

The New Science of Brain Health Nutrition

Presented for Alzheimer's Research & Prevention Foundation
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Our Goal: Create Healthy, Robust, More Resilient Brain Tissue

- Healthy Brain tissue better withstands ravages of age, genetic vulnerabilities, environmental stresses, accidents, toxins (including certain anesthetics), and disease, *including invasion of microbes.*
- Nutrition, Exercise, Cognitive Training and Healthy Lifestyles help us enhance and strengthen brain neurons, synapses & dendrites and other body & brain cells relevant to brain health.
- Boost our immune system defenses.



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Alzheimer's Statistics

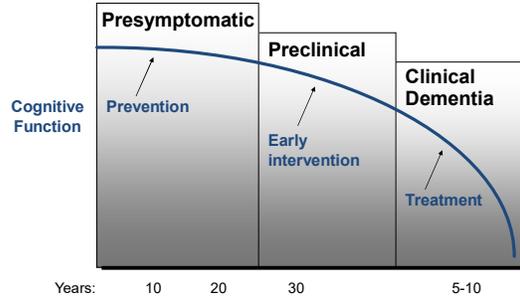
- 6th leading cause of death
- 6.5 Million are living with Alzheimer's today in USA
- **Prevalence of Alzheimer's disease doubles every 5 years after age 65**
- 11% over age 65 have Alzheimer's
- **Approximately 40% age 85 & older have Alzheimer's (33%) or another dementia**
- It is a health & economic issue; costs \$320 billion+
- Only major chronic illness with no cure
- 2015 only \$600 million on research, \$300-400 mil added each year! FY2022 passed budget is \$3.5 bil.



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Alzheimer's Disease Takes 2-3 Decades to Develop



Years: 10 20 30 5-10

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Chronic Conditions Influence Risk for Dementia

- Cardiovascular Disease – aggressive management of Blood Pressure to 120-130 reduces risk of MCI by nearly 20%
- Pre-Diabetes/Insulin Resistance and Diabetes increases risk
- Destructive Processes
 - ✓ Inflammation
 - ✓ Oxidative Stress



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Lifestyle Enhances Brain Health

- **EXERCISE***
- **SLEEP**
- **SOCIAL ENGAGEMENT***
- **COGNITIVE STIMULATION***
- CREATIVE-ARTS, MUSIC
- SPIRITUAL, PURPOSE
- CHI
- MANAGE STRESS & DEPRESSION
- LAUGHTER/HUMOR Stop Smoking!

NUTRITION* and Hydration (* all in FINGER trial in FINLAND & world wide FINGER, & US POINTER) +Sleep



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Why Brain Foods?

- **Delay onset** of Alzheimer's by 5 years by itself....
 - Cut prevalence in half
- **Slow progression** of cognitive impairment
 - For MCI, AD
 - Stroke
 - And perhaps other dementias
- **Improve overall health, quality of life and longevity for everyone**
- **Same foods great for the body**



African Heritage Diet Pyramid

Illustration by George Mikellatos © 2011 Okinawa Prevention Trial www...

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Research Support for Memory Preservation Nutrition (MPN™)

100's of Studies

- Individual foods & nutrients may help/hinder brain function
- Pinpointed by hundreds of lab studies in mice+
- Over a 100 longitudinal/cohort studies in humans
- Clinical trials
- Need combinations of foods to have enough potency.
- Foods help each other help us be healthier. Called "Synergy."



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Maintaining Healthy Brain Tissue

- **People with AD** have many remaining healthy brain cells and are creating new ones all the time.
- Proper nutrition, exercise and other healthy lifestyles, can help build new neurons, neurites & dendrites, keep brain cells healthy, to slow progression.
- Helps Caregivers and Family too!
- Improves mood and helps preserve cognition.

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Combination Of Foods More Potent Than Single Foods

- Eating foods typical of "Mediterranean Diet" Reduces Risk of AD by 40%; Also lowers risk of conversion of MCI to AD
- Nutrients, in combination, lower risk:
 - High intake of variety of foods typical of Mediterranean diet (veggies, fruit, fish, olive oil, nuts and seeds, beans, whole grains, red wine (1-2 gl/day but not more)
 - Low intakes of high-fat animal foods, i.e. dairy, red meat, organ meat and butter, and of saturated fats & Omega 6's



- DASH Anti-Hypertensive Diet lowers risk of dementia

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Mediterranean Diet May Extend Life Of Persons With Alzheimer's Disease – ?Result of Slowing Pathology?!



