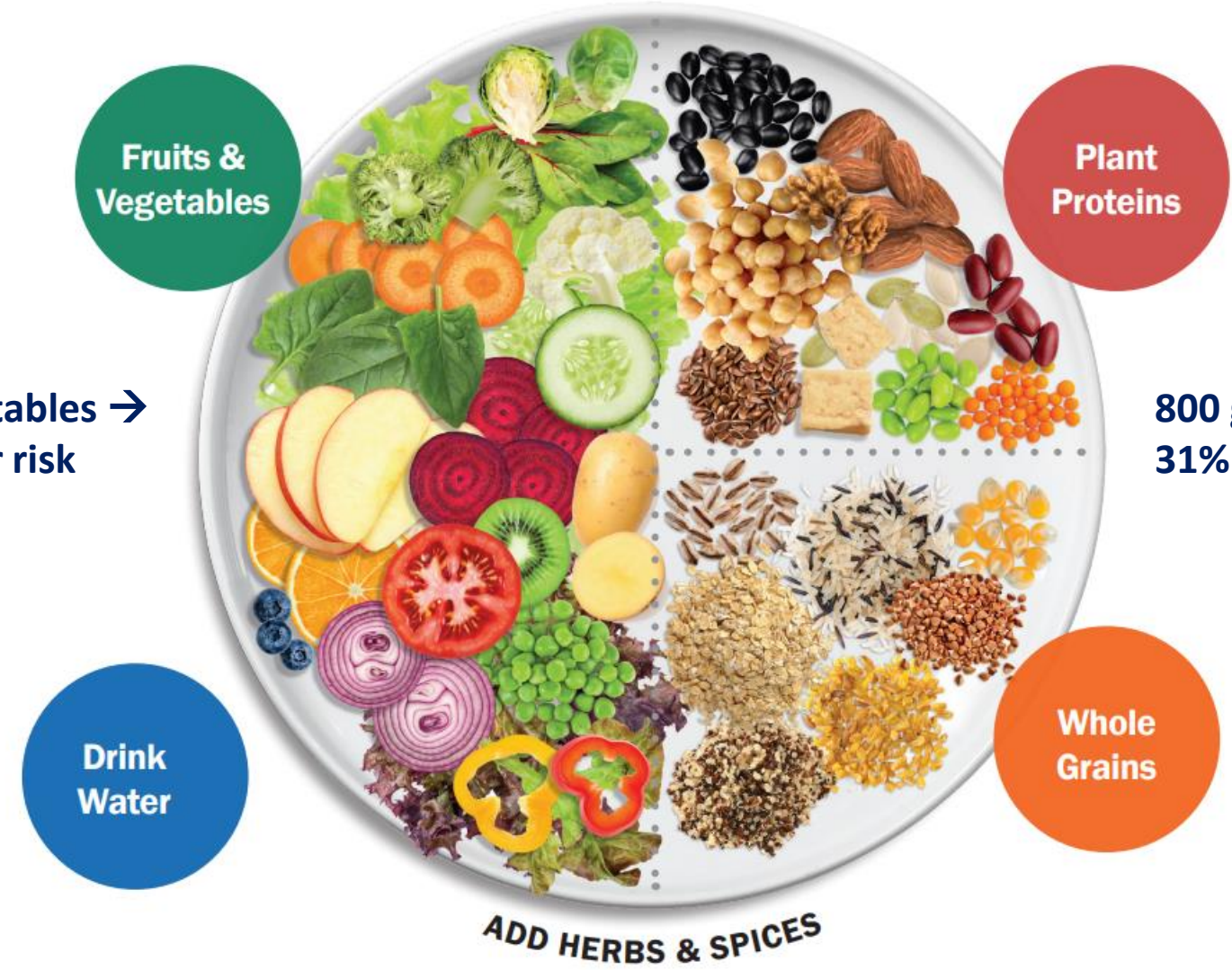
Hu FB J of Internal Medicine 2023

https://onlinelibrary.wiley.com/doi/full/10.1111/joim.13728

A WHOLE FOOD, PLANT-BASED PLATE

Nutrition Prescription for Treating & Reversing Chronic Disease

The American College of Lifestyle Medicine Dietary Lifestyle Position Statement for Treatment and Potential Reversal of Disease: ACLM recommends an eating plan based predominantly on a variety of minimally processed vegetables, fruits, whole grains, legumes, nuts and seeds.



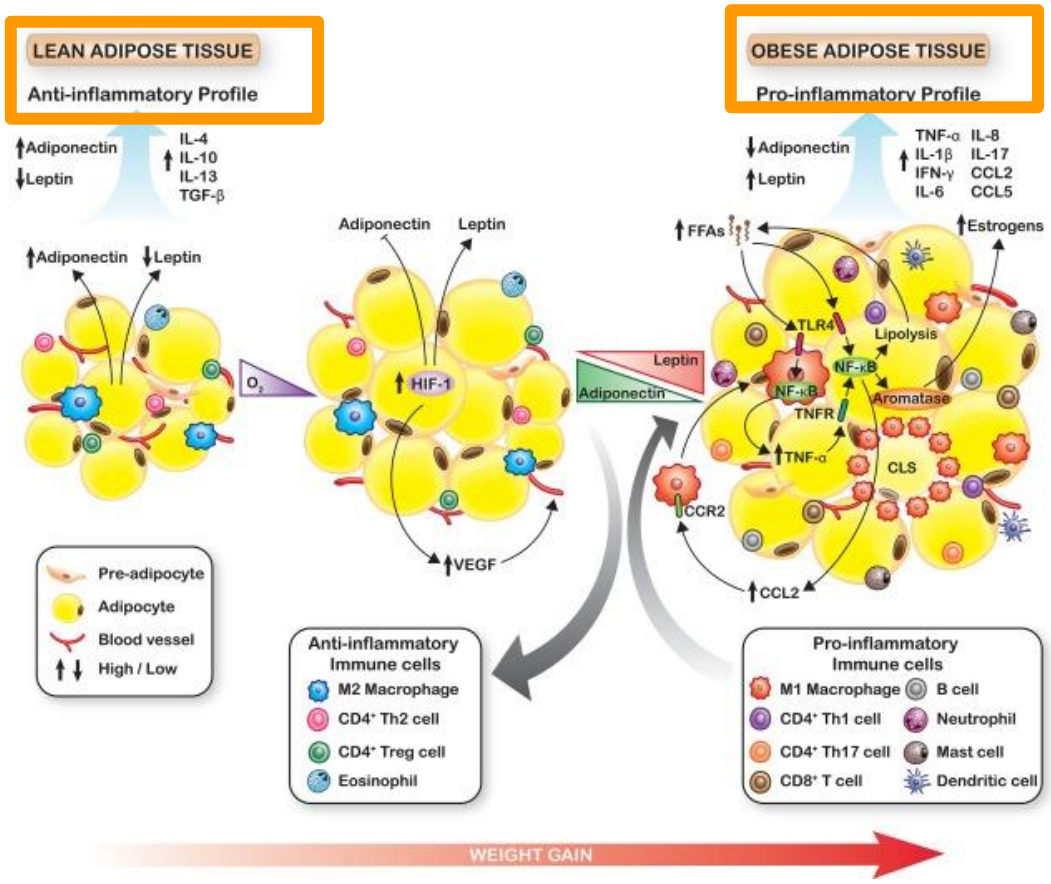
600 g/d fruits and vegetables →
14% reduction in cancer risk

800 g/d fruits and vegetables →
31% reduction all cause mortality

Lifestylemedicine.org; Aune 2017

Obesity=Metabolic Disruption Increases the Risk of Most Common Solid and Blood Cancers

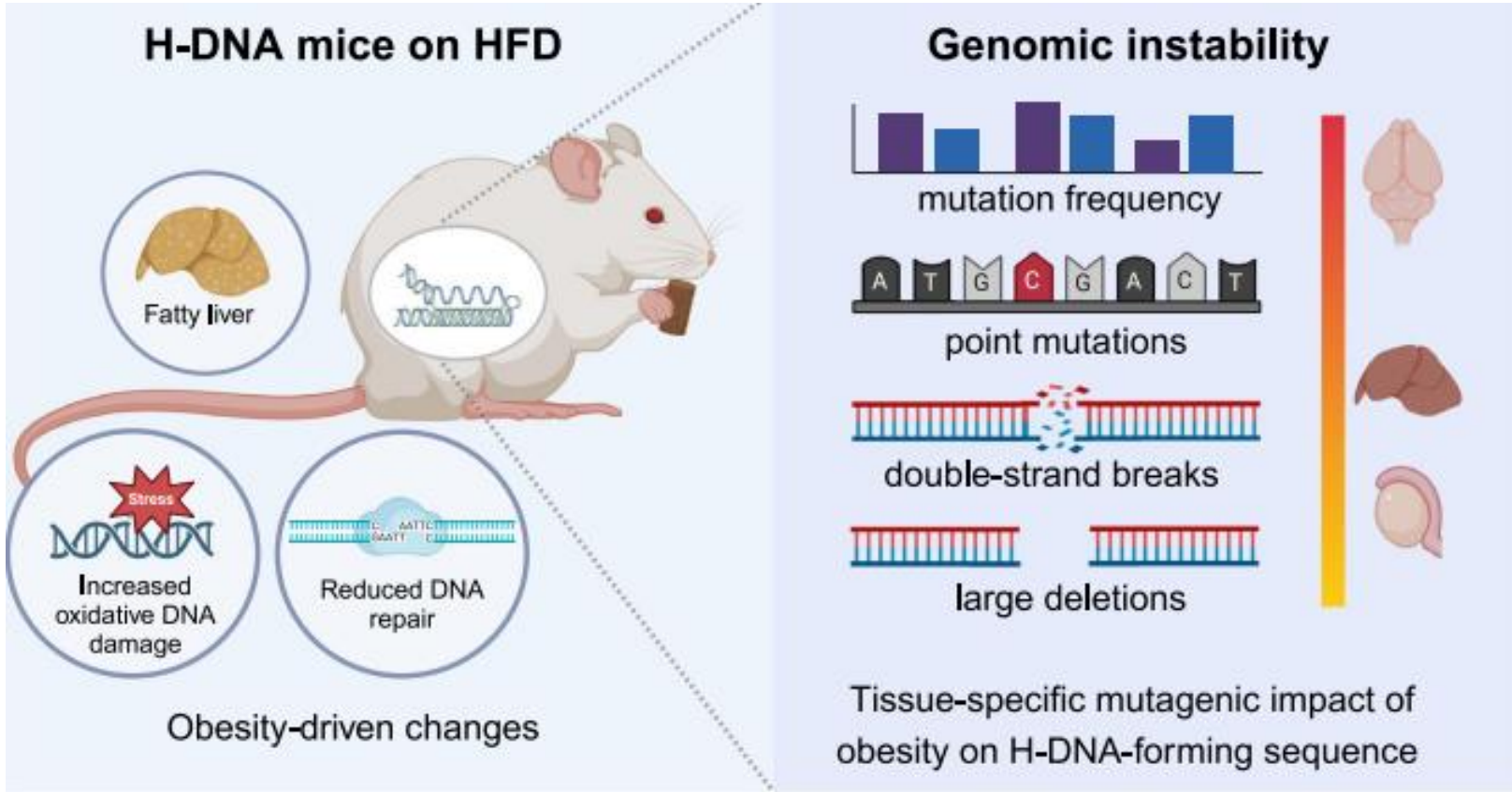
- Breast
- Ovarian
- Prostate
- Lung
- Esophageal
- Colon and rectal
- Pancreatic and liver
- Gallbladder
- Thyroid
- Kidney



- Multiple myeloma
- Non-Hodgkin lymphoma
- Hodgkin lymphoma
- Acute myeloid leukemia/CHIP
- Acute lymphoblastic leukemia
- CLL

metabolic, endocrinologic, immunologic, and **inflammatory-like changes, oxidative stress** → **dysregulated gene function, DNA repair, epigenetic changes→ CANCER**

Common Cancer Types – NChttps://www.cancer.gov/types/common-cancers#:~:text=The%20most%20common%20type%20of,prostate%20cancer%20and%20lung%20cancer.], Picon-Ruiz M, Morata-Tarifa C, Valle-Goffin JJ, Friedman ER, Slingerland JM. Obesity and adverse breast cancer risk and outcome: Mechanistic insights and strategies for intervention. *CA Cancer J Clin*. 2017;67(5):378-397. doi:10.3322/caac.21405; Haring B, Reiner AP, Liu J, et al. Healthy Lifestyle and Clonal Hematopoiesis of Indeterminate Potential: Results From the Women's Health Initiative. *J Am Heart Assoc*. 2021;10(5):e018789. doi:10.1161/JAHA.120.018789; Bilgihan MT, Ciftciler R. The Effect of Obesity and Body Mass Index on Hematologic Malignancies. *Metab Syndr Relat Disord*. 2023;21(7):353-361. doi:10.1089/met.2023.0048; Yang L, Drake BF, Colditz GA. Obesity and Other Cancers. *J Clin Oncol*. 2016;34(35):4231-4237. doi:10.1200/JCO.2016.68.4837; Petrelli F, Cortellini A, Indini A, et al. Association of Obesity With Survival Outcomes in Patients With Cancer: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2021;4(3):e213520. Published 2021 Mar 1. doi:10.1001/jamanetworkopen.2021.3520; Kompella, P., Wang, G., Durrett, R. E., Lai, Y., Marin, C., Liu, Y., Habib, S. L., DiGiovanni, J., & Vasquez, K. M. (2024). Obesity increases genomic instability at DNA repeat-mediated endogenous mutation hotspots. *Nature communications*, *15*(1), 6213. https://doi.org/10.1038/s41467-024-50006-8

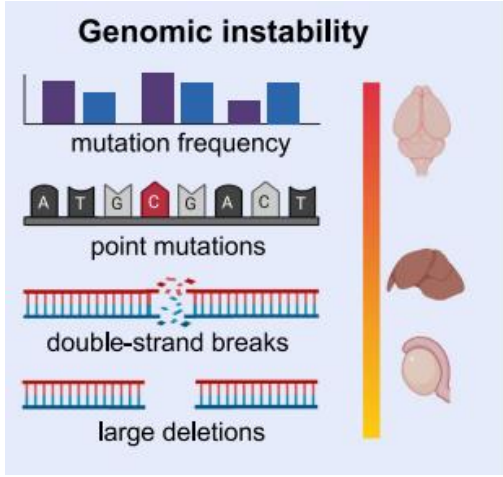

H-DNA mice on HFD
Fatty liver
Stress
Increased oxidative DNA damage
Reduced DNA repair
Obesity-driven changes
Genomic instability
mutation frequency
A T G C G A C T
point mutations
double-strand breaks
large deletions
Tissue-specific mutagenic impact of obesity on H-DNA-forming sequence

THE UNFORTUNATE CHAIN OF EVENTS

POOR DIET

METABOLIC SYNDROME
Obesity
Microbiome change

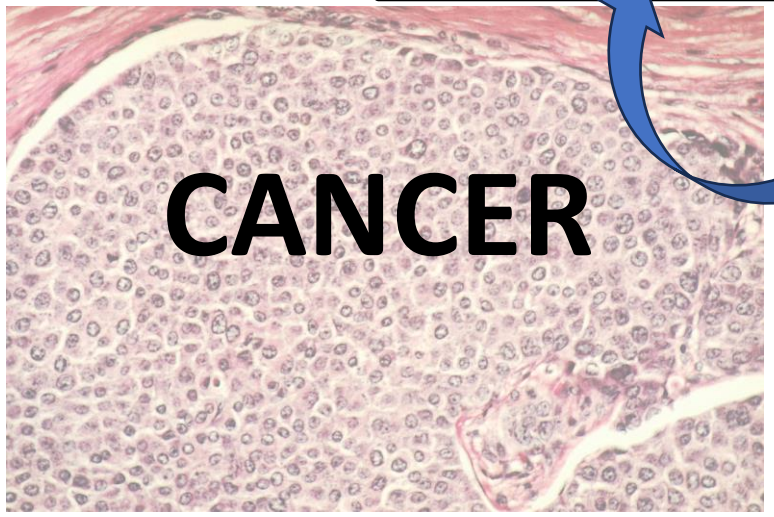
INFLAMMATION



FREE RADICALS
CHRONIC
OXYDATIVE STRESS

MUTAGENESIS
Epigenetic disruption
NF kappa B pathway

Anthocyanins



Sulforaphane

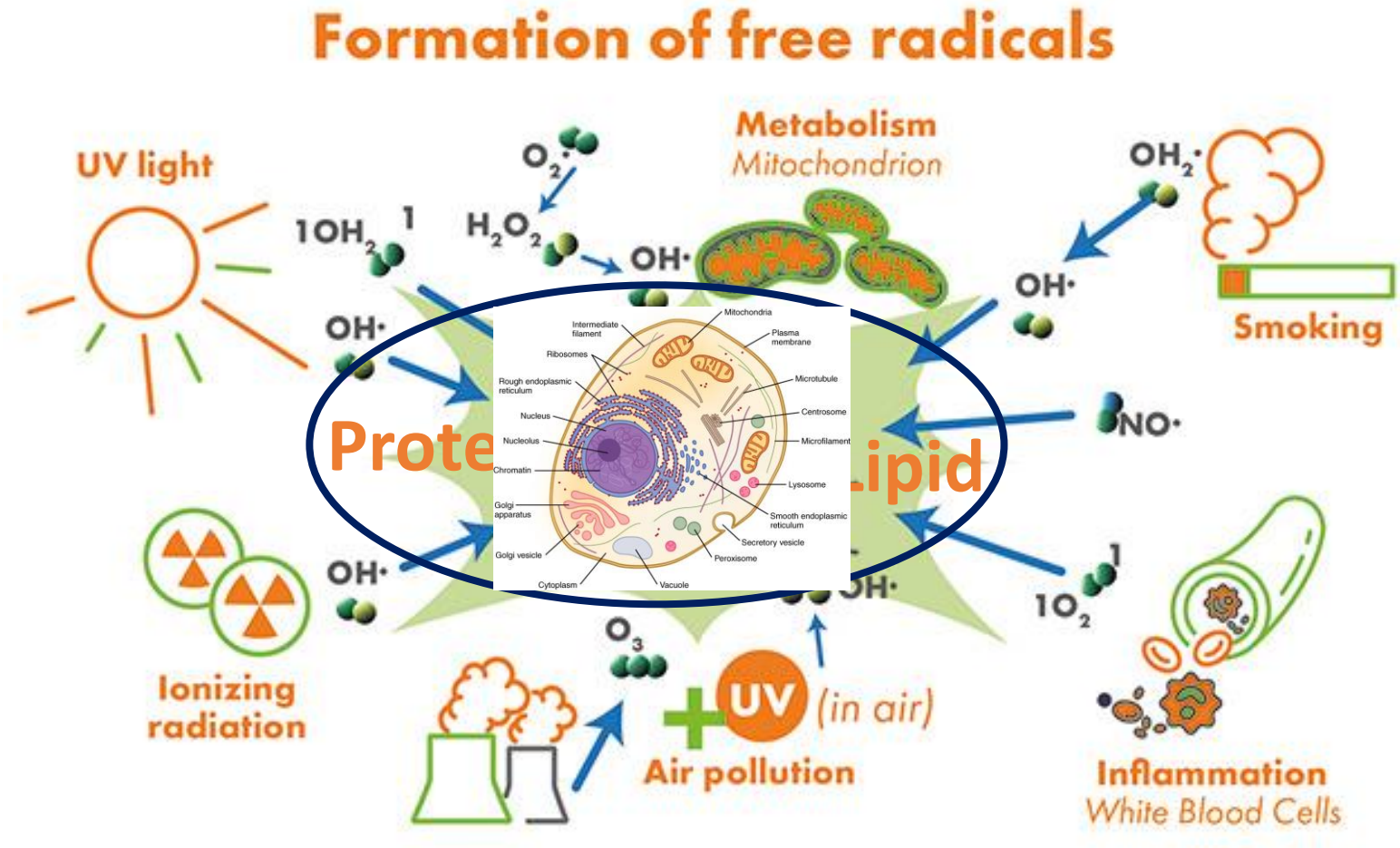
Carotenoids

Fiber

Wikipedia.org

FREE RADICALS- THEY DAMAGE EVERYTHING!!!!

