“Dietary Supplements: What Works, What Doesn’t, What is Known”

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And
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29,000 in US Market in 2000

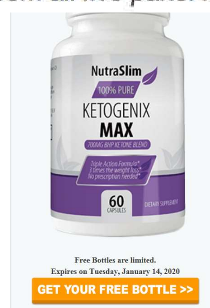
+1,000/ yr

BUSINESS

The sisters were the first contestants in Shark Tank history to receive investment offers from all five panel members.

The judges were amazed that one product could:

- **Stops Excess Fat Production**
- **Suppresses Your Appetite**
- **Increases Serotonin Creation For Emotional Eaters**
- **Increases Energy Levels**
- **Improves Sleep and Prevents Fatigue**
- **Made From 100% All Natural and Organic Ingredients FDA approved**



“If you hear it enough, it must be true!”----NOT

Depending on source, Supplement industry is worth
$40-122 billion dollars a year

ConsumerLab.com 22 YEARS

KATHY'S PHILOSOPHY

- **Promote strategies KNOWN to be effective**
  - **B12, calcium, iron, vitamin D, potassium**

- **WARN against those that are dangerous**
  - **Including exceeding Upper Tolerable Limits (UL)**
  - ***Ephedra* for weight loss; Interactions w/other meds**
  - **Buying products of unknown reliability**

- **Help patient assess risks & benefits for emerging therapies**
  - ***Supplements for blood sugar control***
  - ***Supplements for brain health***
  - ***Vitamins D and C and zinc for COVID risk reduction***

BEST RESOURCES:

ConsumerLab.com 22 YEARS

NIH National Institutes of Health Office of Dietary Supplements

NIH National Center for Complementary and Integrative Health

USE WITH THOUGHT:

WebMD

healthline

THE PEOPLE'S PHARMACY
The People's Perspective on Medicine

What I might ask the person who submitted this question

- I see no downside to taking a heaping spoonful of 1005 cacao powder in my coffee every morning and taking either 15 ml (1/2 oz) of EVOO or cold pressed avocado oil with breakfast…
- What do you hope will happen?
- Who suggested it to you?
- How does it impact other dietary decisions you will make?

Supplements being touted for COVID-19-outpatient

-some nutrients might help if not getting enough

- **Vitamin C—on social media at 5,000-10,000 mg/day. No evidence dosage higher than DRI (120 mg/day from food/supplements) will prevent infection**
- **Vitamin D -- shown to reduce risks of respiratory infections (blood levels of 20-30 ng/mL usually maintained by 15-20 mcg/day or 400-800 IU)**
- **Vitamin B6—protective effect against inflammation (theory hoping to be tested)**
- **Potassium, Zinc also being mentioned in social media**
- **FDA warning letters; JUST ONE EXAMPLE--improper marketing of COVID 19 treatments**
  -Liposoma Vit C and D2, quercetin and Pterostilbene Advance (unapproved new/misbranded drugs) from stopcovidcold.com

Consider a multi vitamin-mineral

- **Natural remedies. None can prevent infection with the virus;**

  For reduction of symptoms-- little to no clinical evidence in humans

Want more details? Ask Kathy to send handout

- From Consumerlab.com 4/1/2020

We will talk about :

- Tools you can use in decision making
- Common nutrient deficiencies that benefit from vitamin and/or mineral supplementation: Vitamin B12, Multiple vitamin mineral, Vitamin D, calcium, eye health,
- Risks/benefits of other supplements (herbals & others) for chronic conditions, especially diabetes; memory enhancing
- Your questions

TOOLS YOU CAN USE

A reminder: DSHEA passed in 1994

Little FDA control over dietary supplements

Most misunderstood label statement:

"these statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure or prevent disease"

NUTRITION FACTS

Serving Size: 6oz / 170g
Calories: 170
Calories from Fat: 15

Total Fat - Grams	1.5
% DV Fat	3
Saturated Fat - grams	1
% DV Saturated Fat	5
Trans Fat - grams	0
Cholesterol - mg	10
% DV Cholesterol	3
Sodium - mg	80
% DV Sodium	3
Potassium - mg	260
% DV Potassium	7
Total Carbohydrate - grams	33
%DV Carbohydrate	11
Dietary Fiber - grams	0
% DV Dietary Fiber	0
Sugars - grams	27
Protein - grams	5
% DV Protein	11
% DV Vitamin A	15
% DV Vitamin C	0
% DV Calcium	20
% DV Iron	0
% DV Vitamin D	20
% DV Phosphorus	15