- **Moderate adherence extends life by 1 1/3 years;**
- **Closer adherence extends life by almost 4 years.**
- (Columbia Univ. Scarmeas, Luchsinger, Mayeux & Stern 2007)

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Clinical Trials Confirm Power of Nutrition for Brain Health in Older Adults

- Human clinical trials - just past decade & 1/2
 - B vitamins, fish oil – mixed results w/ single nutrients
 - Pilot clinical trials with herbs/spices very promising for persons with early AD
 - High glycemic index foods bad for brain & memory
 - First whole foods dietary trials reporting in 2013-15
 - 2014: Finnish Multi-domain Randomized Clinical Trials: positive results; included Finnish national diet "Nordic Diet"

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Pilot Clinical Trials with Spices/Herbs

- traditional spices: Improved acetylcholine levels & cognition in pilot randomized clinical trials in early AD patients – 2003-2010 (Akhondzadeh S et al)
- Sage (N=40)
- Melissa (lemon balm) (N=40)
- Saffron: 30 mg saffron tied 10 mg Aricept with no side effects (N=40); Also 30 mg Saffron tied with 20 memantine in 1 year RCT, N=68 (2014); Tsolaki M (Greece) N=35 1 year Saffron slows cog dec in MCI vs. wait list (2016).
- Aloe Vera improved cognition in AD & lowered inflammation. 1 year open label (U. Miami, Lewis et al. 2013)
- All small pilot RCTs – need to be repeated, with biomarkers to see if slowing AB/Tau pathology
- Additional (mice) studies show multiple brain benefits of clove, cinnamon and nutmeg. Contain powerful antioxidants, anti-inflammatory + compounds which elevate mood, calm anxiety, help with sleep, help memory, or ease pain.
- Turmeric's curcumin, with fat-added to molecule, improves spatial memory in apes, but not recognition memory, and improves brain matter.



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Glycemic Index and Saturated Fat



- Low glycemic index and low saturated fat diet improves cognitive health in normal older adults and people with amnesic mild cognitive impairment (S.Craft 2012)
- Those on high glycemic index and high saturated fat diet fared much worse than those on low glycemic index, low saturated fat diet
- Good diet groups- improved levels of A-beta in CSF fluids, improved visual memory

Craft's current research direction: Healthy Fats OK even a little saturated fat. It's sugar & transfats we avoid.

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Mediterranean Type Foods Help Thinking and Memory

- **First gold standard randomized clinical trial to prove that healthier diet improves thinking and memory**
- 500+ adults at high risk of Cardio-Vascular Disease-part of 7500 larger RCT which also reported a 30% reduction 1st time heart attacks and strokes).
- Mediterranean Diets (especially adding more fish and legumes to diet) enhanced with either EVOO or nuts results in better cognition compared with a low-fat diet
- (PREDIMED Study, 2013-2015, in SPAIN)

EVOO - executive function;
Nuts - memory



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What We Eat Can Slow Alzheimer's Pathology- Australian Study Proves

- No drug on the market can do this, yet.
- Australian study with brain imaging (Rainey-Smith 2015) annually for 3 years.
- PiB Pet Scans can show amount of AD problem protein Beta Amyloid building up in the brain
- People who followed most closely Mediterranean style diet had lowest levels of brain Beta Amyloid.
- Build-up over 3 years also was less than in others
- Same was true for people who ate lower amounts of red meat. RED MEAT IS Problem for Brain Health-not just saturated fats. May lead to more bad bacteria in gut -& more beta amyloid in brain.



Stephanie R Rainey-Smith



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MIND Diet (by Martha C Morris, ScD)

- Rated 1 of 10 best diets in US Today and World Report since 2015
- MIND is an acronym for Mediterranean-DASH Intervention for Neurodegenerative Delay
- Emphasizes brain-healthy foods, including leafy green vegetables, and berries (1/2 cup/day) as stars
- Nuts and beans, whole grains, olive oil
- Chicken and fish for non-vegan protein sources
- Red wine in moderation.
- Limits consumption of red meat, butter, margarine, and most processed foods especially desserts.