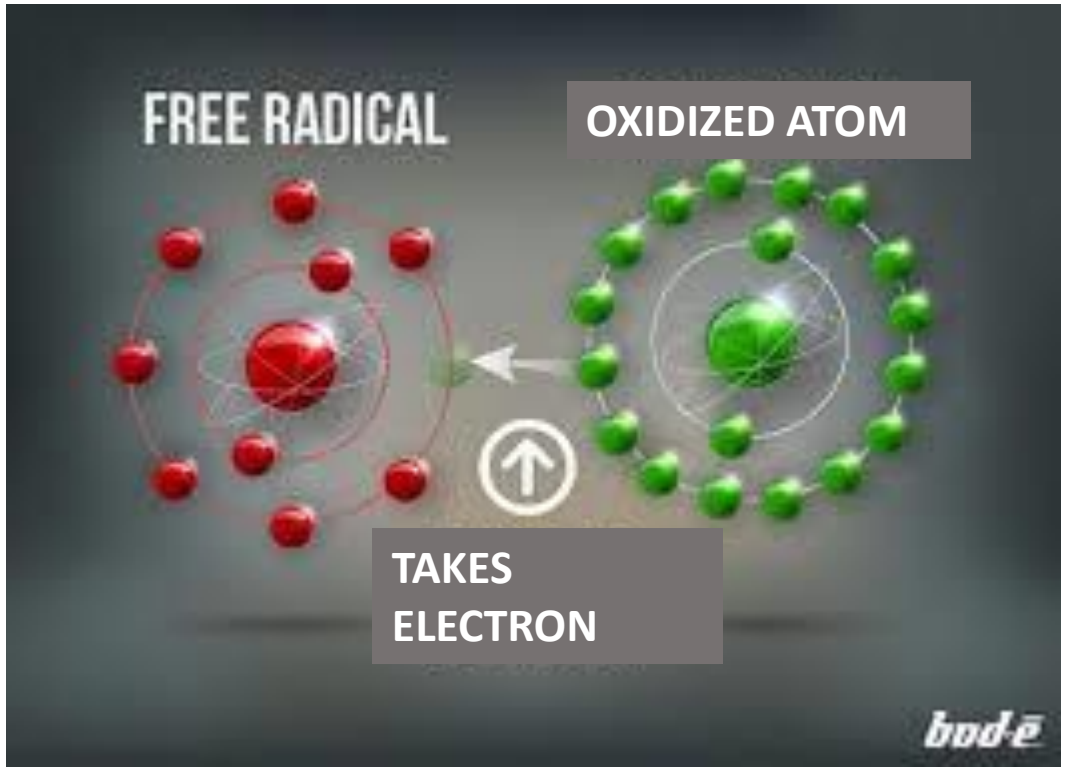
O2- superoxide
OH- hydroxyl

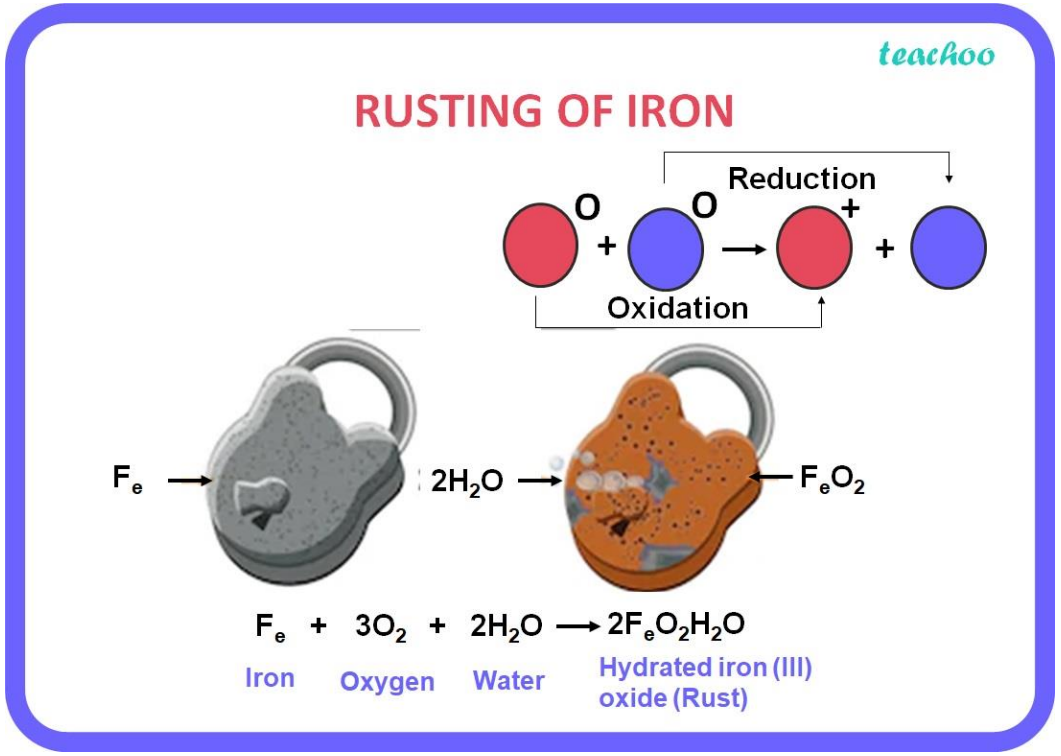


NO- nitric oxide
HO2- hydroperoxyl

https://livingnaturally.co.za/articles/general-healthcare/oxidative-stress/; Bodē Talk; Oxidative Stress - an overview | ScienceDirect Topics

FREE RADICALS- ELECTRONE THIEVES!!!

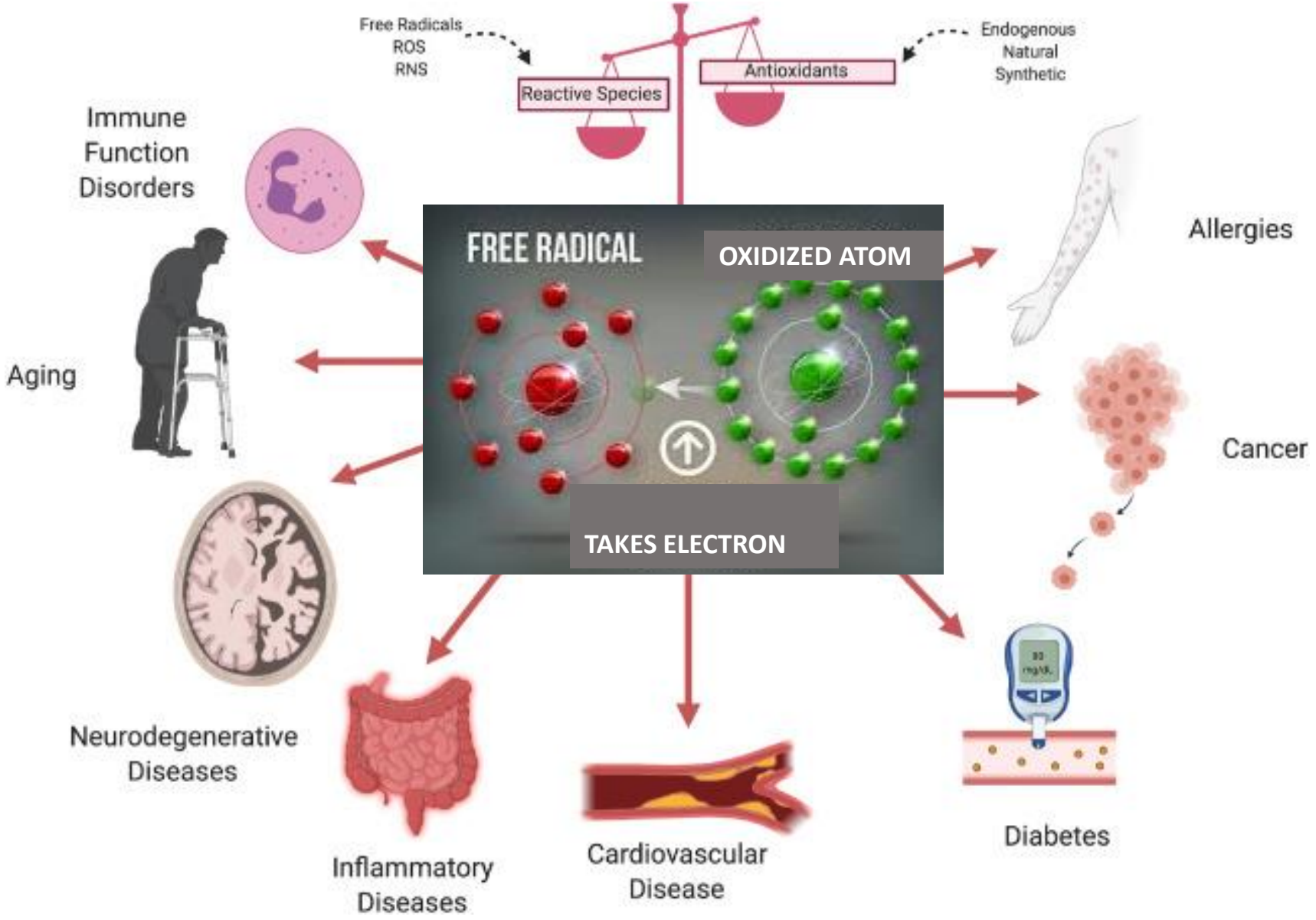




Free radicals:
O2- superoxide
OH- hydroxyl
NO- nitric oxide
HO2- hydroperoxyl

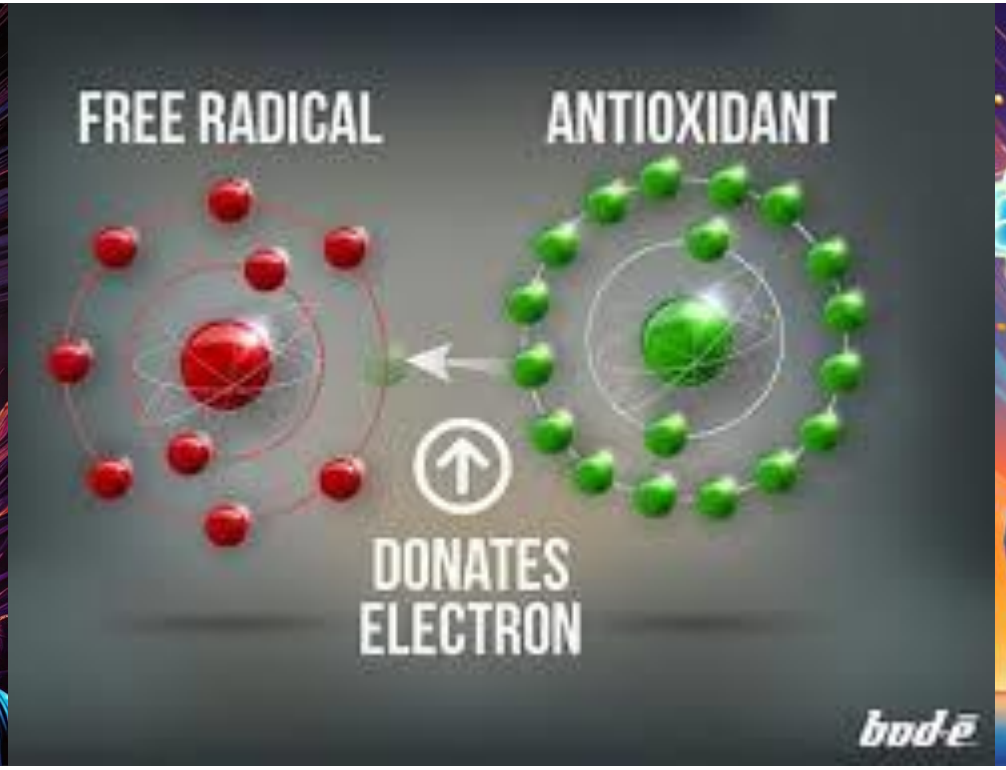
We get "rusty" as we go through life, but we can slow this process down!!!

WHEN HUMANS GET RUSTY…..



What is Oxidative Stress? — Bodē Talk; Oxidative Stress - an overview | ScienceDirect Topics

WE NEED DONORS (ELECTRON DONORS☺
TO PROTECT US FROM ELECTRON THIEVES

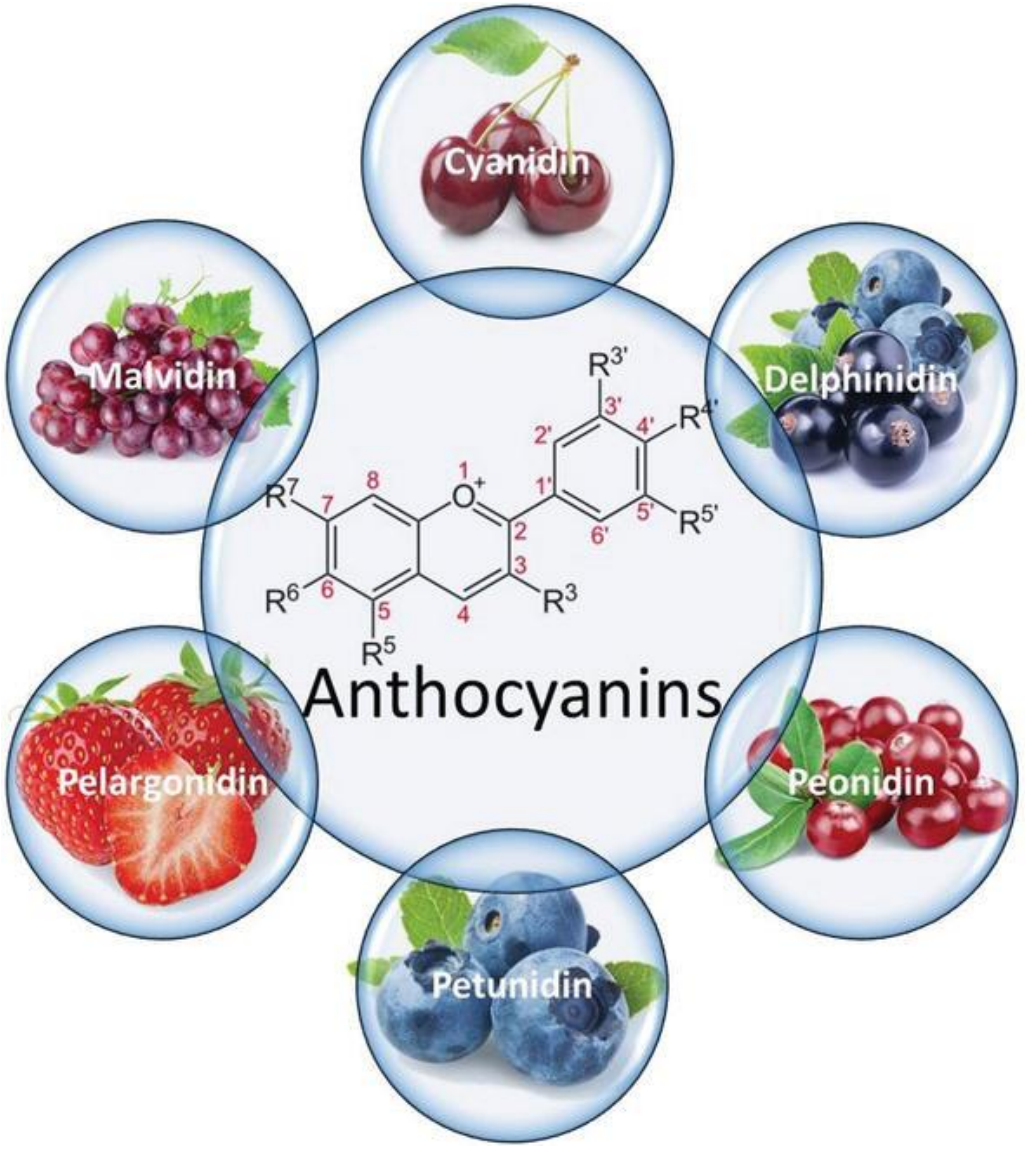


Anthocyanins

O2- superoxide
OH- hydroxyl
NO- nitric oxide
HO2- hydroperoxyl

Carotenoids

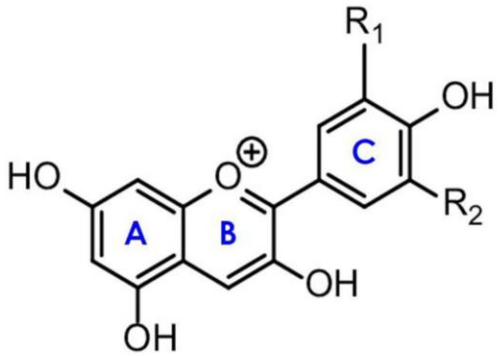
Anthocyanins- our protectors



Phenolic Compounds - Natural Sources, Importance and Applications
Edited by Marcos Soto-Hernandez, Mariana Palma-Tenango and Maria del Rosario Garcia-Mateos

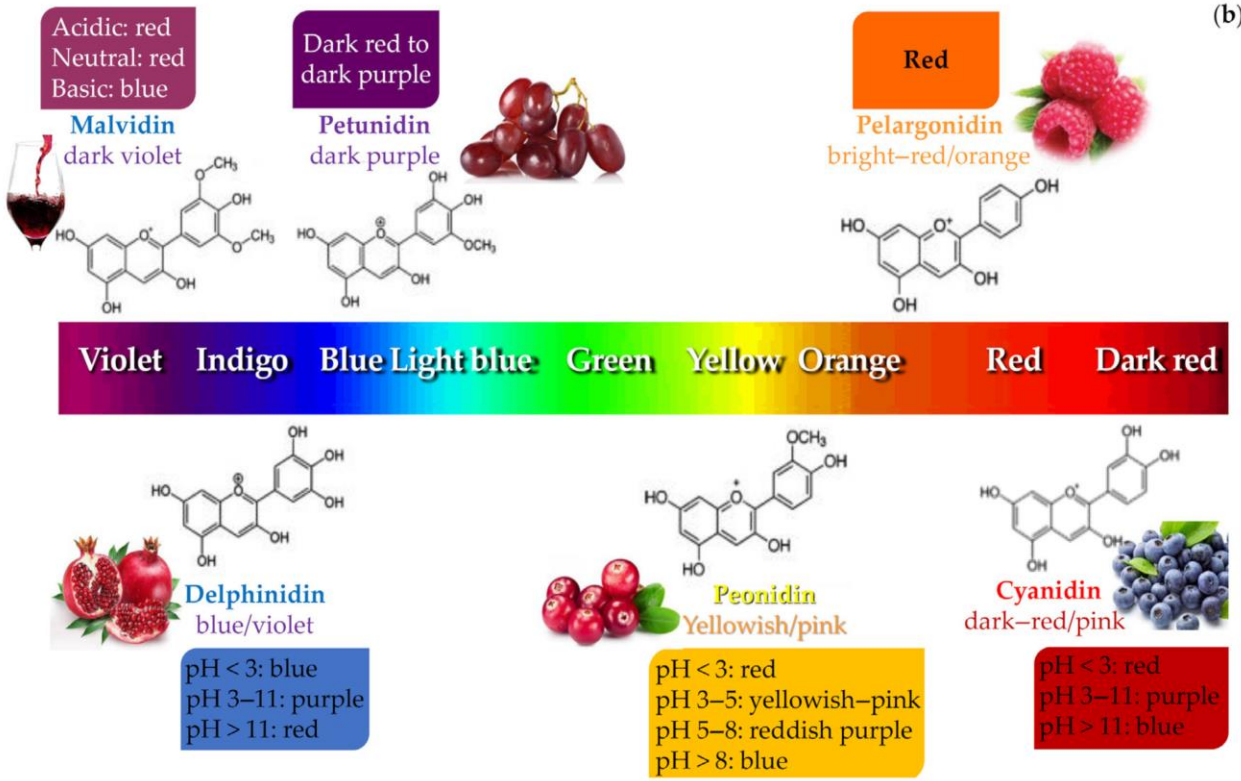
Anthocyanins- Nature's Sunscreen

(a)



	R1	R2	λmax
Pelargonidin	H	H	494 nm
Cyanidin	OH	H	504 nm
Delphinidin	OH	OH	508 nm
Peonidin	OCH_3	H	506 nm
Petunidin	OCH_3	OH	508 nm
Malvidin	OCH_3	OCH_3	510 nm

(b)



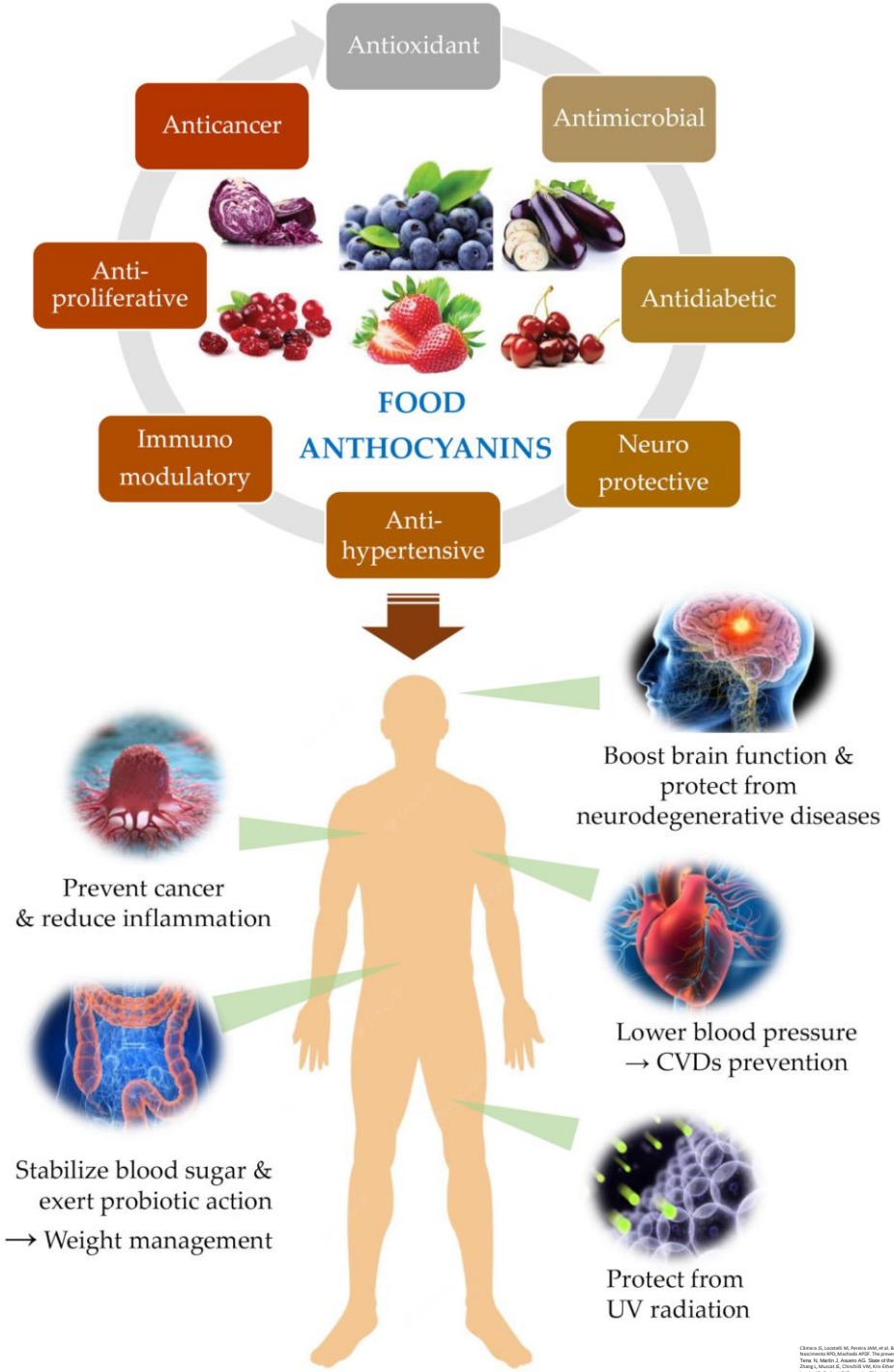
PHOTOAGING REPAIR!