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1st US Clinical Trial Funded 2016 :MIND

- Martha Clare Morris, ScD, Rush University
- NIA \$14.5 Grant + Private funding
- Can a particular diet, the MIND diet, prevent Alzheimer's disease?
- Phase 3 trial, 5 years
- 600 ppl, 65+ years old
 - Sub par diet & Overweight
 - At risk for Alzheimer's
- Sites: U of Chicago, Harvard Univ. Public Health-Boston – Started 2017; Results in 2022?



In Memoriam

MIND is nutrition part of US POINTER

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Nordic Diet Shows Potential Better than MIND or Mediterranean for Swedes

- Nordic Prudent Dietary Pattern appears better than the MIND, Mediterranean or DASH diets in lowering risk of cognitive decline in 2,200 elderly Swedes; all better than unhealthy diet with processed foods, excess bad fats & sweets.
- Healthy Nordic Diet includes: **Eating more:** non-root vegetables, certain fruits - pears, apples, peaches, fish and poultry, canola oil, tea, water, and wine. **Eating less:** root vegetables, refined grains/cereals, butter/margarine, sugar/sweets/pastries, & fruit juice.
- Conclusion: **there are many brain healthy diets**; most of them rely on traditional whole foods and minimize processed and sugary foods, emphasize nutrient rich foods

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Richard Isaacson, MD Neurologist



- Current Director, Center for Brain Health, Florida Atlantic University, Boca Raton, Florida
- Former Director, Alzheimer's Prevention Clinic at Weill Cornell Memory Disorders; School of Medicine, New York Presbyterian Hospital.
- "If you want to take a fast train to Alzheimer's disease, just eat lots of sugar."**
- Interview with Maria Shriver circa 2018
- <https://www.medscape.com/viewarticle/868797>
- Recommends Fasting*** instead of Coconut Oil to obtain ketosis

* (14+ hrs/day several times a week – eat dinner early!)

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Brain Healthy Diets Improve Emotional Health in Just 3 Months!

- Two randomized clinical trials conducted with adults varying ages in Australia reporting in 2017
- Both reported clinically and statistically significant positive results especially with depression, even for those already taking meds or therapy
- 3-6 months interventions with Mediterranean style diets
- 1 study gave out free food with cooking lessons!
- In other study, people who improved their diet also saved \$104/month when stopped buying "junk" food.

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Future Brain Foods Research

African Heritage Diet Pyramid

Mediterranean Diet, MIND Diet, Alz Prevention Diet, MPN, Nordic - More Trials.

- Other Heritage e.g. African Heritage better?
- Closer look at spices, herbs, hot peppers
- Boost anti-oxidant & anti-inflammatory foods
- How to offset toxicity of sugar
- Probiotics, prebiotics & healthy gut
- If auto-immune disease, which foods help?
- What about fasting, if afflicted?
- Should AD patients go on Ketone Diet?
- Liver & bile acid dysfunction – how to prevent, treat



Illustration by George Mouton © 2011 Chicago Preservation Fund www.illbrn.org

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Memory Preservation Nutrition Program



MPN™
Research-based Brain Healthy Nutrition: with Practical Application
Menus, Recipes, Pantry Advice

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What is Memory Preservation Nutrition?

- An **evidence-based** nutrition program
- Cutting Edge** – continually updated
- A **lifestyle program**, not a "diet"
- Based on 7 strategies and **easy to follow** principals
- Flexible** for any type of cuisine or culture
- Customizable** to meet individual taste and preference, medical needs and restrictions




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MPN™ - 7 Strategies

1. Increase Amt. & Variety of Anti-oxidants
2. Reduce Insulin Resistance
3. Reduce LDL cholesterol & avoid trans fats, reduce sugar intake.
4. Increase Omega-3s & Healthy Fats
5. Reduce Inflammation
6. Assure adequate B, C, D & E vitamins
7. *Eat probiotics and prebiotics (Added in 2017)*

*Disclaimer-Check with your Physician before making dietary changes



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MPN™ Principles

- Whole foods best-fewer processed & only healthy
 - More plant foods, fewer animal foods
 - Fish or seafood minimum 3x/week
 - Reduce all forms of sugar & refined carbs.; Desserts
 - Avoid trans fats & HFCS. Read food labels
 - Spices, Leafy greens, Nuts/Seeds, Omega-3's, Whole Grains Every Day; Beans, Legumes or Lentils several times a week
 - Greater **variety** of foods, in moderation
 - How to maintain healthy gut? Pickles? Probiotics? Prebiotics?
- Consume 3 meals with 1-2 snacks
- "Drink Up!" Hydrate with water, tea, herbal teas or 100% fruit juice Supplement if needed-Omega 3s, Vitamins B, C, D3 & E (all 8 forms Vitamin E); Herb/Spice or Veggie/Fruit based supplements



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#1 Increase Amount & Variety of Antioxidants: Key to Brain Health

- Oxidative stress plays major role in brain cell deterioration, AD pathology, dementia symptoms & risk.
- **Every** anti-oxidant rich food tested in AD mice led to better thinking & reduced beta-amyloid.
- Prevent oxidation of DNA & of delicate Omega-3's vital to brain health
 - Improve blood sugar, lipids
 - Decrease inflammation
- **Prioritize Plants – Biggest, most varied source of anti-oxidants. Leafy Greens**

(MC Morris 2018-LGs contain folate, lutein and phyloquinone –slows cognitive decline)



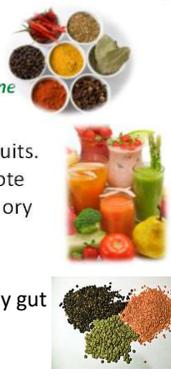
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#1 Eat Plant-Based Anti-oxidants: Variety

- **SPICES AND HERBS –the stars:**
- All Vegetables (eat more than fruit):
 - **Leafy Greens daily –can slow cognitive decline**
- Whole grains, antioxidant rich. Sorghum
- **Berries** - all berries most potent among fruits. Nutrient dense, anti-inflammatory, promote brain cell signalling. Apples increase memory neurotransmitter, acetylcholine.
- **Tea, Coffee, Chocolate**
- **Dried beans and Lentils**-prebiotics, healthy gut
- **Nuts & Seeds** - 1 oz/day



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#1 Star Anti-Oxidants: Herbs, Spices, Plus

- **SPICES AND HERBS –the stars**
- Potent Antioxidants in small volumes
- Anti-inflammatory:
 - **Hot peppers, turmeric, ginger, oregano, rosemary, aloe vera and many others**
- Positive impact on blood sugar, cholesterol (turmeric, cinnamon, nutmeg and many other spices)
- Foods high in antioxidants likely prevent excessive beta amyloid buildup and help reduce accumulated beta amyloid. Cinnamon-1 tsp/day
 - Blocks beta amyloid excess (mice studies)
 - Lowers cholesterol and blood sugar (human)
- Many are anti-microbial **Ginger** anti-viral; **cinnamon** kills bacteria; others kill molds.
- **Hot Chili Peppers (capsaicin)** reduce all cause mortality by 25%-anti-cancer, helps heart (4 country study 1/2 million people via record review)




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#2 Reduce Insulin Resistance

EXCESS* Refined Carbs & Sugar = BAD

1. Sugar consumption is a PROBLEM
 - Early 1900s-5 pounds per year= **1.5 tsp/day**
 - 1970-127 pounds per year
 - Today-152 pounds year=3#/**wk.,=47 tsp/day**
2. Most refined carbs → Sugar in body
3. **Excess sugar/refined carbs →very fine particle LDL cholesterol and triglycerides**
4. WHO recommends **added sugar** max 5% of calories; USA: 10%
6. AHA: < 6 tsp/day for women of added sugar <8-9 tsp/day for men

*Modest amounts of sugar in whole foods such as fruit & root veggies traditionally eaten by humans, is NOT a problem



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#2 Excess Sugar is Toxic to the Brain

- Increases insulin resistance in our brains
- Challenges blood sugar metabolism – brain & Body
- Highly **pro-inflammatory & thus speeds cognitive decline & rate of Alzheimer's**
- Shrinks Hippocampus - seat of our short-term memory & empathy – even in teenagers** (Convit, A, NYU, 2000-2010)



Excess Sugar induces in both AD mice & humans:

- Memory deficits and
- Increased A-Beta problems (and abnormal LDL cholesterol) (Coa, Lu, Lewis & Li, 2007, J. Biological Chemistry) & Suzanne Craft 2012.)