- ABSORB AND DISSIPATE UV LIGHT (esp UVB)
- DONATE ELECTRONES TO PROTECT FROM UV OXIDATION (ANTIOXIDANTS)
- ANTIINFLAMMATORY
- PREVENT CELL DEATH UV INDUCED BY UV LIGHT
- INHIBIT COLLAGEN BEAKDOWN
- INHIBIT PIGMENTATION

Red Cabbage pH Indicator | Kitchen Chemistry for Kids - Science Kiddo

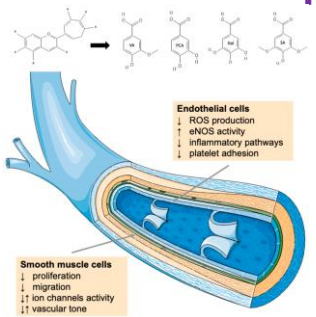
Câmara JS, Locatelli M, Pereira JAM, et al. Behind the Scenes of Anthocyanins-From the Health Benefits to Potential Applications in Food, Pharmaceutical and Cosmetic Fields. *Nutrients*. 2022;14(23):5133.; Oliveira H, Correia P, Pereira AR, et al. Exploring the Applications of the Photoprotective Properties of Anthocyanins in Biological Systems. *Int J Mol Sci*. 2020;21(20):7464.
[1] Li K, Zhang M, Chen H, et al. Anthocyanins From Black Peanut Skin Protect Against UV-B Induced Keratinocyte Cell and Skin Oxidative Damage Through Activating NRF 2 Signaling. Food & Function. 2019;10(10):6815-6828. doi:10.1039/c9fo00706g.
[2] Guo X, He L, Sun J, et al. Exploring the Potential of Anthocyanins for Repairing Photoaged Skin: A Comprehensive Review. Foods (Basel, Switzerland). 2024;13(21):3506. doi:10.3390/foods13213506.
[3] Wang Y, Zhang D, Liu Y, et al. The Protective Effects of Berry-Derived Anthocyanins Against Visible Light-Induced Damage in Human Retinal Pigment Epithelial Cells. Journal of the Science of Food and Agriculture. 2015;95(5):936-44. doi:10.1002/jsfa.6765.
[1] Jo K, Bae GY, Cho K, et al. An Anthocyanin-Enriched Extract From Improves Signs of Skin Aging in UVB-Induced Photodamage. Antioxidants (Basel, Switzerland). 2020;9(9):E844. doi:10.3390/antiox9090844.
[2] Giampieri F, Alvarez-Suarez JM, Tulipani S, et al. Photoprotective Potential of Strawberry (Fragaria × Ananassa) Extract Against UV-A Irradiation Damage on Human Fibroblasts. Journal of Agricultural and Food Chemistry. 2012;60(9):2322-7. doi:10.1021/jf205065x.
[3] Guo X, He L, Sun J, et al. Exploring the Potential of Anthocyanins for Repairing Photoaged Skin: A Comprehensive Review. Foods (Basel, Switzerland). 2024;13(21):3506. doi:10.3390/foods13213506.

Anthocyanins- Our Most Important Donors Protect Us from Diseases Generated by Oxidative Stress



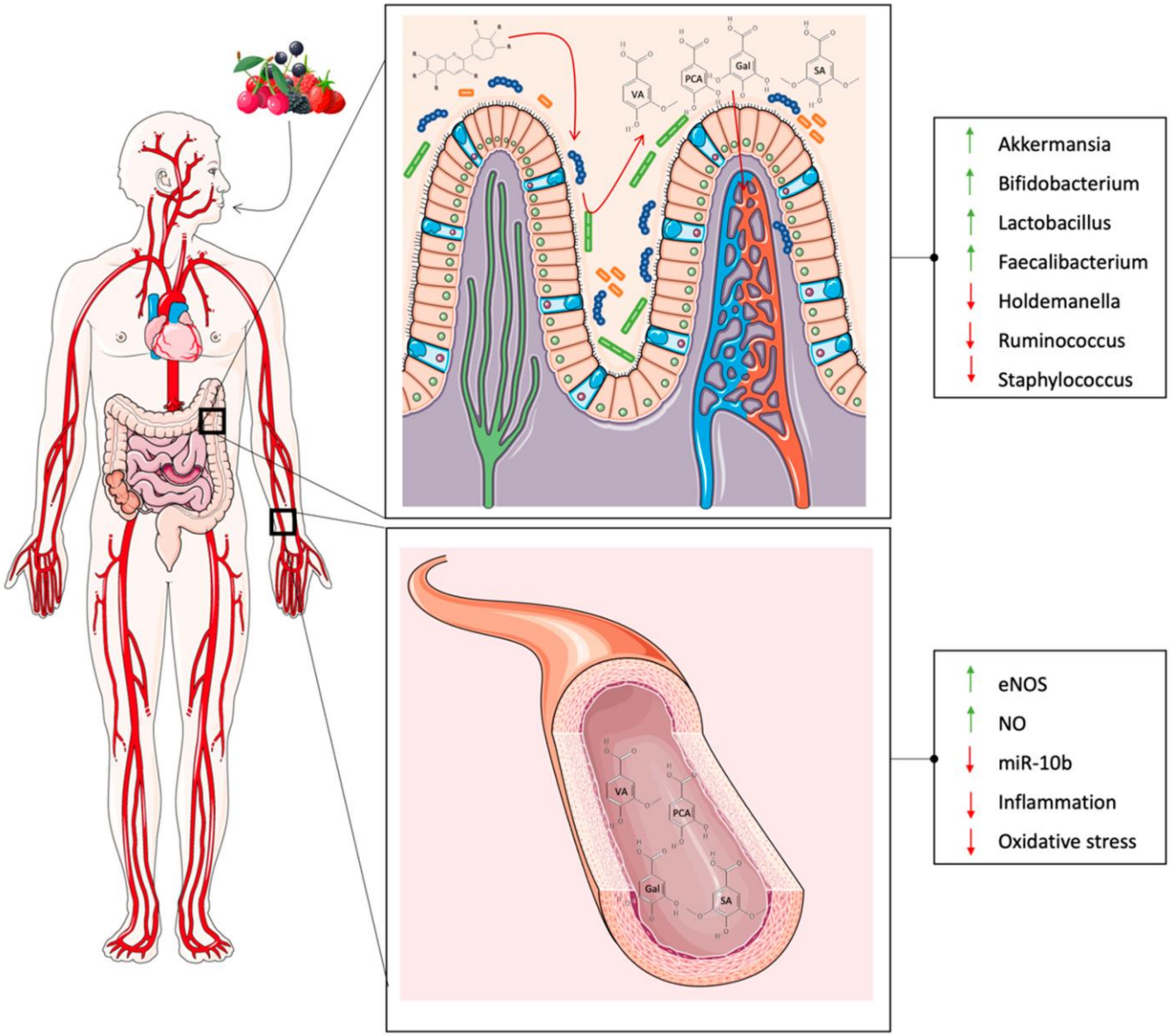
Reduce colorectal cancer risk

Berries- 20% reduction in all cause mortality
Anthocyanins 30% reduction all cause mortality and stress related disease risk



40% reduction in cardiovascular disease

ANTHOCYANINS- BOOST BENEFICIAL GUT BACTERIA



Laudani S, Godos J, Di Domenico FM, et al. Anthocyanin Effects on Vascular and Endothelial Health: Evidence from Clinical Trials and Role of Gut Microbiota Metabolites. *Antioxidants (Basel)*. 2023;12(9):1773.

Gene edited tomato approved by USDA | The Grower

Suzauddula M, Kobayashi K, Park S, Sun XS, Wang W. Bioengineered Anthocyanin-Enriched Tomatoes: A Novel Approach to Colorectal Cancer Prevention. *Foods*. 2024;13(18):2991.

PURPLE RAIN

Legendary 'Purple Rain' musician Prince dead at 57 – The Talon; Anthocyanin Foods, Benefits and Supplements - Dr. Axe; **Phenolic Compounds - Natural Sources, Importance and Applications** Edited by Marcos Soto-Hernandez, Mariana Palma-Tenango and Maria del Rosario Garcia-Mateos

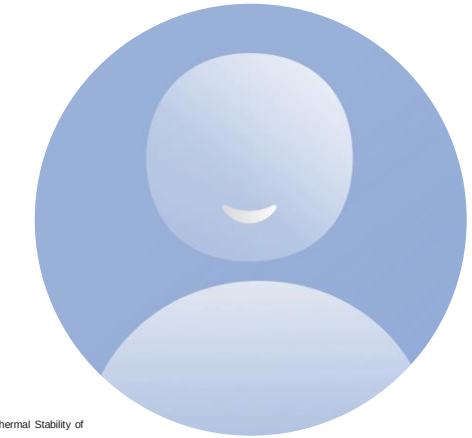
MY DAILY MEDICINE

average American spends around $146 per month on chronic illness medications

- Water soluble
- RAW
- Fast boiling
- Steaming
- Mircrowaving
- Save the broth

- Boiling x 30 minutes (60-80% decrease)

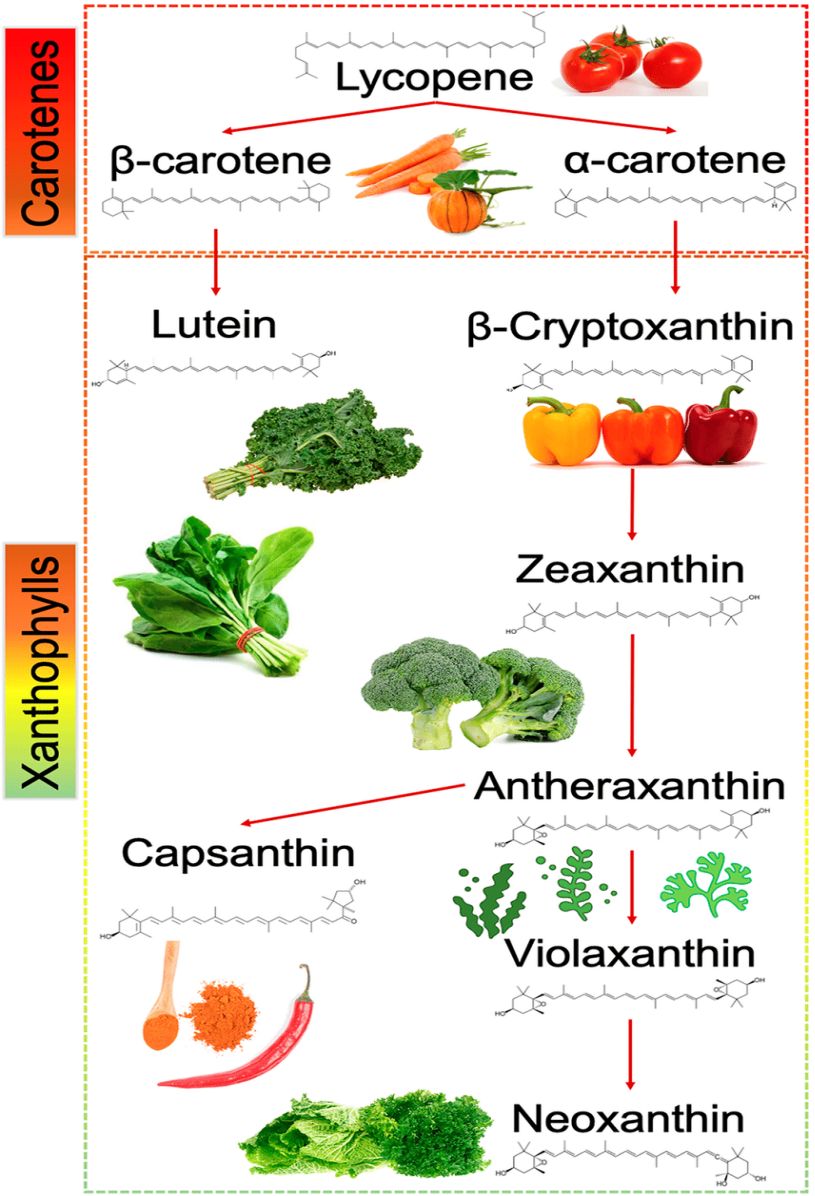
  11–45% decrease
- Baking
- Frying
- Air-frying
- Stir-frying



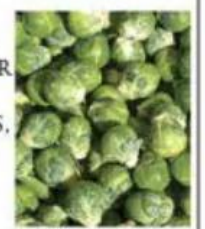
https://simplyhomecooked.com/purple-cabbage-salad/

sweetpotato GZ9. *Heliyon*. 2019;5(4):e01515. Oancea S. A Review of the Current Knowledge of Thermal Stability of
- Stephanie Kay Nutrition

Carotenoids- Not Necessarily Orange



Carrillo C, Nieto G, Martínez-Zamora L, et al. Novel Approaches for the Recovery of Natural Pigments with Potential Health Effects. *J Agric Food Chem*. 2022;70(23):6864-6883; Swapnil 2021 https://doi.org/10.1016/j.cpb.2021.100203

Type	Carotenoid Food Sources
Alpha-Carotene	  Carrots, pumpkin, winter squash, plantains, collard greens  
Beta-Carotene	    Carrots, leafy greens, sweet potato, cantaloupe, pumpkin
Lycopene	 Tomatoes, papaya, grapefruit, watermelon  
Lutein/ Zeaxanthin	   Leafy greeens, summer/ winter squash, brussel sprouts, yellow corn 
Beta-cryptoxanthin	 Pumpkin, papaya, sweet pepper, orange, carrot   

Better Brain Health with Carotenoids | Fullscript; Carotenoid Foods May Protect Against Certain Breast Cancers - American Institute for Cancer Research

ALZHEIMER's, DEPRESSION, DEMENTIA- DISEASES OF INFLAMMATION

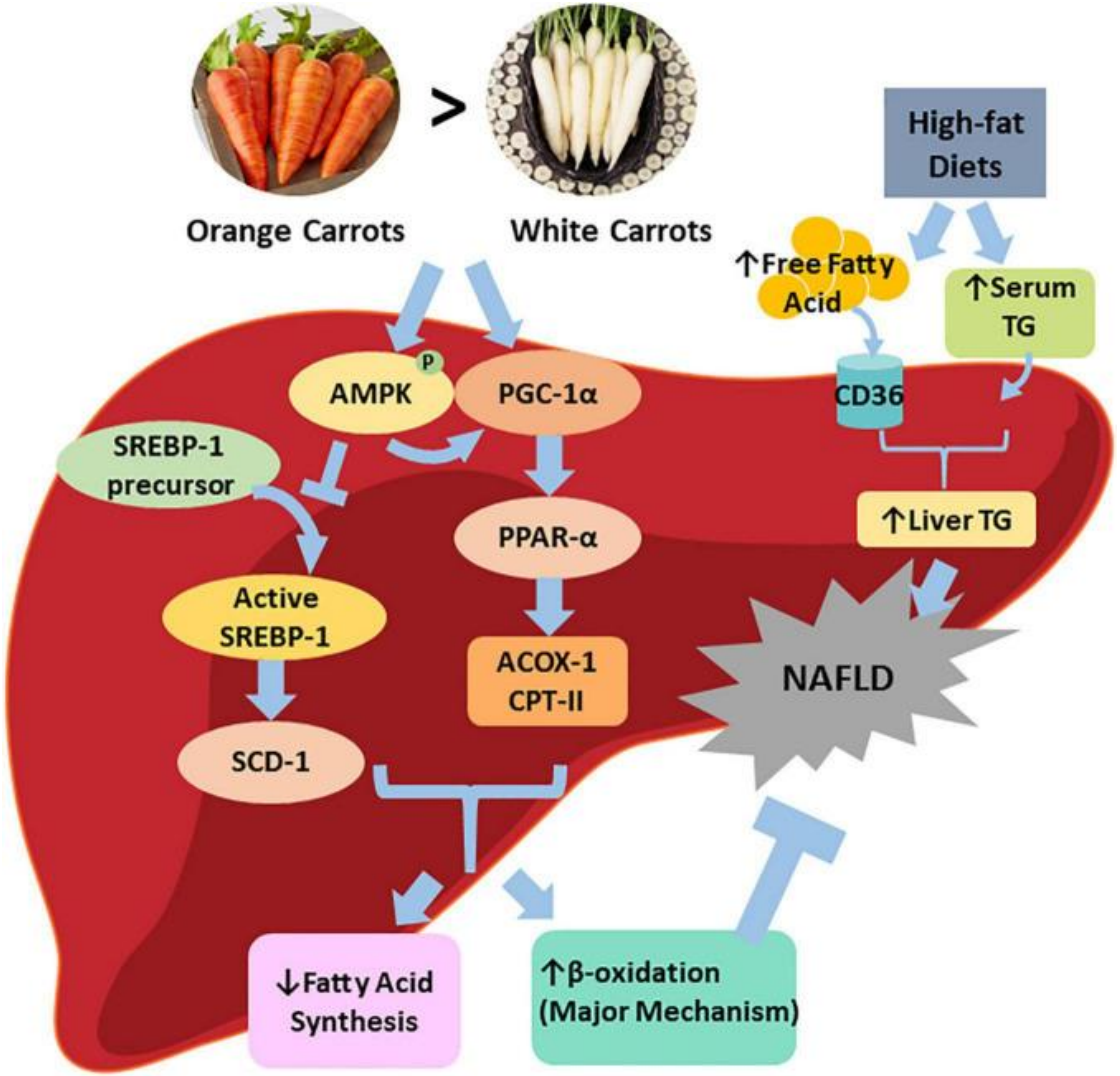
- beta-carotene, lutein, lycopene, and zeaxanthin → low levels in Alzheimer's patients
- higher serum concentrations of lutein, zeaxanthin, and beta-carotene ---> better ***processing speed, attention, and executive function***
- lutein and zeaxanthin supplementation → decrease in ***cognitive decline and improvements in cognitive tasks; improved memory***
- lower levels of carotenoids were associated with depressive symptoms and even predicted the development of new symptoms in older Italians

435 STUDIES ANALYZED
CAROTENOID INTERVENTION→ COGNITIVE FUNCTION IMPROVEMENT

Lopresti AL, Smith SJ, Drummond PD. The Effects of Lutein and Zeaxanthin Supplementation on Cognitive Function in Adults With Self-Reported Mild Cognitive Complaints: A Randomized, Double-Blind, Placebo-Controlled Study. *Front Nutr*. 2022;9:843512. Davinelli S, Ali S, Solfrizzi V, Scapagnini G, Corbi G. Carotenoids and Cognitive Outcomes: A Meta-Analysis of Randomized Intervention Trials. *Antioxidants (Basel)*. 2021

Better Brain Health with Carotenoids | Fullscript; Carotenoid Foods May Protect Against Certain Breast Cancers - American Institute for Cancer Research

DON'T FEED YOUR GEESE CARROTS IF YOU WANT FOIS GRAS



Balbuena E., Cheng J., Eroglu A. Carotenoids in orange carrots mitigate non-alcoholic fatty liver disease progression. Front. Nutr. 2022;9:987103. doi: 10.3389/fnut.2022.987103.

Carotenoids And Cancer Risk- GET THEM FROM FOOD!!!

BREAST
decreased risk (14%)
30% at the highest lutein level

GASTROINTESTINAL
Increased tomatoe consumption-27%
Reduction gastric cancer

PROSTATE
α-carotene intake and lycopene 13-19% decrease
1 serving of tomatoe sauce per week ~15% decrease

LUNG AND BLADDER
Beta-carotene supplementation - increased risk

ORAL AND PHARYNGEAL
Lycopene, α-carotene, and β-cryptoxanthin 26% reduction

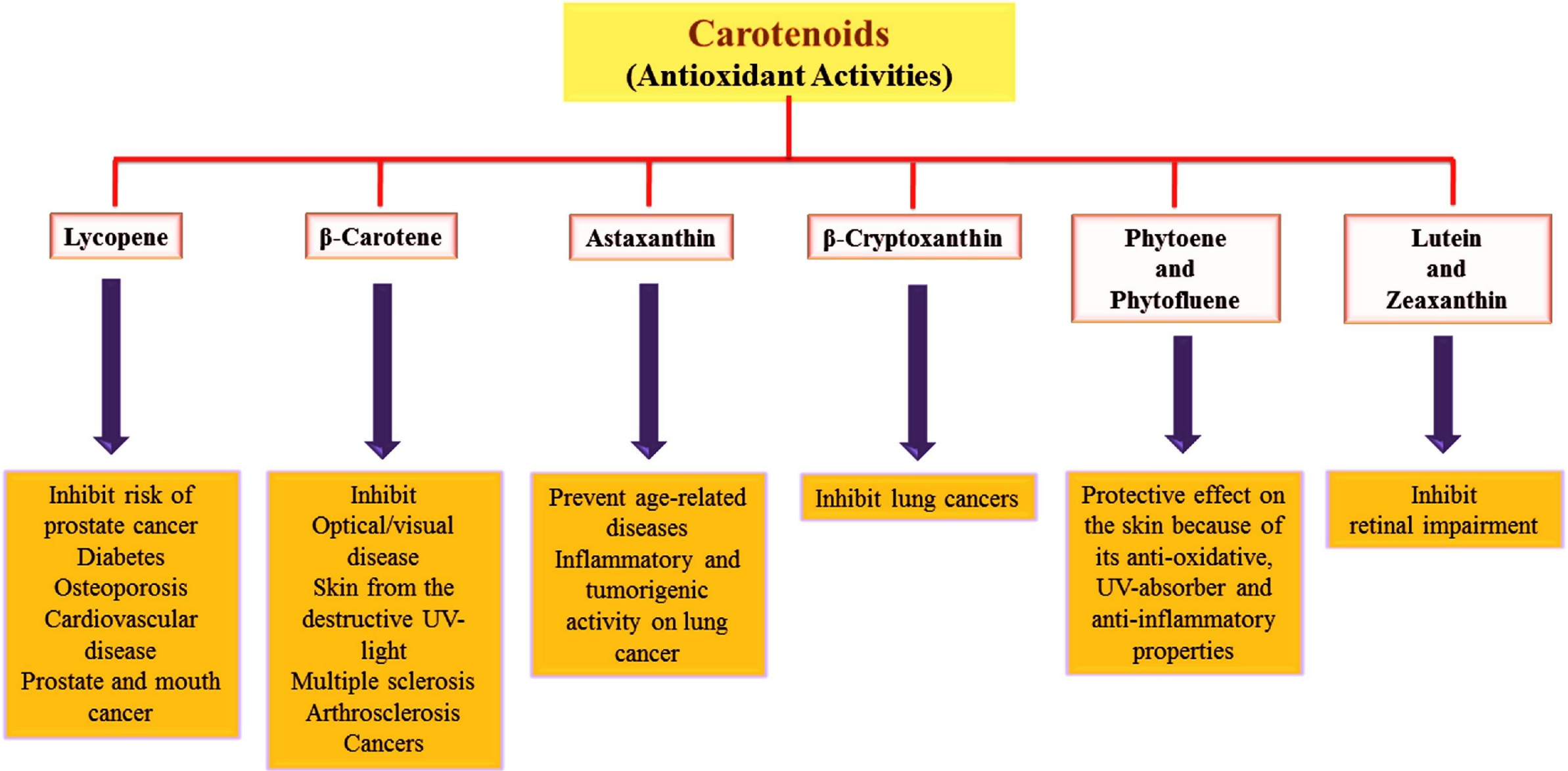
[4] Dehnavi MK, Ebrahimpour-Koujan S, Lotfi K, Azadbakht L. The Association Between Circulating Carotenoids and Risk of Breast Cancer: A Systematic Review and Dose-Response Meta-Analysis of Prospective Studies. Advances in Nutrition (Bethesda, Md.). 2024
[5] Wang Y, Cui R, Xiao Y, Fang J, Xu Q. Effect of Carotene and Lycopene on the Risk of Prostate Cancer: A Systematic Review and Dose-Response Meta-Analysis of Observational Studies. PloS One. 2015;10(9):.
Eliassen AH, Hendrickson SJ, Brinton LA, et al. Circulating Carotenoids and Risk of Breast Cancer: Pooled Analysis of Eight Prospective Studies.
Peng C, Gao C, Lu D, et al. Circulating Carotenoids and Breast Cancer Among High-Risk Individuals.
Leoncini E, Nedovic D, Panic N, et al. Carotenoid Intake From Natural Sources and Head and Neck Cancer: A Systematic Review and Meta-Analysis of Epidemiological Studies. This meta-analysis found that dietary carotenoids are associated with a reduced risk of head and neck cancers
Rowles JL, Erdman JW. Carotenoids and Their Role in Cancer Prevention. This review summarizes the associations between dietary carotenoids and the risk of ten common cancers, suggesting potential benefits in reducing carcinogenesis.[

HEAT AND FAT

Heating and cooking lycopene-rich foods (e.g., tomatoes cooked into tomato sauce) increases bioavailability and absorption

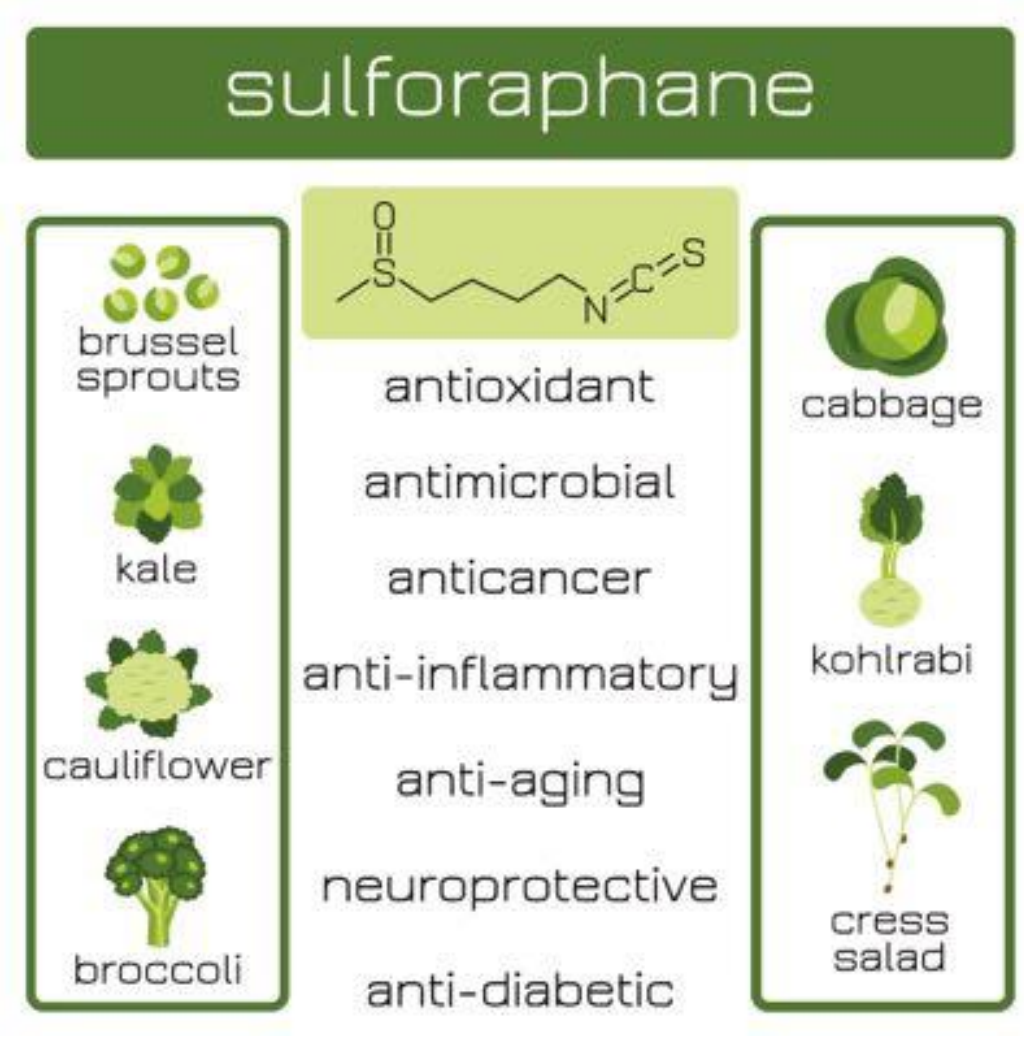
Carotenoids are fat soluble-best absorbed with fat

Carrot Salad - Food Faith Fitness; Easy Homemade Marinara Sauce (VIDEO) - NatashasKitchen.com



https://doi.org/10.1016/j.cpb.2021.100203 Swapnil 2021

CRUCIFEROUS CRUSADE:
HOW BRUSSEL SPROUTS PROTECT YOU FROM COLON CANCER



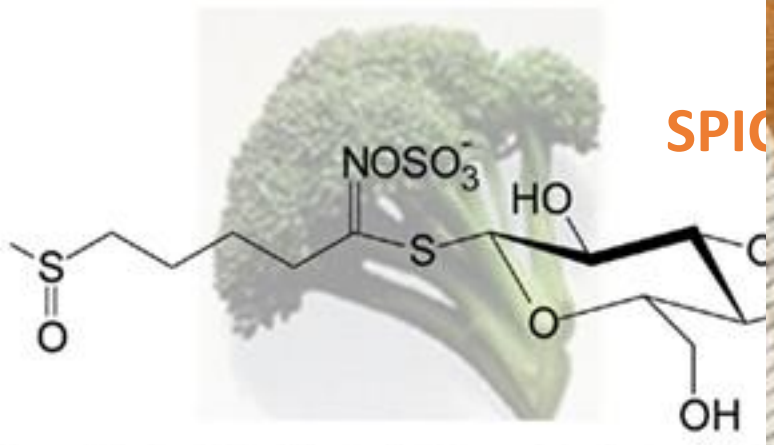
Sulforaphane—A Compound with Potential Health Benefits for Disease Prevention and Treatment: Insights from Pharmacological and Toxicological Experimental Studies

Sulforaphane benefits: How leafy veggies like broccoli and Brussels sprouts may help reduce your cancer risk | MD Anderson Cancer Center

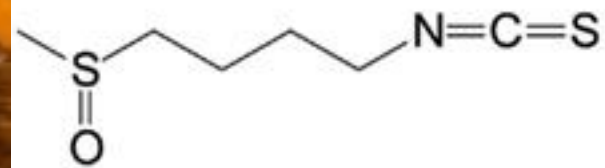
RAW (chop, let sit x 40 min)

STEAM <5 min
Microwave < 2min

SPIC TARD!!!!!



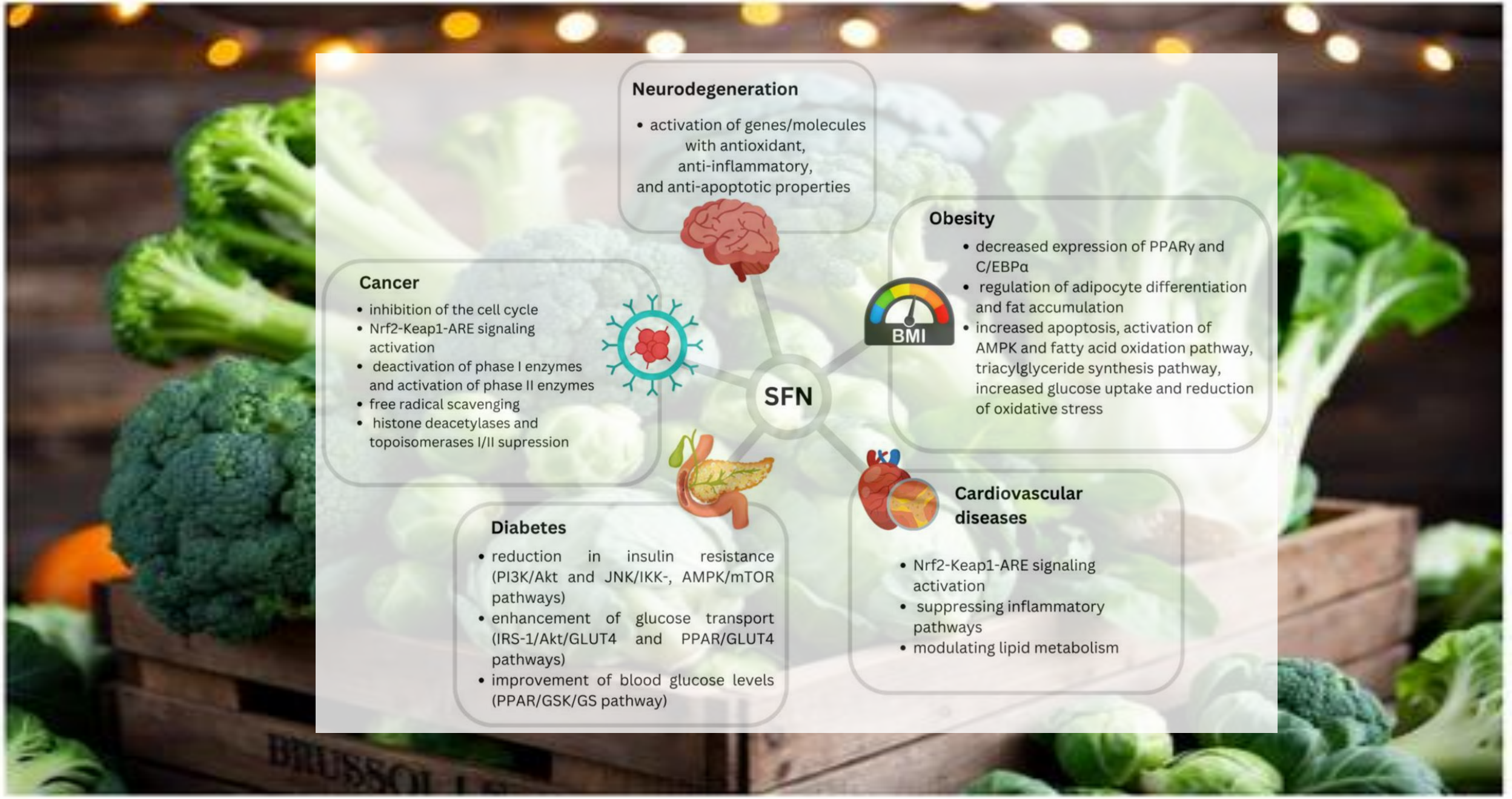
4-methylsulfinylbutyl Glucosinolate (4-M
(Glucoraphanin)



Sulforaphane

The Health Benefits Of Broccoli Sprouts; Sauerkraut On Hot Dog Royalty-Free Images, Stock Photos & Pictures | Shutterstock

Boddupalli, Sekhar et al. "Induction of phase 2 antioxidant enzymes by broccoli sulforaphane: perspectives in maintaining the antioxidant activity of vitamins a, C, and e." *Frontiers in genetics* vol. 3 7. 24 Jan. 2012, doi:10.3389/fgene.2012.00007; **Okunade 2018; Barba 2016)**

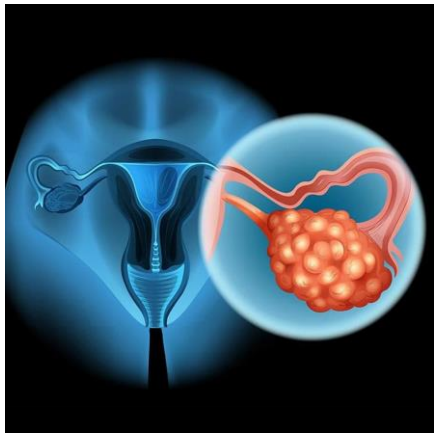


Sulforaphane—A Compound with Potential Health Benefits for Disease Prevention and Treatment: Insights from Pharmacological and Toxicological Experimental Studies

Sulforaphane benefits: How leafy veggies like broccoli and Brussels sprouts may help reduce your cancer risk | MD Anderson Cancer Center; (Liu 2024, Aune 2017)

Scientists analyzed data from the U.S. National Health and Nutrition Examination Survey. Those who ate broccoli 1-2 times a week had 30-40% lower risk of dying from any cause. Higher broccoli consumption is associated with lower risk of dying from cancer or cardiovascular disease. Cruciferous vegetable consumption in general is inversely associated with all cancer risk.

CRUCIFEROUS CRUSAID TO FIGHT CANCER!!!



OVARIAN
ENDOMETRIAL

GASTROINTESTINAL
Esophageal
gastric
liver
pancreatic
colorectal cancers

PROSTATE

LUNG

RENAL CELL AND BLADDER

Ovarian cancer – Symptoms, Causes & Prevention | Sachin Marda | Best Cancer Specialist in Hyderabad
Metastatic Renal Cell Carcinoma | Dr. Sandeep Nayak
Lung cancer: symptoms, treatments and life expectancy; Laryngeal cancer: What you should know | MD Anderson Cancer Center; san antonio breast cancer symposium (SABCS) - Cleveland Clinic; Prostate Cancer #6 Metal Print by Science Photo Library - Fine Art America

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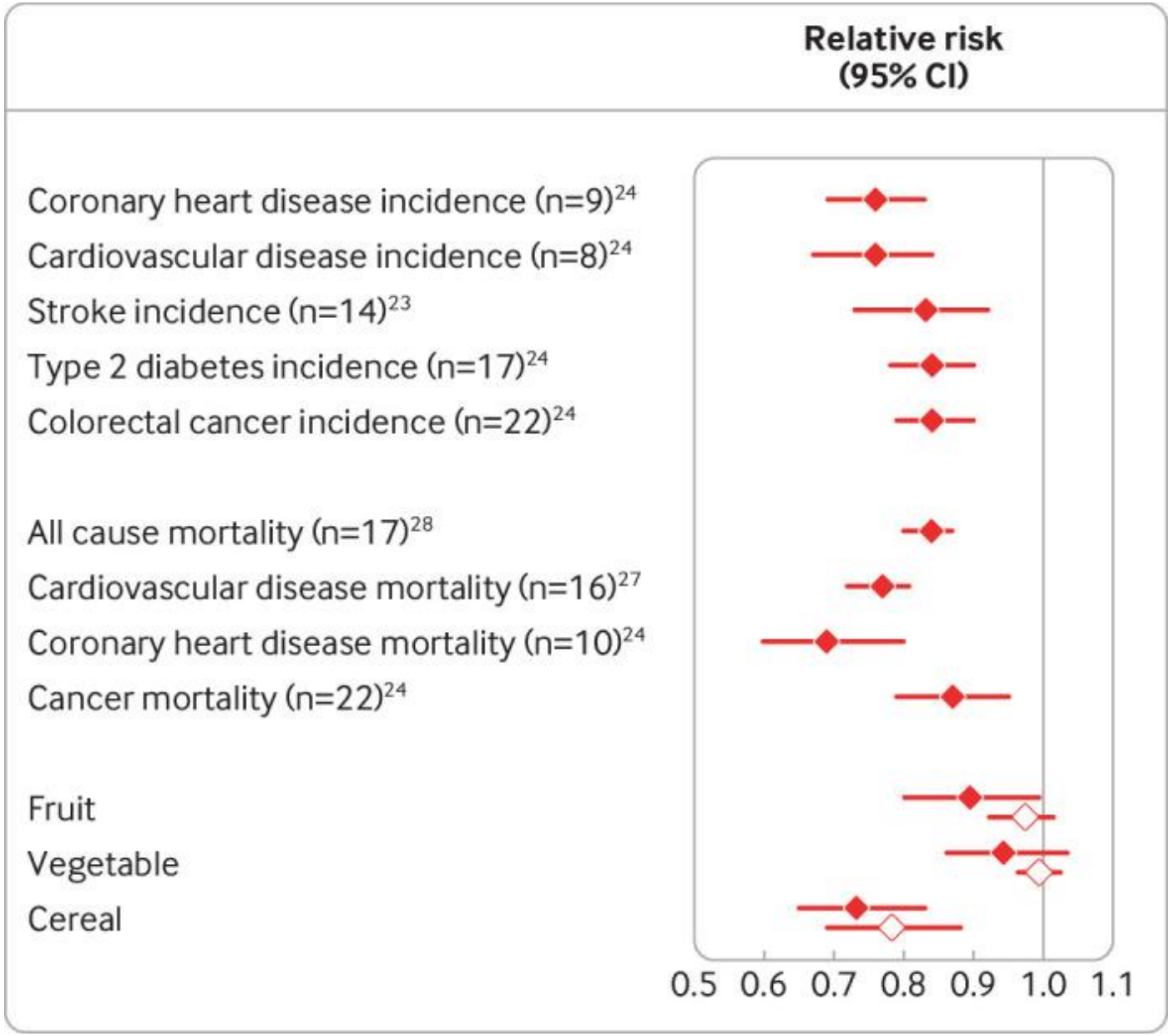
FIBER FIBER FIBER !!!! FIBER INTAKE FOR OPTIMAL HEALTH