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#2 Reduce Insulin Resistance

- Eat Less:** Reduce refined carbs, sugars, processed foods
- Avoid nitrates** (processed meats)
- Eat More:** Foods that regulate blood sugar: Cinnamon (1 tsp/day) & Spices, Green Tea, Beans & Lentils, Nuts & Seeds Fish/Seafood, Green Vegetables, Whole Grains AND....
- Eat:** 70% Dark Chocolate-up to 1.6 oz./day





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#3 Reduce LDL Cholesterol: Here's How

- Latest research: It's NOT eating cholesterol. (e.g. Omega 3 Eggs OK!)
- Unclear as yet how much saturated fat is OK for heart or brain and whether it might increase cholesterol. In any case we need to continue limiting saturated fat to 10% of calories for brain health.
- MAIN problem: eating too much SUGAR & Carbs** (which body converts to sugar)
- Liver converts all excess sugar** to very fine particle (VLDL) cholesterol & fat (triglycerides)—it's a survival mechanism from ancient times to save we humans from starvation.
- Thus, eating **Excess** sugar causes our liver to make too much of the very fine particle LDL that when oxidized (and only when oxidized), creates sticky plaque that sticks to inside of blood vessels in brain as well as body.



EAT MORE: cholesterol reducing foods—all delicious! See next slide!

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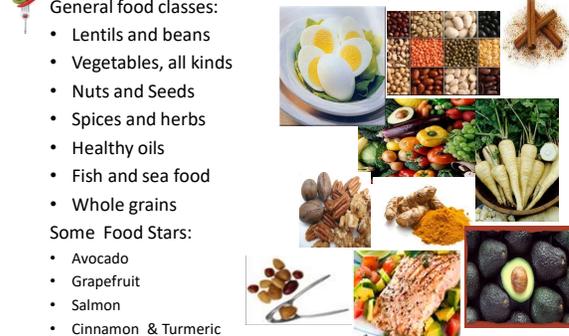
#3 Eat More Foods that Help Lower LDL Cholesterol

General food classes:

- Lentils and beans
- Vegetables, all kinds
- Nuts and Seeds
- Spices and herbs
- Healthy oils
- Fish and sea food
- Whole grains

Some Food Stars:

- Avocado
- Grapefruit
- Salmon
- Cinnamon & Turmeric
- Carrots & parsnips, other root vegetables
- Hemp seeds



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#4 Type of Fats We Eat Matters

- Most important fat for brain: Omega 3's.
- Need More Omega 3's for brain health:
 - Brain composition and structure
 - Membrane health & flexibility,
 - Growth of dendrites and synapses
 - Flexible and Healthy Blood Vessels plus Viscosity of blood, healthy blood flow
 - Retina of eye is almost pure DHA

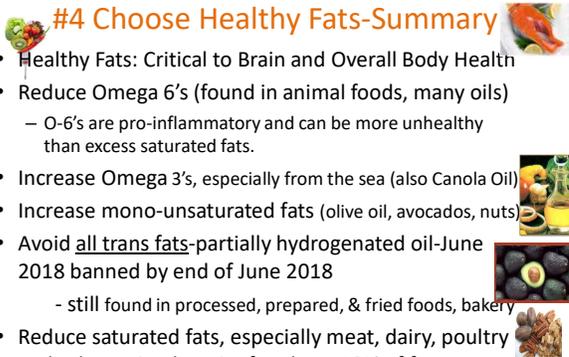
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#4 Choose Healthy Fats-Summary