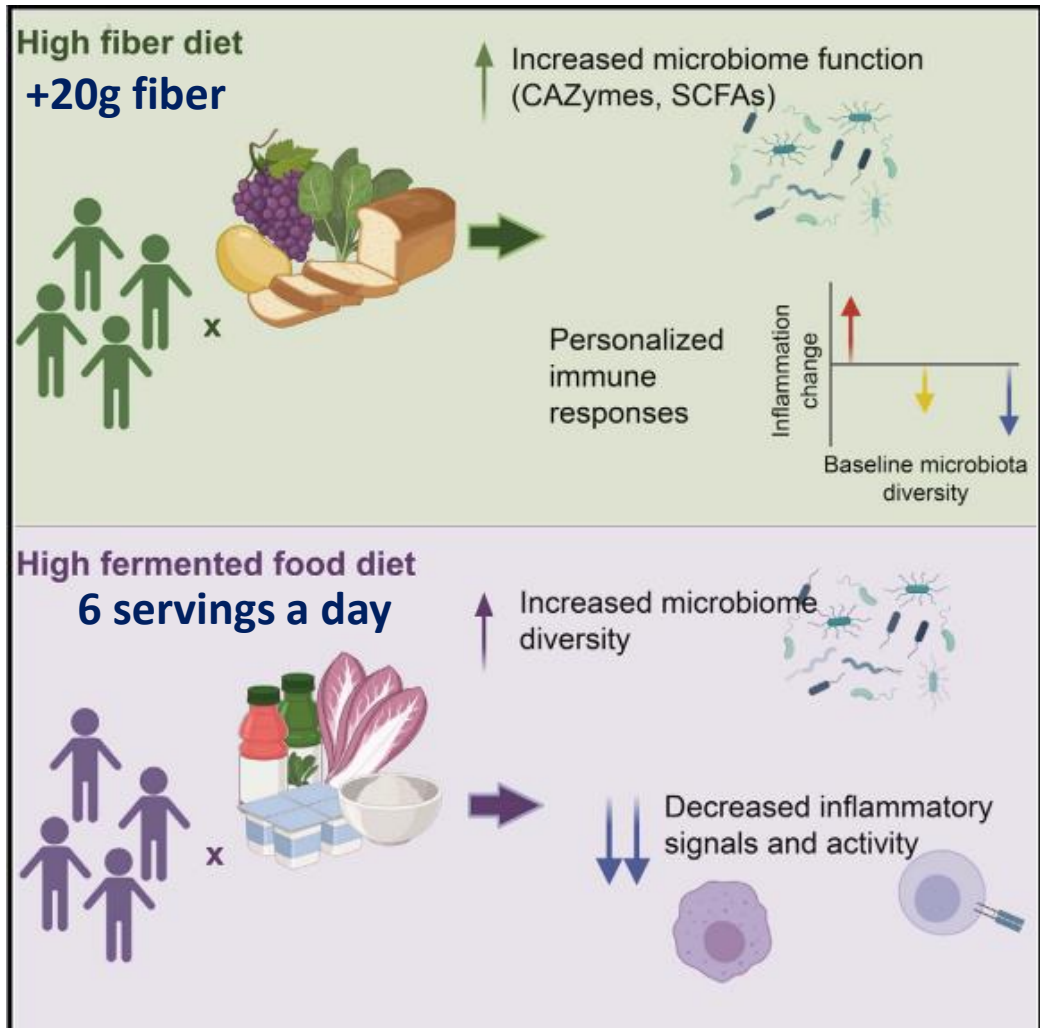
Females > 25 g (best >40g)
Men > 40g (best >45g)

800 g/d fruits and vegetables →
31% reduction all cause mortality

McKeown NM, Fahey GC Jr, Slavin J, van der Kamp JW. Fibre intake for optimal health: how can healthcare professionals support people to reach dietary recommendations? BMJ. 2022 Jul 20;378:e054370. doi: 10.1136/bmj-2020-054370. PMID: 35858693; PMCID: PMC9298262.

FIBER FIBER FIBER and EVEN BETTER FERMENTED FIBER!!!

10 weeks



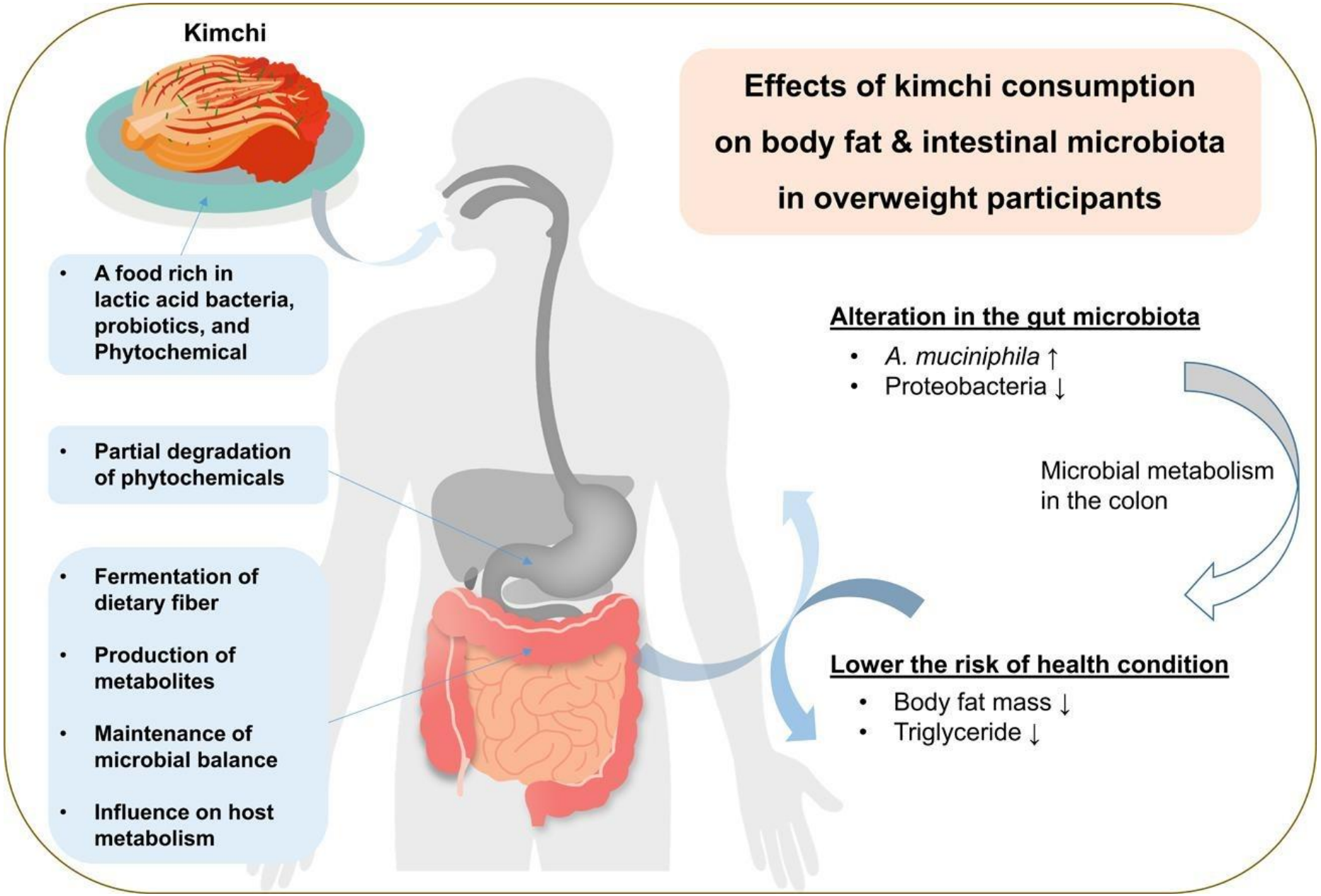
- **Increase in bacterial diversity**
- **19 markers of inflammation decreased**
- **IL-6 decreased**

(key mediator of chronic inflammation, elevated in rheumatoid arthritis, type-2 diabetes, and chronic stress)

kombucha yogurt
kefir buttermilk
kvass = 6 oz
kimchi sauerkraut
other fermented veggies = 1/4 cup
vegetable brine drink = 2 oz

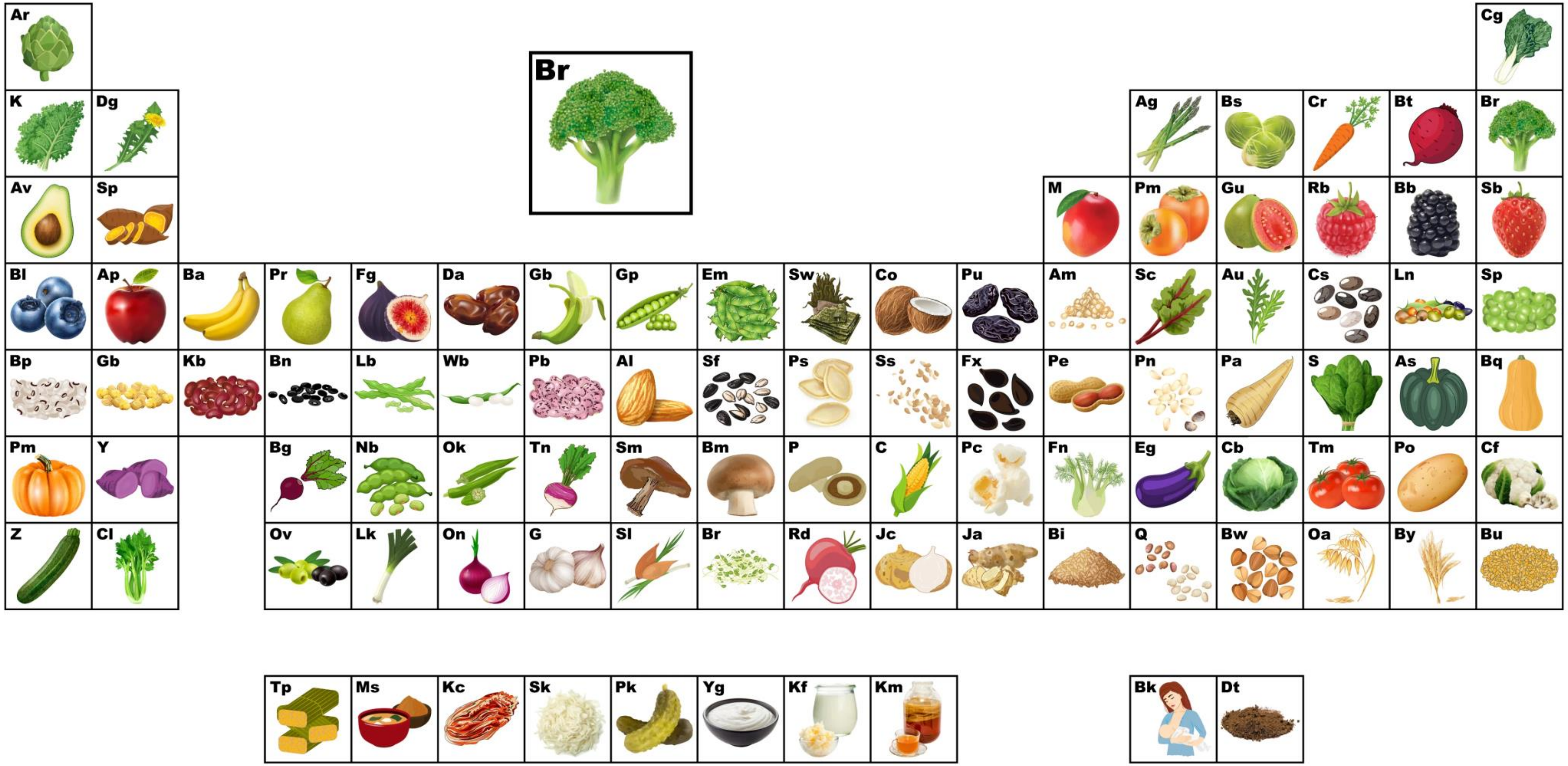
Superfood-List.pdf (lifestylemedicine.org)

Wastic et al. Cell 2022



Wooje Lee, Min-Sung Kwon, Ye-Rang Yun, Hasun Choi, Mi-Ja Jung, Hyelyeon Hwang, Myung-Jun Shin, Jong-Hwan Park, Du-Ri Kim, Ji Yoon Chang, So Young Moon, Ho Jae Lee, Tae-Woon Kim, Tae Woong Whon, Sung Wook Hong, Effects of kimchi consumption on body fat and intestinal microbiota in overweight participants: A randomized, double-blind, placebo-controlled, single-center clinical trial, Journal of Functional Foods,. https://doi.org/10.1016/j.jff.2024.106401. (https://www.sciencedirect.com/science/article/pii/S1756464624004031)

Periodic Table of Microbiome-Friendly Foods



Ar Artichoke
Cg Collard Greens
K Kale
Dg Dandelion Greens
Ag Asparagus
Bs Brussels Sprouts
Cr Carrot
Bt Beet
Br Broccoli
Av Avocado
Sp Sweet Potato
M Mango
Pm Persimmon
Gu Guava
Rb Raspberries
Bb Blackberries
Sb Strawberries
Bl Blueberries
Ap Apple
Ba Banana
Pr Pear
Fg Fig
Da Dates
Gb Green Banana
Gp Green Peas
Em Edamame
Sw Seaweed
Co Coconut
Pu Prunes
Am Amaranth
Sc Swiss Chard
Au Arugula
Cs Chia Seeds
Ln Lentils
Sp Split Peas
Bp Black Eyed Peas
Gb Garbanzo Beans
Kb Kidney Beans
Bn Black Beans
Lb Lima Beans
Wb White Beans
Pb Pinto Beans
Al Almonds
Sf Sunflower Seeds
Ps Pumpkin Seeds
Ss Sesame Seeds
Fx Flax Seeds
Pe Peanuts
Pn Pine Nuts
Pa Parsnip
S Spinach
As Acorn Squash
Bq Butternut Squash
Pm Pumpkin
Y Yam
Bg Beet Greens
Nb Green Beans
Ok Okra
Tn Turnip
Sm Shiitake Mushroom
Bm Button Mushroom
P Portobello Mushroom
C Corn
Pc Popcorn
Fn Fennel
Eg Eggplant
Cb Cabbage
Tm Tomato
Po Potato
Cf Cauliflower
Z Zucchini
Cl Celery
Ov Olive
Lk Leek
On Onion
G Garlic
Sl Shallot
Br Bean Sprouts
Rd Radish
Jc Jicama
Ja Jerusalem Artichoke
Bi Brown Rice
Q Quinoa
Bw Buckwheat
Oa Oats
By Barley
Bu Bulgur
Tp Tempeh
Ms Miso
Kc Kimchi
Sk Sauerkraut
Pk Pickles
Yg Yogurt
Kf Kefir
Km Kombucha
Bk Breast Milk
Dt Dirt

Microbiome-Friendly Foods | Prostate Cancer Foundation (pcf.org)

NATURE'S OZEMPIC IN OUR KITCHEN--FOODS THAT INCREASE GLP-1

- **Anthocyanins- all the purple fruits and vegetables**
- **Beta glucan fiber- (oat and barley bran)**
- **Legumes: soy, green lentils, peas**
- **Quercetin**

(apples with skin, berries, citrus, onions, capers, green tea)

- **Curcumin (turmeric)**
- **Sesquiterpenoids**

(ginger, turmeric, black pepper, chamomile, green tea)

- **Berberine - barberry**
- **Resveratrol- grapes, berries, dark chocolate**
- **Cinnamon**
- **Whey protein (cheese water)**

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PROTEIN MYTH BUSTERS

MYTH: Most people do not get enough protein.

FACT: The average person consumes too much protein.

How much protein do you need per day?

19-51+ years old*

*The general recommendation for protein intake is 0.8g/kilogram or 0.36g/pound.

The average adult person consumes 80 grams of protein per day – far more than is necessary! Excess protein is stored as fat and can lead to weight gain or prevent weight loss. Our bodies benefit from consuming mostly fruits, vegetables, whole grains, beans, and legumes to provide healthy sources and amounts of carbohydrate, fat, and protein.

Sources: https://health.gov/dietaryguidelines/2015/guidelines/appendix-7/
J Acad Nutr Diet. 2013 Dec; 113(12): 1610–1619.

HAVE YOU BEEN LIED TO YOUR ENTIRE LIFE??
9 PLANT SOURCES OF 9 ESSENTIAL AMINO ACIDS

quinoa

amaranth

chia seeds

spirulina

buckwheat

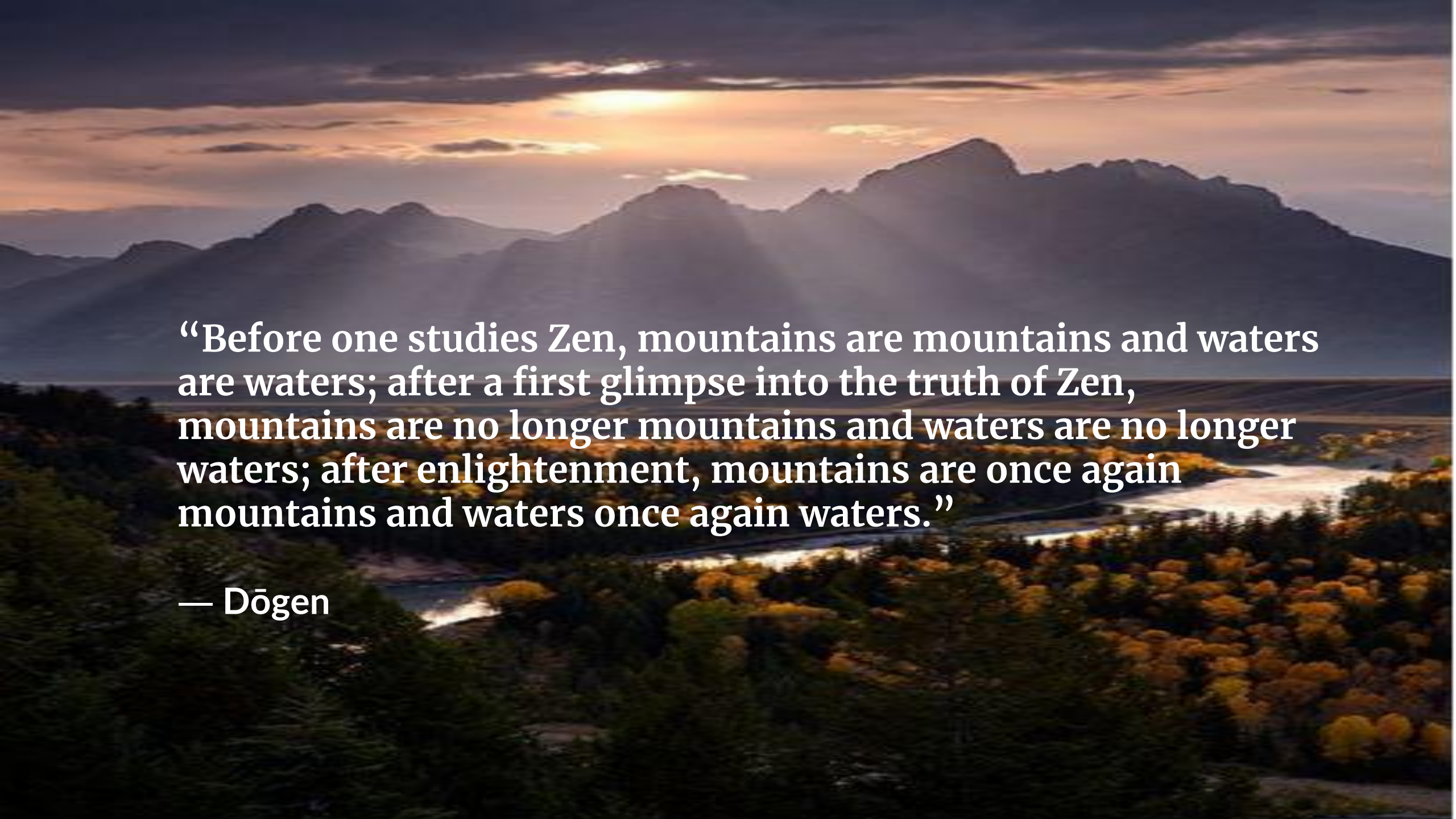
soy (tofu, tempeh)

hemp seed

nutritional yeast

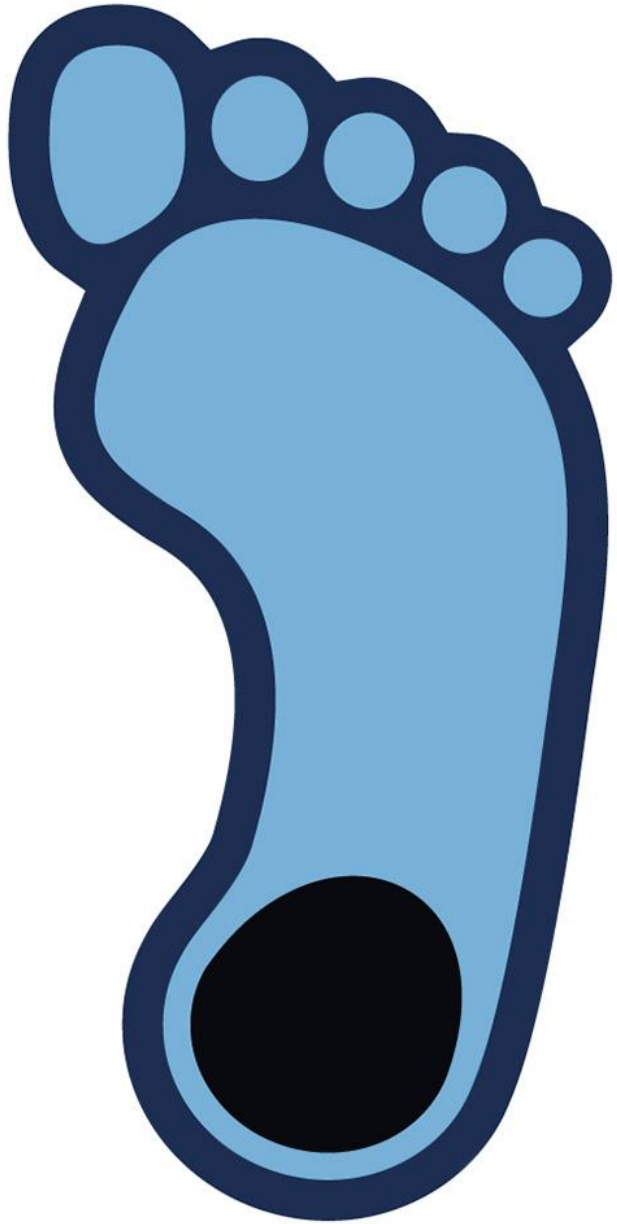
Lemon Herb Quinoa Recipe; 69,100+ Buckwheat Stock Photos, Pictures & Royalty-Free Images – iStock;
Basic Homemade Seitan Recipe | DIY Seasoned Wheat Gluten


ORGANIC
HEMP
HEARTS
USDA
ORGANIC
cerabeta™
BARLEY BETA-GLUCAN
4g
30
CALORIES
0g
PLANT-BASED
COLLAGEN · PREBIOTIC · FIBER
CLEANSE · ENERGIZE · FOCUS · FEEL FULL LONGER
ZenBasil™
ORGANIC BASIL SEEDS
In a gram to gram comparison with Chia seeds, ZenBasil seeds have nearly:
2X THE FIBER
2X THE CALCIUM
2X THE POTASSIUM
2X THE IRON
NATURALLY:
GLUTEN FREE
LECTIN FREE
PALEO
15g
FIBER
54% Daily Value per 30g Serv
14 oz | 390 g


“Before one studies Zen, mountains are mountains and waters are waters; after a first glimpse into the truth of Zen, mountains are no longer mountains and waters are no longer waters; after enlightenment, mountains are once again mountains and waters once again waters.”
— Dōgen

Yuliya Linhares, MD *with distinction*

- **FIU Associate Professor, Translational Medicine**
- **Chief of Lymphoma at MCI 2019-**
- **Baptist Health- top 10% in lymphoma, myeloma and leukemia**
- **Principal Investigator (10 clinical trials)**
- **10 publications, 23 abstracts (2019-2025)**



Yuliya Linhares, MD– SELCTED BIBLIOGRAPHY

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OUTREACH: phase 2 study of lisocabtagene maraleucel as outpatient or inpatient treatment at community sites for R/R LBCL.
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PMID: 29977661 Free PMC article.

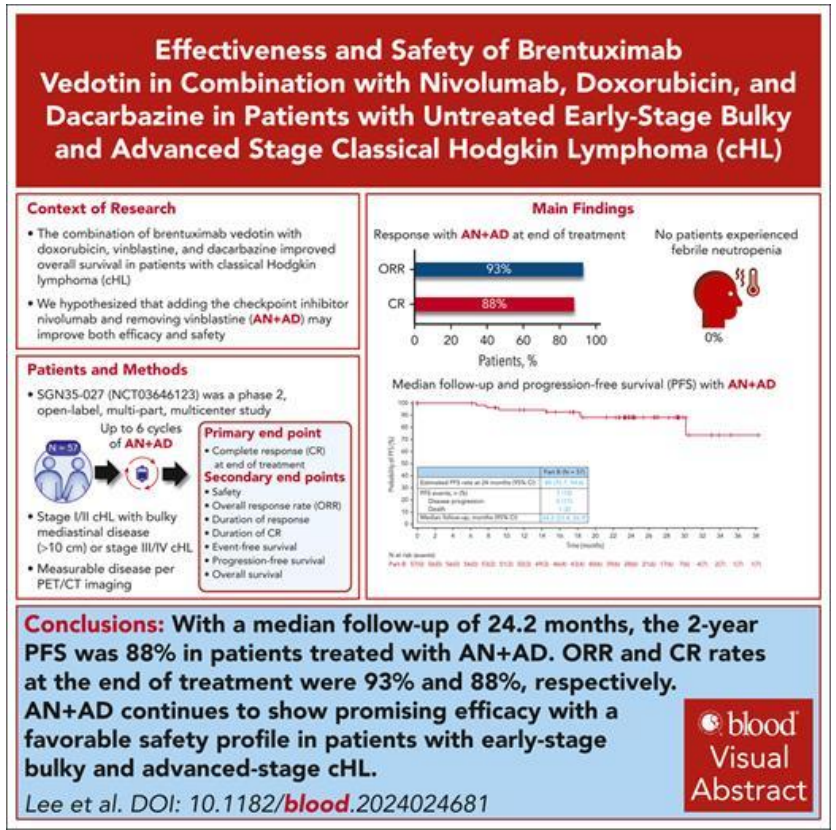
blood

CLINICAL TRIALS AND OBSERVATIONS

CME Article

Brentuximab vedotin, nivolumab, doxorubicin, and dacarbazine for advanced-stage classical Hodgkin lymphoma

Hun Ju Lee,[1] Rod Ramchandren,[2] Judah Friedman,[3] Jason Melear,[4] Ian W. Flinn,[5] John M. Burke,[4] Yuliya Linhares,[6] Paul Gonzales,[7] Matthew Peterson,[8] Mihir Raval,[4] Rangaswamy Chintapatla,[9] Tatyana A. Feldman,[10] Habte Yimer,[4] Miguel Islas-Ohlmayer,[4,11] Ameet Patel,[11] Leland Metheny,[12] Asad Dean,[4] Vishal Rana,[13] Mitul D. Gandhi,[4] John Renshaw,[4] Linda Ho,[14] Michelle A. Fanale,[14] Wenchuan Guo,[14] and Christopher A. Yasenchak[15]



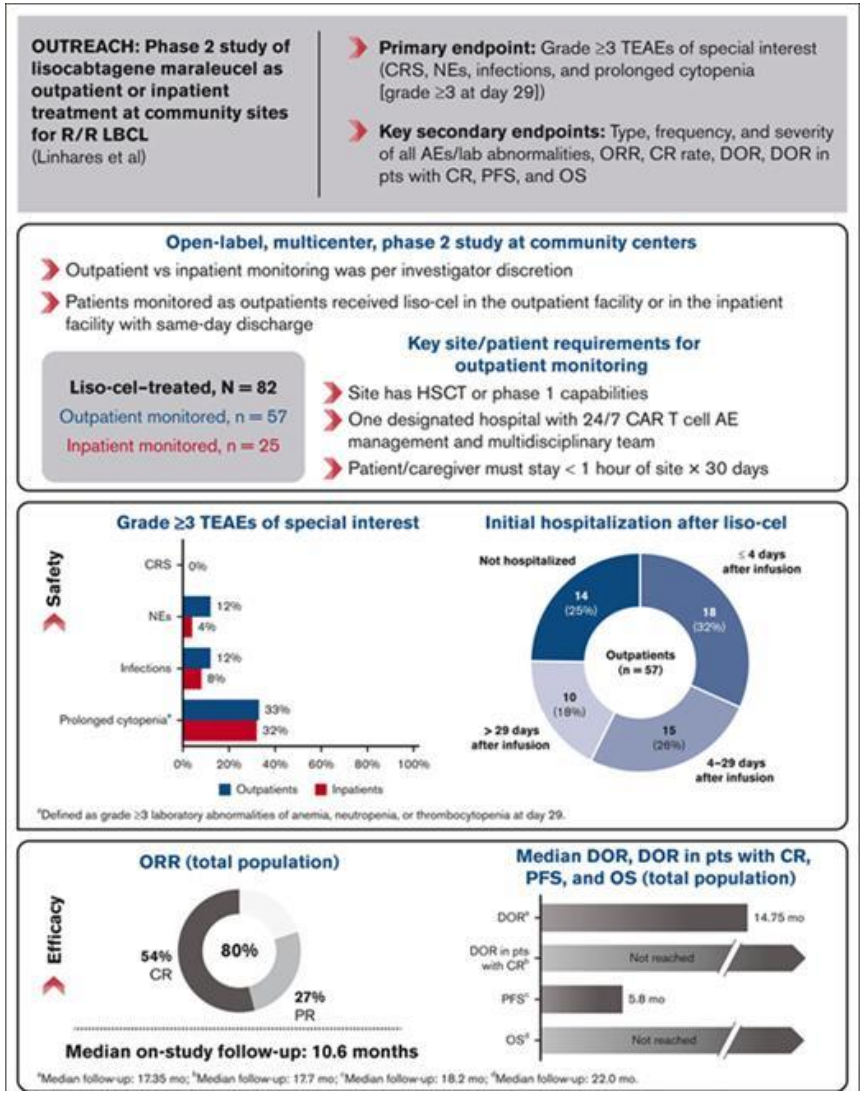
blood advances

OUTREACH: phase 2 study of lisocabtagene maraleucel as outpatient or inpatient treatment at community sites for R/R LBCL

Clinical Trials & Observations

Yuliya Linhares, Cesar O. Freytes, Mohamad Cherry, Carlos Bachier, Michael Maris, Daanish Hoda, Juan C. Varela, Courtney Bellomo, Scott Cross, James Essell, Suzanne Fanning, Howard Terebelo, Habte Yimer, Jay Courtright, Jeff P. Sharman, Ana Kostic, Min Vedal, Ken Ogasawara, Ariel Avilion, Ricardo Espinola, Brenda Yuan, Bassam Mattar

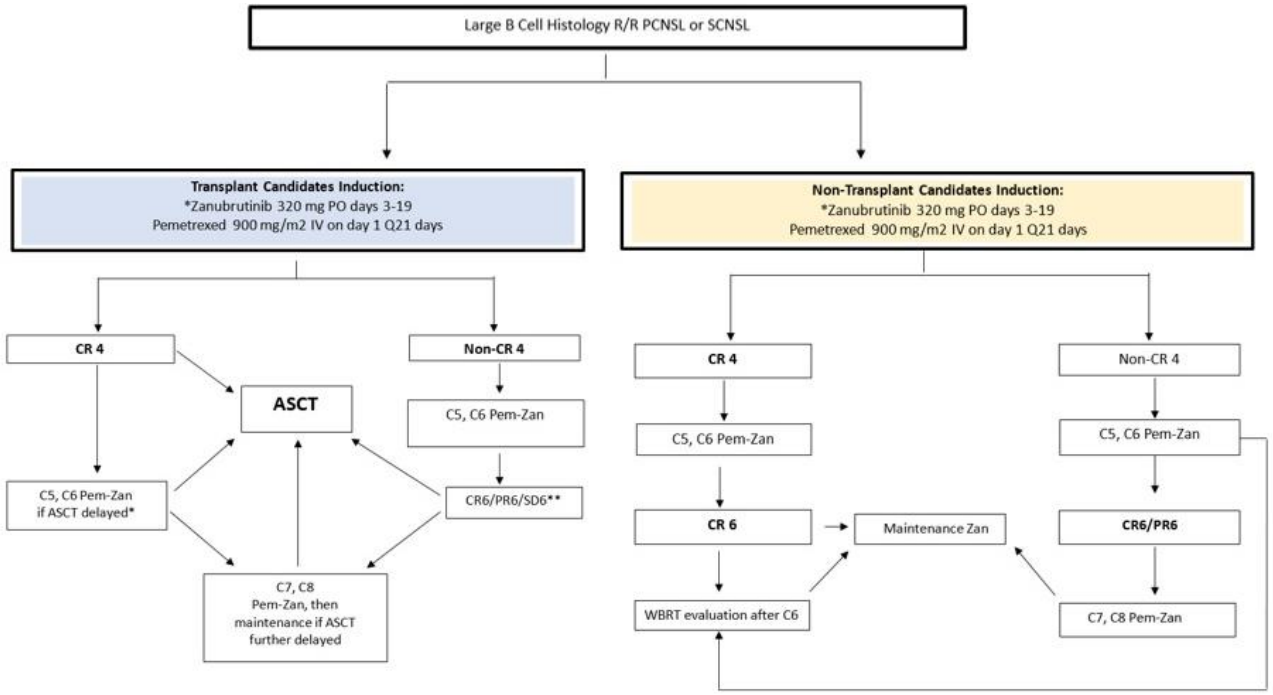
Outpatient CART administration and monitoring were safe and effective at MCI



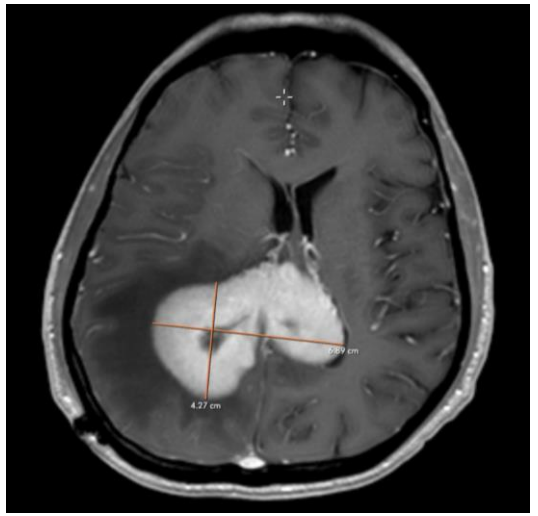
Blood Adv (2024) 8 (23): 6114–6126.

Trial in Progress: Zanubrutinib with Pemetrexed for the Treatment of Relapsed/Refractory Primary and Secondary CNS Lymphomas: A Phase II Trial with a Safety Lead-in (P.I. Yuliya Linhares, MD; NCT05681195)

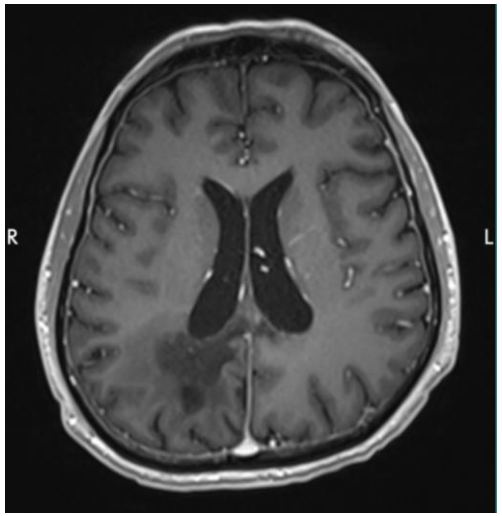
Primary endpoint: best ORR



60 yo male with inadequate response to 2 cycles of standard therapy (high dose methotrexate) and progressive neurologic symptoms



Initial: 4.3 x 6.9 cm
after 2 high dose methotrexates



CR after 4 cycles Pem-Zan

- Fully outpatient regimen
- 2 patients enrolled and treated; both in CR, no significant toxicities
- Patient 1 underwent autologous stem cell transplant and continues to be in remission 5 months after transplant
- Complete resolution of all neurologic deficits in patient 1, patient 2 signed up for a gym

HOW IS THIS TRIAL UNIQUE??

- Fully outpatient regimen, allows for quality of life and rehabilitation
- Reasonable and realistic low cost drug combination (as opposed to TEDDi-R, VIPOR)
- Real world patient population
- Accepts patients with low performance status, HIV, hepatitis and advanced age
- Allows for consent by proxy for those unable to consent due to neurological deficits
- No significant toxicities
- We analyze tumor tissue mutational profiles and microenvironment and correlate with treatment outcomes (BostonGene Tumor Portrait)
- We study the significance of circulating tumor DNA presence and quantity in blood and CSF (Adaptive-ClonoSeq, PhasEDSeq-Foresight)

Mark Roschewski, et al ; Dose-Adjusted Teddi-R Induces Durable Complete Remissions in Relapsed and Refractory Primary CNS Lymphoma. *Blood* 2018; 132 (Supplement 1): 4195. doi: https://doi.org/10.1182/blood-2018-99-112184
Disha Dalela,et al ; A Pilot Study of Venetoclax, Ibrutinib, Prednisone, Obinutuzumab, and Lenalidomide (VIPOR) for Diffuse Large B-Cell Lymphoma Involving the Central Nervous System. *Blood* 2024; 144 (Supplement 1): 1724. doi: https://doi.org/10.1182/blood-2024-194482

OUR TRIAL IS NEEDED

PROUD MEMBER PIEDMONT CLINIC

4.9 out of 5
1,599 ratings, 446 comments

Erin M Dunbar, MD

Neuro-Oncology, Medical Oncology

Piedmont Physicians Neuro Oncology Atlanta

2001 Peachtree Road Northeast, Suite 645
Atlanta, GA 30309

See Location | See on Map

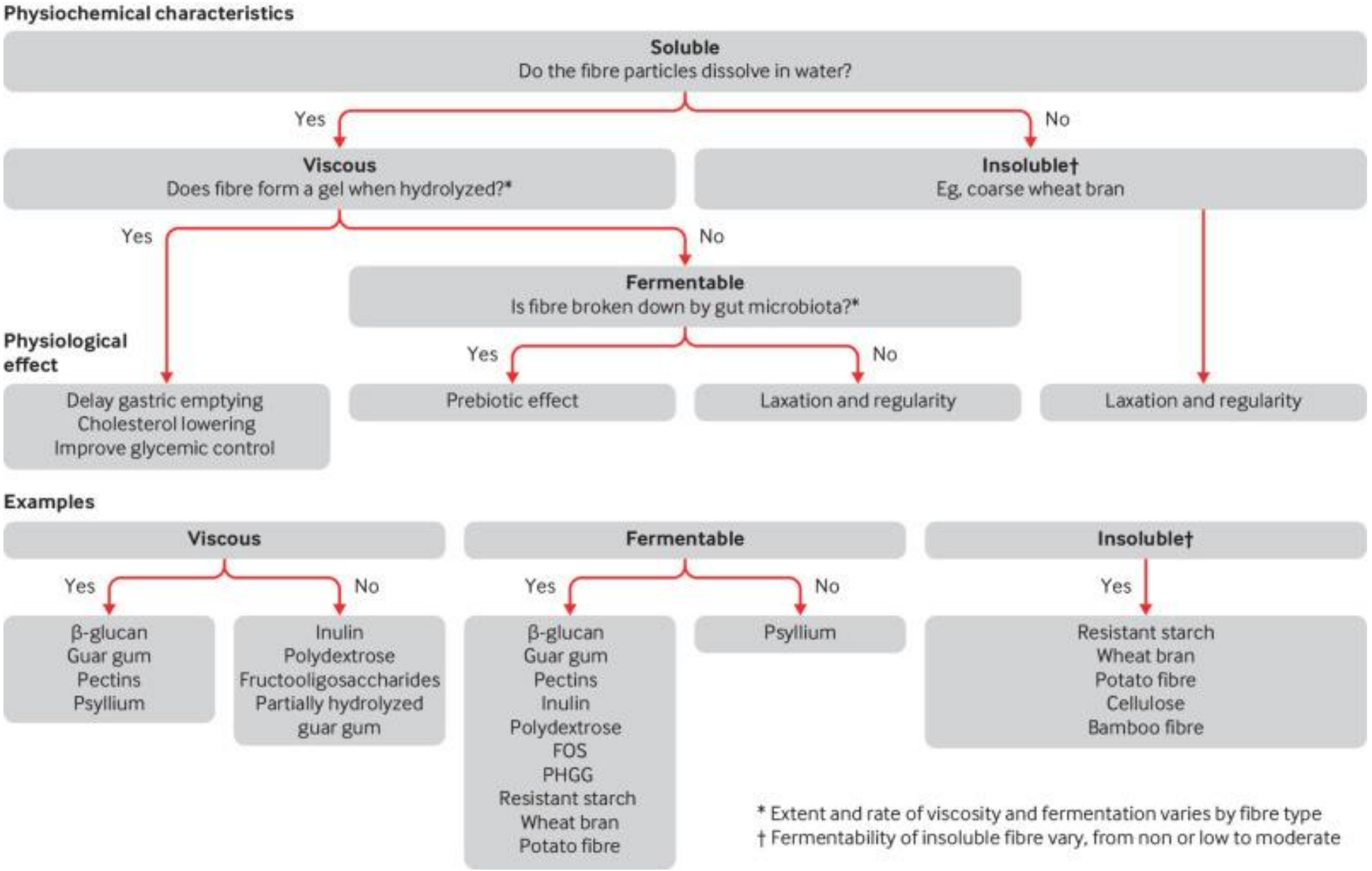
Office Number
404-605-2050

Fax Number
833-605-2563

The Piedmont Brain Tumor Center provides a medical "home for life" for patients through multidisciplinary: clinical trials, specialty clinics, tumor boards, and hospital rounds. We are a not-for-profit hospital and rely on donations, volunteers, and resources to support the continual needs of our patients and caregivers.