- Healthy Fats: Critical to Brain and Overall Body Health
- Reduce Omega 6's (found in animal foods, many oils)
 - O-6's are pro-inflammatory and can be more unhealthy than excess saturated fats.
- Increase Omega 3's, especially from the sea (also Canola Oil)
- Increase mono-unsaturated fats (olive oil, avocados, nuts)
- Avoid **all trans fats**-partially hydrogenated oil-June 2018 banned by end of June 2018
 - still found in processed, prepared, & fried foods, bakery
- Reduce saturated fats, especially meat, dairy, poultry and other animals – aim for about 10% of fats

Decrease O-6 to achieve 1:4 ratio O3/O6 (USA: 1:30) pro-inflammatory



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#4 OH, My ...Omegas!

- Increase Omega 3 Fatty Acids & Healthy Fats:
 - Essential part of all brain cells & connections, nerves
 - Cools Inflammation
 - May reduce risk of depression and mood disorders
 - Deficient in American diet
- Foods rich in Omega-3
 - Fish, shellfish, Seaweed, Kelp, Dulse, Kombu
 - Eggs-Free Range and Omega 3s Enriched are best
 - Green leafy vegetables and purslane
 - Canola Oil
 - Certain Nuts and seeds (walnuts, chia, flax, hemp)
 - Modest amounts in raspberries and cauliflower



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#5 Cool Inflammation

EAT LESS: Sugar, Refined Carbs, Animal foods, Omega-6's

EAT MORE:

- Fish & Seafood, Omega 3's
- Plant Foods-Vegetables
- Nuts and Seeds
- Spices & Herbs
- Among most anti-inflammatory
 - Turmeric
 - Ginger
 - Rosemary
 - Oregano
 - Holy Basil
 - Cinnamon
 - Hot Peppers – the hotter, the more it cools us



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#6 Get Your Vitamins B,C,D & E

Vitamin B

- Slows brain atrophy and cognitive and emotional decline
- Best choice-B 50 complexes to avoid imbalances & excess B-6
- B12 and Niacin Important
- Synthetic Bs found in enriched grains work well as we age

Vitamin D

- Helps prevent cognitive and emotional decline
- Vitamin D enriched foods are insufficient
- 20 minutes of sun a day
- Take a vitamin D supplement &/or Cod Liver Oil

Vitamin E (8 complex forms-4 tocopherols and 4 tocotrienols)

- Part of neuronal membrane; Protects delicate Omega 3s
- Foods: Nuts, seeds, palm oil, leafy greens

Vitamin C helps vitamin E do its job

*Disclaimer-Check with your Physician before making changes

**B
D
E
C**

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#7. Gut Health is Key – Eat Pro-biotics

- Probiotics (healthy bacteria) include:
 - Most Pickled or Fermented vegetables such as sauerkraut, dill and other cucumber pickles, Kim chi, assorted pickled vegetables
 - Vinegars especially if still “alive” e.g. Bragg’s Apple Cider Vinegar. All vinegars from various fruits including cider vinegar, balsamic vinegar
 - (Limit use of rice vinegar because of high sugar content)
 - Kombucha and other fermented non dairy drinks
 - Fermented dairy (choose low fat) e.g. yogurt, buttermilk, cottage cheese, ricotta and limited amounts of full fat cheeses (avoid however processed cheeses/cheese foods)
 - Tempeh, miso and other fermented soy products
- Wines, beers, especially red wine (moderation)

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#7. Gut Health is Key – Eat Pre-biotics

- Pre-biotics are FOOD for the good, healthy bacteria
- Generally soluble, & some insoluble “indigestible” fiber that pro-biotic bacteria use for food. These fibers are often sweet tasting ones that pro-biotic bacteria ferments and turns into its own edible food. Examples are certain polysaccharides e.g. inulin, pectin and certain fructo-oligosaccharides and oligosaccharides.
- Also certain “resistant starches” which pass to large intestine undigested, such as found in sorghum. PROCESSING GRAINS destroys most resistant starches.
- Certain prebiotics enhance good bacteria’s ability to produce an anti-inflammatory substance called butyrate that reduces inflammation in the gut.