Additional Resources

NOT ALL FIBER IS CREATED EQUAL



McKeown NM, Fahey GC Jr, Slavin J, van der Kamp JW. Fibre intake for optimal health: how can healthcare professionals support people to reach dietary recommendations? BMJ. 2022 Jul 20;378:e054370. doi: 10.1136/bmj-2020-054370. PMID: 35858693; PMCID: PMC9298262.

Resources- longevity calculator, references

Lifespan calculator- current and if you make certain dietary changes- great resource to design healthier diet for longevity:

Food4healthylife (shinyapps.io)

Food for healthy life is based on the following paper: Fadnes LT, Økland J-M, Haaland ØA, Johansson KA (2022) Estimating impact of food choices on life expectancy: A modeling study. PLoS Med 19(1): e1003889.

Dietary Reference Intake Recommendations:

DRI Calculator Results | National Agricultural Library (usda.gov)

Which nutrients are you missing and nutritional information:

Nutrient Optimiser

Nutrition facts for buckwheat, recommended daily values and analysis. (nutrientoptimiser.com)

Resources- plant-based diet

Excellent website to learn about healthy plant-based diet:

fullplateliving.org

Full Plate Living

Free “Food as Medicine” course:

Food as Medicine - American College of Lifestyle Medicine

https://lifestylemedicine.org/nutrition-as-medicine/?gad_source=1&gclid=EAIaIQobChMIpdOcipyphQMV0LZaBR1zpQOfEAAYASAAEgKQAPD_BwE

Superfood list from American Academy of Lifestyle Medicine-PDF:

Superfood-List.pdf (lifestylemedicine.org)

https://lifestylemedicine.org/wp-content/uploads/2022/07/Superfood-List.pdf

Food as medicine curriculum –PDF:

ACLM-Food-As-Medicine-Jumpstart-8.5x11.pdf (lifestylemedicine.org)

https://lifestylemedicine.org/wp-content/uploads/2024/01/ACLM-Food-As-Medicine-Jumpstart-8.5x11.pdf

Dr. Greger Books: incredible resources for everyone, highly recommend, buy on Amazon

How Not To Age How Not To Die How Not To Diet

Harvard Health Website- excellent resource for healthy living:

Signup for More Free Email Newsletters - Harvard Health

https://www.health.harvard.edu/healthbeat/co-reg

COMPLETE PROTEIN SOURCES (g = grams of protein / per):

- Quinoa, cooked (8g /1 cup)
- Tofu, cooked (8-10g /100g)
- Tempeh, cooked (18g /100g)
- Buckwheat, raw groats (23g /100g)
- Rice & beans, cooked (10-15g /1 cup)
- Soybeans, raw (36g /100g)
- Hemp seeds (11g /30g)
- Chia seeds (4g /2 tablespoon)
- Spirulina (4g /1 tablespoon)

Incomplete Protein Sources:

- Grains (approx. 5g /100g cooked)
- Nuts and seeds (average 6-9g /30g)
- Legumes/beans (average 7-9g /100g)
- Vegetables (Green Peas = 7g /1 cup. Spinach & Broccoli = 3-4g /1 cup)
- Nutritional Yeast (4g /1 tablespoon)

COMBINATION IDEAS TO CREATE COMPLETE PROTEINS INCLUDE:

- Brown Rice and Beans
- Ezekiel Bread (Gluten- this bread is easier on the digestive track because the grains are sprouted.)
- A smoothie with Spirulina (Blue-Green Algae) and nuts
- Salads with any combination beans, nuts or grain
- Soup with any combinations beans or grains
- Get creative creating bowls of all types of grains, vegetables, beans or hummus, with nuts and hempseeds.
- Adding any item from the first list to any meal completes the protein.

Liquid Amino Acids can be used as a supplement & add you meal as well to be sure to get all the essential amino acids. It's flavor is similar to that of soy sauce.

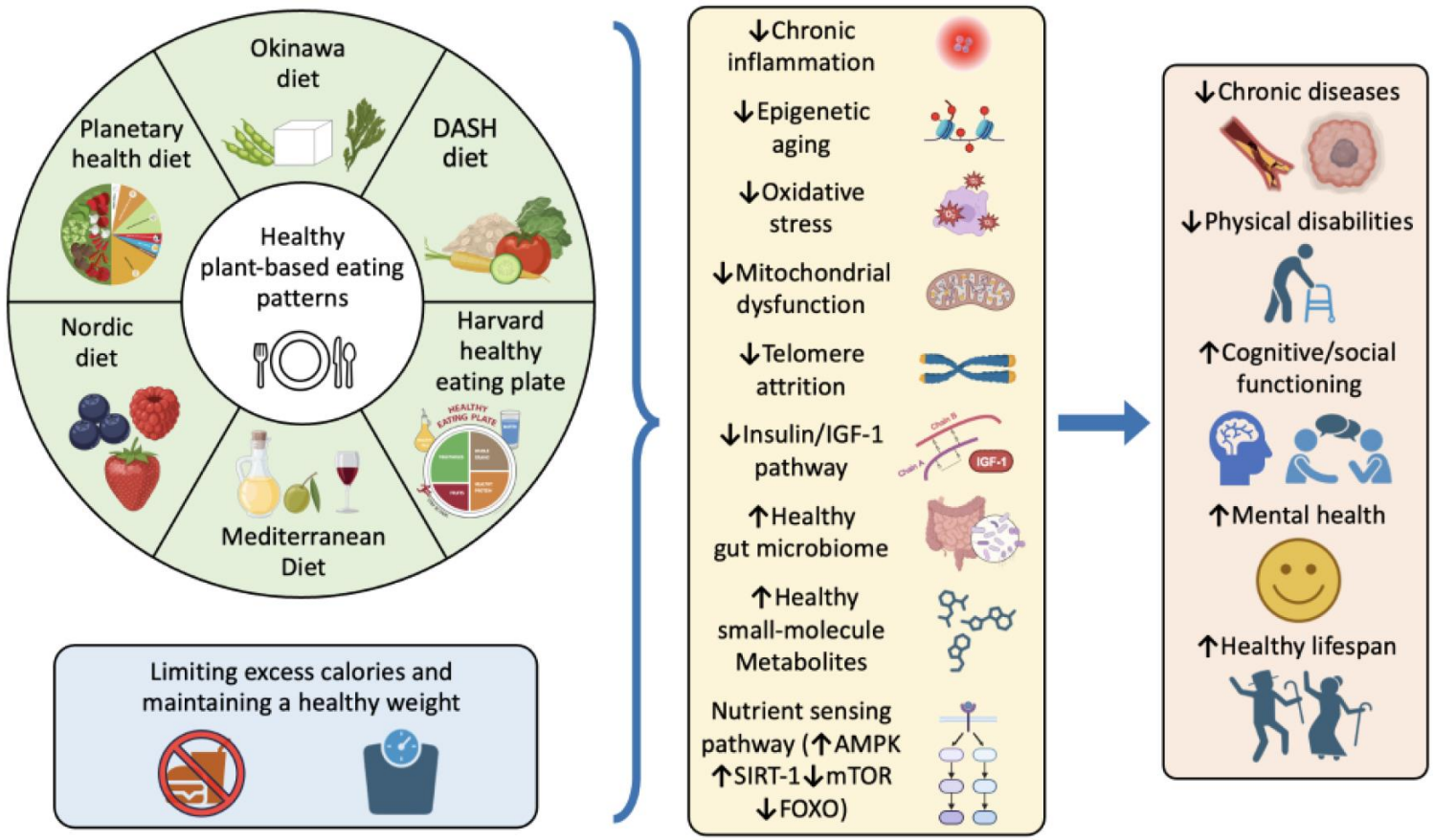
COMPLETING YOUR PLANT PROTEINS - Ironwood Cancer & Research Centers

Grain Nutrient Content Comparison- there is no reason to be eating white rice

In 100g	White rice	Black Rice (forbidden rice)	Pearl Barley	Buckwheat	Quinoa
Whole grain	No- no bran or endosperm	yes	No- bran is off but endosperm is preserved; Hulled barley is full grain	yes	yes
Calories per 100g	353	336	330	350	354
Fiber (g% daily requirement)	3g (10%)	4g	16g (55%)	10g/35%	7g/25%
Carbohydrates per 100 g (g/% daily requirement)	82g (28%)	71g	78g/26%	72g/24%	64g/22%
Protein	7g	10.5g	10g	13 g	14g
Essential amino acids				All 9 present	All 9
Iron	1.6 mg (8%)	1.5 mg	2.5 mg/13%	2.2 mg/12%	4.6mg/25%
Potassium	77 mg (2%)	0 mg	280mg/7%	460 mg/12%	563mg/14%
Special qualities	Incomplete protein	High in anthocyanins (antioxidants)	Rich in soluble fiber known as beta glucan, which is recognized for its cholesterol-lowering abilities	Complete protein	Complete protein

https://nutrientoptimiser.com/; table by Dr. Yuliya Linhares

Diet strategies for promoting healthy aging and longevity



Hu FB J of Internal Medicine 2023

https://onlinelibrary.wiley.com/doi/full/10.1111/joim.13728

PROTEIN MYTH BUSTERS

MYTH: You need to eat animal protein to meet your protein needs.

FACT: Plants foods such as beans, lentils, nuts, whole grains, and veggies provide ample protein, as well as fiber and other essential vitamins, minerals, and phytochemicals not found in animal products such as meat, fish, poultry, eggs, and dairy.

PLANT PROTEIN

per serving

ADVANTAGES

- Fiber
- Phytonutrients
- Vitamins & minerals
- Low or healthy fat profile
- No cholesterol

18g	17g	15g	6g	5g	5g	5g
Red Lentils boiled, 1 cup	**Edamame** boiled, 1 cup	**Black Beans** cooked, 1 cup	**Almonds** 1 oz	**Peas** cooked, 1 cup	**Baked Potato** 1 medium	**Spinach** boiled, 1 cup
						

ANIMAL PROTEIN

per serving

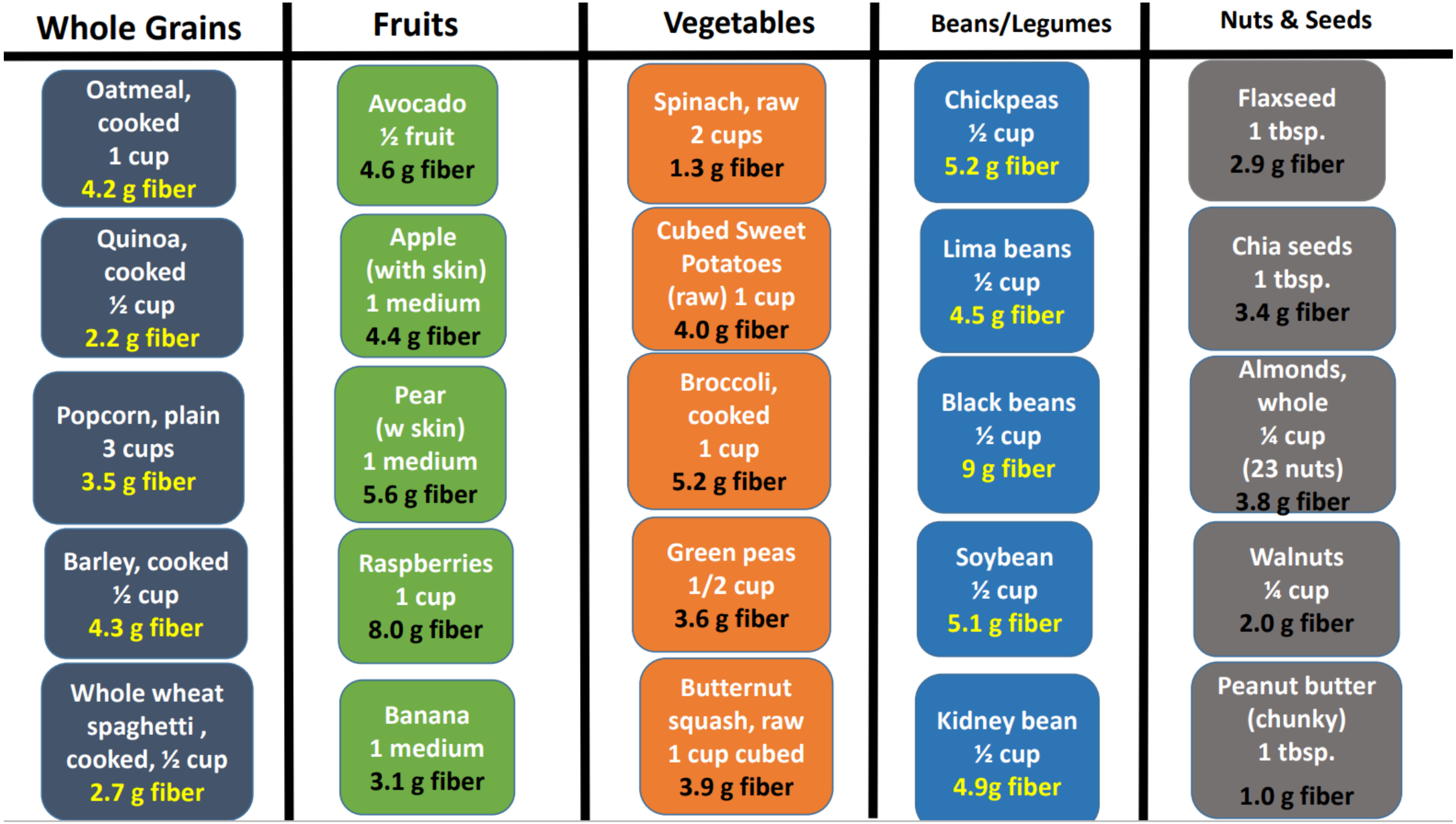
DISADVANTAGES

- Cholesterol
- Saturated fat
- No fiber
- Higher in calories

6g	20g	25g	25g
Egg cooked, 1	**Salmon** cooked, 3 oz	**Steak** cooked, 3 oz	**Chicken** cooked, 3 oz
			

Eating minimally processed whole plant foods such as vegetables, fruits, whole-grains, legumes, and nuts lower the risk of diabetes, heart disease, cancer, and promote overall health.

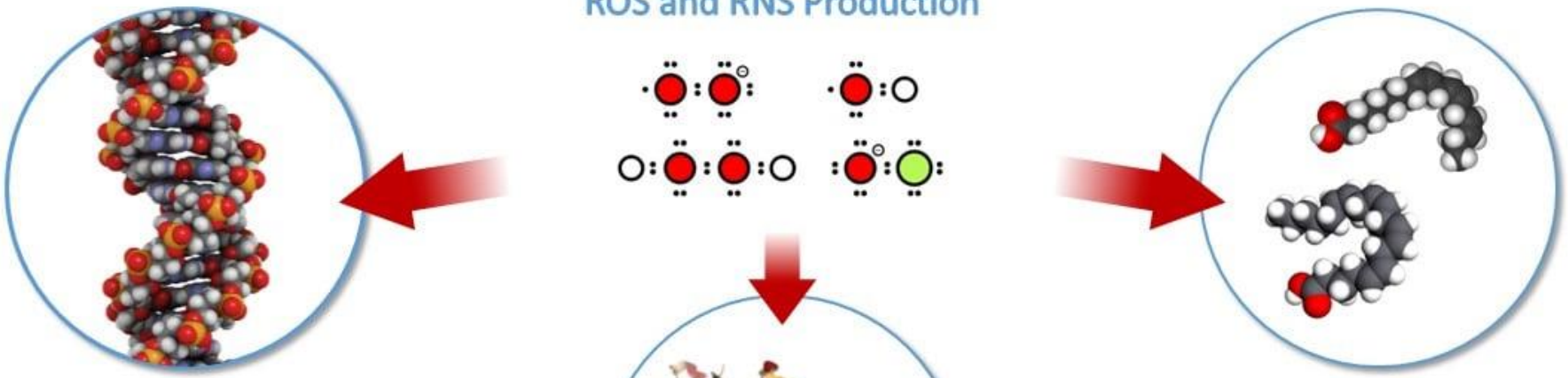
Source: USDA Nutrient Analysis Database



PowerPoint Presentation; Scientific Advisory Committee on Nutrition. Carbohydrates and health. 2015. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/445503/SACN_Carbohydrates_and_Health.pdf

Whole Grains	Fruits	Vegetables	Beans/Legumes	Nuts & Seeds
Oatmeal, cooked 234g 4.2 g fiber	Avocado ½ fruit (68g) 4.6 g fiber	Spinach, raw 60g 1.3 g fiber	Chickpeas 85g 5.2 g fiber	Flaxseed 10g 2.9 g fiber
Quinoa, cooked 194g 2.2 g fiber	Apple (with skin) 1 medium (182g) 4.4 g fiber	Cubed Sweet Potatoes (raw) 133g 4.0 g fiber	Lima beans 85g 4.5 g fiber	Chia seeds 10g 3.4 g fiber
Popcorn, plain 93g 3.5 g fiber	Pear (w skin) 1 medium (178g) 5.6 g fiber	Broccoli, cooked 156g 5.2 g fiber	Black beans 85g 9 g fiber	Almonds, whole 35g (23 nuts) 3.8 g fiber
Barley, cooked 24g 4.3 g fiber	Raspberries 1 cup (123g) 8.0 g fiber	Green peas 123g 3.6 g fiber	Soybean 85g 5.1 g fiber	Walnuts ¼ cup 30g 2.0 g fiber
Whole wheat spaghetti , cooked, 78g 2.7 g fiber	Banana 1 medium (118g) 3.1 g fiber	Butternut squash, raw, cubed 118g 3.9 g fiber	Kidney bean 85g 4.9g fiber	Peanut butter (chunky) 16g 1.0 g fiber

ROS and RNS Production



Nucleic Acid Oxidation

Oxidative modifications in DNA/RNA cause nucleotide alterations, strand breaks, base conversions, and the formation of adducts. Markers include: 8-OHdG, 8-oxoG, isoguanine, 8-oxoadenine, 5-hydroxycytosine, 5-chlorocytosine, and 5-chlorouracil

Protein Oxidation

Reactive species cause modifications in amino acid residues, protein backbones and functional groups that affect protein structure. Markers include: protein carbonyls, nitrotyrosine, oxLDL, ischemia-modified albumin, 3-chlorotyrosine, and AGEs

Lipid Peroxidation

The reaction of ROS with polyunsaturated fatty acids produces lipid hydroperoxides and reactive aldehyde end products. Markers include: malondialdehyde, 4-hydroxynonenal, F2-isoprostanes, isolevuglandins, and acrolein