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#7. Gut Health is Key – Eat Pre-biotics+

- Beans and Lentils & Other legumes such as peas, chickpeas, edamame (plus some beans can be fermented)
- Leafy Greens- Especially dandelions! (lots of inulin) & cabbage can also be pickled so both pro and pre
- Onions, garlic, leeks and others in onion family (inulin plus)
- Asparagus (inulin plus other prebiotics)
- Root vegetables (rich in pectins and other prebiotics)
- Whole grains, and the bran of grains, and other seeds
- Fruits rich in pectin such as apples, citrus, pears, guava, plums
- Raw bananas; other fruits such as nectarines, watermelon, grapefruit, pomegranate & persimmon; smaller amounts in cherries, grapes, berries
- Nuts
- Note: High amounts in uncommon foods: Jerusalem artichokes and chicory root

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MPN™ Goals for Brain Healthy Eating

- **HEALTHY FATS** – Daily
- **SPICES/HERBS** – Daily
- **PROBIOTICS & PREBIOTICS** - Daily
- **WHOLE GRAINS** – 70% of All Grains
- **FISH/SEAFOOD** – 3-5x/Week
- **POULTRY** – 2-4x/Week
- **EGGS** – 5+/Week
- **RED MEAT** – 1x or Less/Wk. -Month
- **BEANS/LENTILS** – 5+x/Week
- **NUTS/SEEDS** – 5+x/Week © 2017 Nancy Emerson Lombardo
- **VEGETABLES** – 5-7+x/Day-vary & root veg.
- **LEAFY GREENS** – 1-3x/Day
- **FRUIT (esp. Berries)** – 3-5x/Day (Juice <4-6 oz/day)
- **ADDED SUGAR** – W <5-6tsp; M <8-9tsp*

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Where to Start?

- Start with desserts, use fruit instead, smaller portions, less often
- Snacks: more savory, nuts and seeds, carrots, veggies, avocado
- Water instead of soda – beware of “bubbly water” with sugar added (e.g. San Pellegrino adds as much sugar as soda-33 gm)
- Salad dressings- EV olive oil and vinegar, mixed spices
- Eat more veggies (balsamic vinegar or mustard helps flavor!)
- Eat berries
- Nuts and seeds
- Whole grains

BRAIN HEALTH logo Toxic foods: use less, less often Nancy Emerson Lombardo ©2021 Brain Health and Wellness Center®

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Additional Steps

Menu changes – some easy for individuals:

- Increase use of spices and herbs
- Reduce amount and frequency of red meat
- Make your own salad dressings
- Try one new whole grain a week;
- Cook large batch beans/lentils weekly and use some for multiple meals. Or add beans to soups.
- Select nuts as a snack; Sprinkle hemp or flax seeds
- Make your own fruit yogurt cups
- Switch to coconut sugar and stevia products e.g. sweetleaf, some truvias (check for if sugar content)

BRAIN HEALTH logo Use more avocado Nancy Emerson Lombardo ©2021 Brain Health and Wellness Center®

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Brain Foods & Brain Busters

- There are 100s of delicious foods that can help protect the brain and enhance brain power
- Combinations of foods such as Mediterranean, DASH, MIND, Nordic or MPN diets are more potent than single brain foods
- There are fewer but very prevalent foods that actively harm the brain, especially when eaten in excess: sugar, refined carbs, red meat, trans fats, nitrates
- Thus important to increase use of brain foods as well as decreasing use of brain toxins

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Summing Up

“Eat real food, mostly plants, not too much”
Michael Pollen

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If You Have Early Alzheimer’s or MCI

- Should you consider Fasting?
 - Isaacson’s definition of fasting to stimulate ketosis
 - 14 hours of no food or caloric intake; water and zero calorie beverages OK e.g. dinner 5-6 pm, no snacks, breakfast after 8 am. 12 hours has some benefit Do this 5+ times/week
- Should you consider Ketogenic Diet?
 - First try fasting, as safer and easier (Dr. Isaacson)
 - Second, only use healthy fats and proteins, minimize red meats and related fats
 - Don’t neglect other key brain healthy foods
 - So for minimal carbs, include fruits such as berries
 - Herbs and spices have no calories or carbs so OK on ketogenic diet
 - Consider supplements that offer concentrated plant nutrients w/o sugar

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