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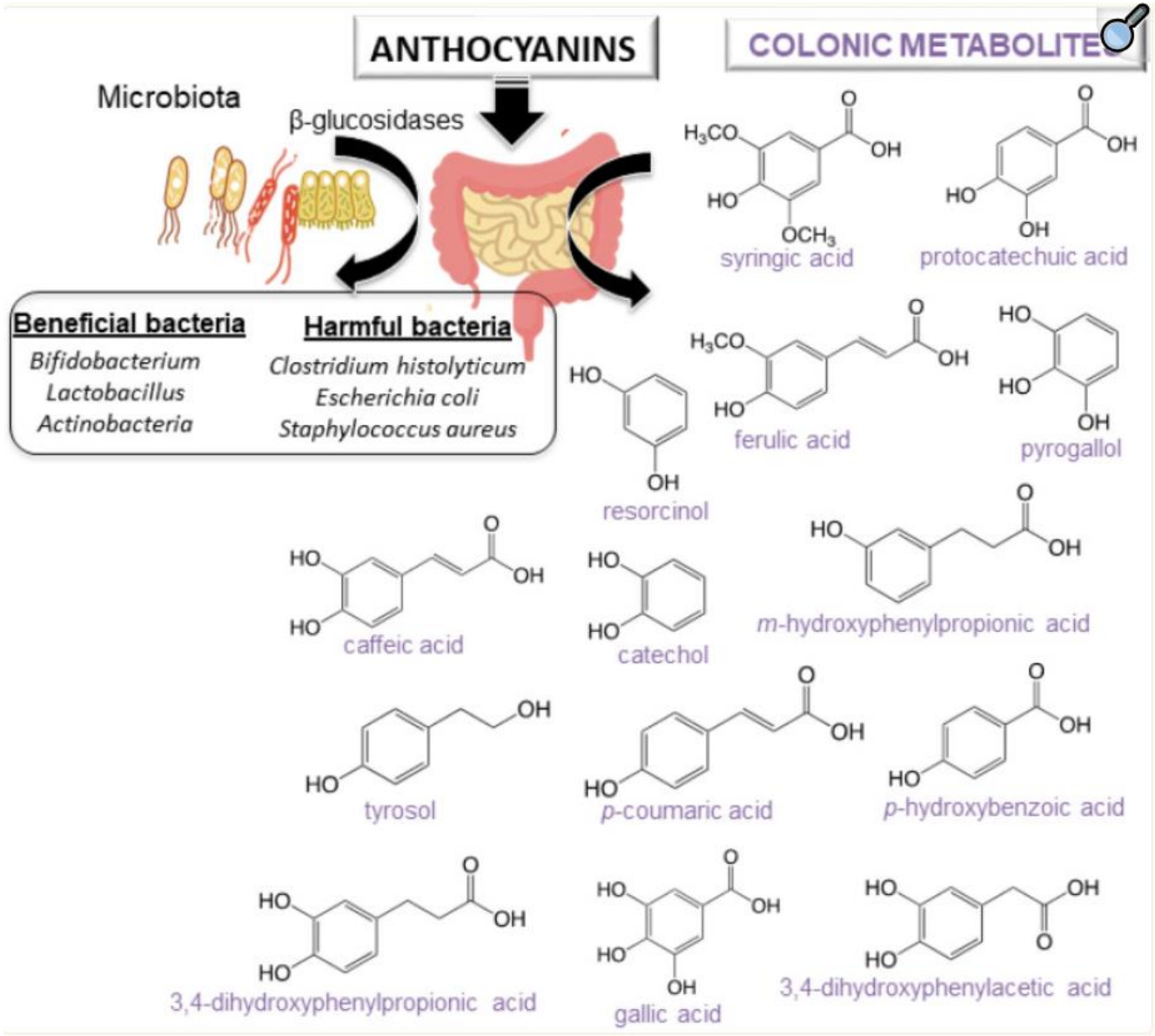
COMPLETING YOUR PLANT PROTEINS - Ironwood Cancer & Research Centers



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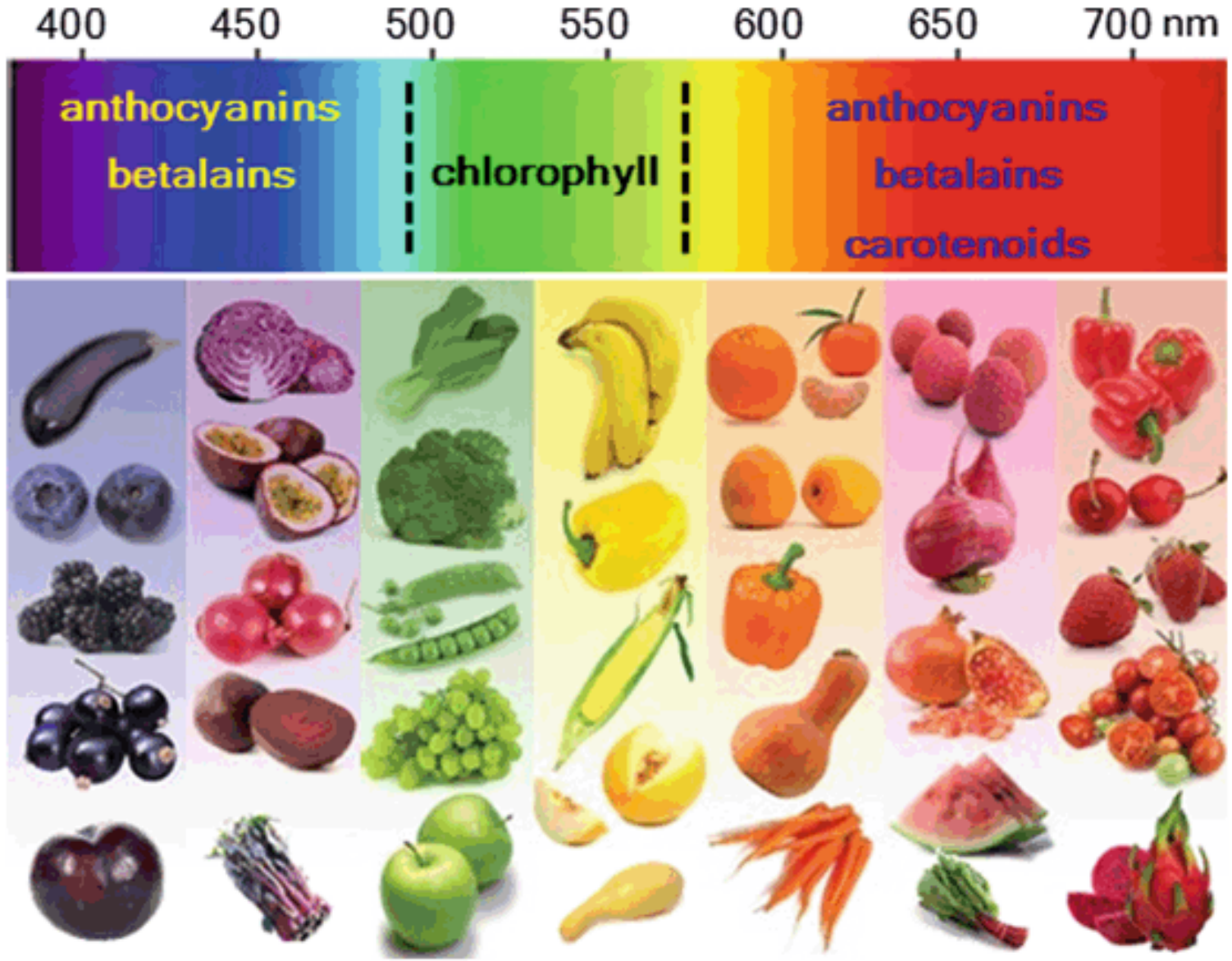

Overview of Plant Pigments | SpringerLink

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2. Sui J, Guo J, Pan D, et al. The Efficacy of Dietary Intake, Supplementation, and Blood Concentrations of Carotenoids in Cancer Prevention: Insights From an Umbrella Meta-Analysis. This umbrella meta-analysis found that dietary intake and blood concentrations of carotenoids are inversely associated with the risk of various cancers, although high doses of β-carotene supplements may increase the risk of lung and bladder cancers.[2]

7. Saini RK, Keum YS, Daglia M, Rengasamy KR. Dietary Carotenoids in Cancer Chemoprevention and Chemotherapy: A Review of Emerging Evidence. This review highlights the potential roles of various carotenoids in cancer chemoprevention and chemotherapy.[7]

11. Key TJ, Appleby PN, Travis RC, et al. Carotenoids, Retinol, Tocopherols, and Prostate Cancer Risk: Pooled Analysis of 15 Studies. This pooled analysis found that lycopene and α-tocopherol are inversely associated with aggressive prostate cancer risk.[11]

TYPES OF CAROTENOIDS

Beta-Carotene (β-carotene) and A-Carotene (α-Carotene)

-Closely related, as both are synthesized to form active A
-Both found in foods like squash, spinach, sweet potatoes and carrots
-Have anti-inflammatory, cancer-protective effects

estrogen receptor positive breast cancer

Lutein and Zeaxanthin

-The only two found in the retina and lens of the human eye
-Improve eye health and protect vision
-Best sources iare dark leafy green vegetables and cruciferous veggies
-Lower age-related eye problems including macular degeneration and cataracts

Lycopene

-Best source is tomato, especially cooked tomatoes
-Reduce risk for developing diseases like prostate cancer.

Dr. Axe

Carotenoids: Benefits for Improved Skin and Eye Health - Dr. Axe

The Second World Cancer Research Fund/American Institute for Cancer Research Expert Report. *Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective*

Table 1. Headline recommendations of the expert Panel convened to discuss and judge the evidence from the systematic literature reviews, to draw conclusions and to make recommendations

Category	Recommendation
Body fatness	Be as lean as possible within the normal range of body weight
Physical activity	Be physically active as part of everyday life
Foods and drinks that promote weight gain	Limit consumption of energy-dense foods
	Avoid sugary drinks
Plant foods	Eat mostly foods of plant origin
Animal foods	Limit intake of red meat and avoid processed meat
Alcoholic drinks	Limit alcoholic drinks
Preservation, processing, preparation	Limit consumption of salt
	Avoid mouldy cereals or pulses
Dietary supplements	Aim to meet nutritional needs through diet alone
Breast-feeding	Mothers to breast-feed; children to be breast-fed
Cancer survivors	Follow the recommendations for cancer prevention

Wiseman M. The second World Cancer Research Fund/American Institute for Cancer Research expert report. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. *Proc Nutr Soc*. 2008;67(3):253-256. doi:10.1017/S002966510800712X.

CLINICAL CANCER RESEARCH | TRANSLATIONAL CANCER MECHANISMS AND THERAPY

Sustained Minimal Residual Disease Negativity in Multiple Myeloma is Associated with Stool Butyrate and Healthier Plant-Based Diets

Urvi A. Shah[1,2], Kylee H. Maclachlan[1,2], Andriy Derkach[3], Meghan Salcedo[1], Kelly Barnett[1], Julia Caple[1],

GUT MICROBES
2023, VOL. 15, NO. 2, 2249143
https://doi.org/10.1080/19490976.2023.2249143

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RESEARCH PAPER

OPEN ACCESS Check for updates

Microbial metabolite butyrate promotes anti-PD-1 antitumor efficacy by modulating T cell receptor signaling of cytotoxic CD8 T cell

Xinhai Zhu[a#], Ke Li[b#], Guichao Liu[c,d#], Ruan Wu[e], Yan Zhang[a], Siying Wang[f], Meng Xu[a*], Ligong Lu[g*], and Peng Li[g,h*]

- Feed your gut bacteria to enhance butyrate production
- *Bifidobacterium*, *Faecalibacterium*, *Eubacterium,* and *Roseburia*
- fiber -whole grains, legumes, fruits, vegetables, nuts, and seeds, dark chocolate

JAMA Network | Open

Original Investigation | Oncology

Association of Short-Chain Fatty Acids in the Gut Microbiome With Clinical Response to Treatment With Nivolumab or Pembrolizumab in Patients With Solid Cancer Tumors

Motoo Nomura, PhD; Ryosuke Nagatomo, MPHPM; Keitaro Doi, MD; Juko Shimizu, MPHPM; Kiichiro Baba, MD; Tomoki Saito, MD; Shigemi Matsumoto, PhD;

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Microbiota as Predictor of Mortality in Allogeneic Hematopoietic-Cell Transplantation

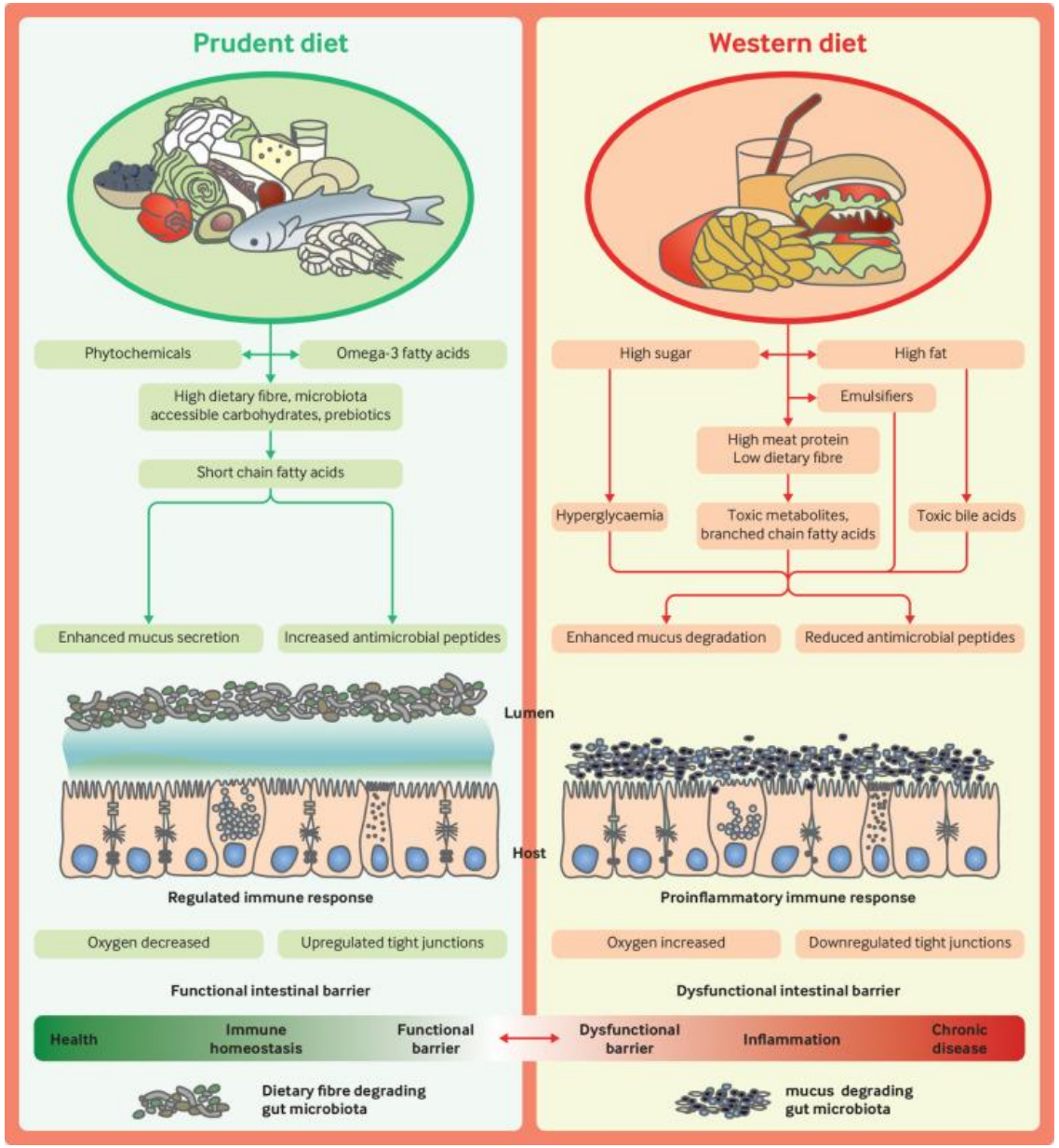
J.U. Peled, A.L.C. Gomes, S.M. Devlin, E.R. Littmann, Y. Taur, A.D. Sung, D. Weber,

IMMUNOTHERAPY

Dietary fiber and probiotics influence the gut microbiome and melanoma immunotherapy response

Christine N. Spencer[1]†‡, Jennifer L. McQuade[2]†, Vancheswaran Gopalakrishnan[1]†§,

Zhu X, Li K, Liu G, et al. Microbial metabolite butyrate promotes anti-PD-1 antitumor efficacy by modulating T cell receptor signaling of cytotoxic CD8 T cell. *Gut Microbes*. 2023;15(2):2249143. doi:10.1080/19490976.2023.2249143 Shah, U. A., Maclachlan, K. H., Derkach, A., Salcedo, M., Barnett, K., Caple, J., Blaslov, J., Tran, L., Ciardiello, A., Burge, M., Shekarkhand, T., Adintori, P., Cross, J., Pianko, M. J., Hosszu, K., McAvoy, D., Mailankody, S., Korde, N., Hultcrantz, M., Hassoun, H., ... Lesokhin, A. M. (2022). Sustained Minimal Residual Disease Negativity in Multiple Myeloma is Associated with Stool Butyrate and Healthier Plant-Based Diets. *Clinical cancer research : an official journal of the American Association for Cancer Research*, *28*(23), 5149–5155. https://doi.org/10.1158/1078-0432.CCR-22-0723 Lee SY, Jhun J, Woo JS, et al. Gut microbiome-derived butyrate inhibits the immunosuppressive factors PD-L1 and IL-10 in tumor-associated macrophages in gastric cancer. *Gut Microbes*. 2024;16(1):2300846. doi:10.1080/19490976.2023.2300846; Nomura M, Nagatomo R, Doi K, et al. Association of Short-Chain Fatty Acids in the Gut Microbiome With Clinical Response to Treatment With Nivolumab or Pembrolizumab in Patients With Solid Cancer Tumors. *JAMA Netw Open*. 2020;3(4):e202895. Published 2020 Apr 1. doi:10.1001/jamanetworkopen.2020.2895; Butyrate in microbiome abates a host of ills, studies find - UW Medicine | Newsroom; Peled JU, Gomes ALC, Devlin SM, et al. Microbiota as Predictor of Mortality in Allogeneic Hematopoietic-Cell Transplantation. *N Engl J Med*. 2020;382(9):822-834. doi:10.1056/NEJMoa1900623; Spencer CN, McQuade JL, Gopalakrishnan V, et al. Dietary fiber and probiotics influence the gut microbiome and melanoma immunotherapy response. *Science*. 2021;374(6575):1632-1640. doi:10.1126/science.aaz7015



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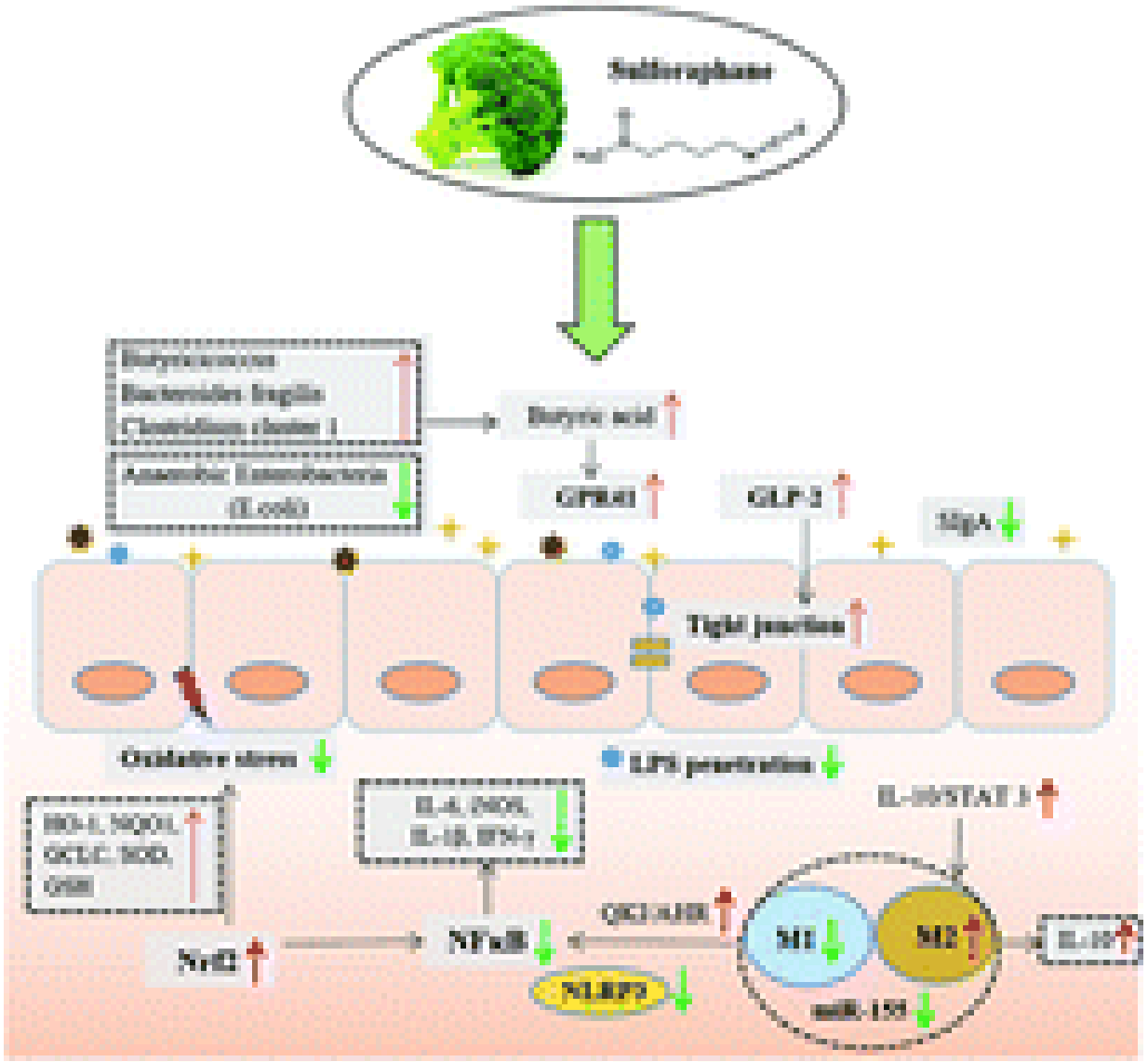

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