"Adequate calcium and vitamin D throughout life, as part of a…

SUPPLEMENT FACTS

Ingredients	Amt Per Serving	Units	%Daily Value
Vitamin A	2500	IU	50%
Vitamins C	60	mg	100%
Vitamin D	400	IU	100%
Vitamin E	33	IU	110%
Vitamin K	20	mcg	25%
Thiamin (B1)	1.5	mg	100%
Riboflavin (B2)	1.7	mg	100%
Niacin	15	mg	75%
Vitamin B6	2	mg	100%
Folic Acid	400	mcg	100%
Vitamin B12	6	mcg	100%
Biotin	30	mcg	10%
Pantothenic Acid	10	mg	100%
Calcium	200	mg	20%
Iron	18	mg	100%
Iodine	38	mcg	25%
Magnesium	40	mg	10%
Zinc	15	mg	100%
Selenium	55	mcg	79%
Copper	2	mg	100%

"Emerging research suggests vit D as part of a healthy….

MEDICAL FOOD

For the dietary treatment of vitamin D deficiency

- 50,000 IU D3 cholecalciferol
-33 IU vitamin E
-dextrose (9 calories)

MEDICAL FOOD

For the clinical dietary management of the metabolic processes of osteopenia and osteoporosis – "natural treatment for osteoporosis"
-27 mg genistein, 20 mg zinc chelazome, 200 IU cholecalciferol

FOOD? SUPPLEMENT? DRUG?

FDA is unclear

-CBD oil no label on most
-CBD foods, chews –some have Nutrition Facts

MEDICAL FOOD: consume enterally; Specific disease condition w/distinctive nutrition need; clinical data; MD supervision

Claims

- Food: Health claims: significant scientific consensus“
  - "http://www.fda.gov/food/labelingnutrition/consumerinformation/default.htm
  - Example: *Calcium, vitamin D, and osteoporosis*: "Adequate calcium and vitamin D throughout life, as part of a well-balanced diet, may reduce the risk of osteoporosis”
  - http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/FoodLabelingNutrition/ucm152626.htm
- Dietary Supplement: Structure/Function
  - Example: “Emerging research suggests that vitamin D as part of a healthy diet and lifestyle may support heart health”
- Medical Food:
  - Example: “For the dietary management of vit D deficiency”
  - http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/MedicalFoods/default.htm

Dietary Reference Intakes DRIs Food and Nutrition Board

- To describe what is optimal
- To identify Upper Tolerable Limits
- To prevent deficiency
- Chronic disease risk reduction (for sodium and potassium)

FDA sets **Daily Value**… usually higher than the value to prevent deficiency

Updated Daily Values

In 2020

FDA

- Using most recent science
- Changes in DVs may make the %Daily Value look different
- Continue to use the population-coverage approach for Vitamins and Minerals
  - Total Fat: 65 ➡ 78 g
  - Total Carbohydrate: 300 ➡ 275 g
  - Dietary Fiber: 25 ➡ 28 g
  - Sodium: 2,400 ➡ 2,300 mg
  - Potassium: 3,500 ➡ 4,700 mg
  - Calcium: 1,000 ➡ 1,300 mg
  - Vitamin D: 400 IUs (10 mcg) ➡ 20 mcg

Nutrition Facts

8 servings per container

Serving size **2/3 cup (55g)**

Amount per serving

Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

MUST have a DV to be included on Nutrition Facts; not necessary to be on Supplement Facts

Centrum Silver Women

Multivitamin/Multimineral Supplement

This is the most current labeling information and may differ from labels on produ
If there are any differences between this website labeling and product packaging labelin
labeling should be regarded as the most current.

SUGGESTED USE: Adults: Take one (1) tablet daily with food. Not formulated for use in children. Do not exceed suggested use.

Supplement Facts
Serving Size 1 Tablet

Amount Per Serving	% Daily Value
Vitamin A 1,050 mcg (29% as Beta-Carotene)	117%
Vitamin C 100 mg	111%
Vitamin D_3 25 mcg (1,000 IU)	125%
Vitamin E 15.8 mg	105%
Vitamin K 50 mcg	42%
Thiamin 1.1 mg	92%
Riboflavin 1.1 mg	85%
Niacin 14 mg	88%
Vitamin B_6 5 mg	294%
Folate 667 mcg DFE (400 mcg Folic Acid)	167%
Vitamin B_{12} 50 mcg	2,083%
Biotin 30 mcg	100%
Pantothenic Acid 5 mg	100%
Calcium 300 mg	23%
Iron 8 mg	44%
Phosphorus 20 mg	2%
Iodine 150 mcg	100%
Magnesium 100 mcg	24%
Zinc 15 mg	136%
Selenium 22 mcg	40%
Copper 0.5 mg	56%
Manganese 2.3 mg	100%
Chromium 52 mcg	149%
Molybdenum 50 mcg	111%
Chloride 72 mg	3%
Potassium 80 mg	2%
Lutein 300 mcg	*

* Daily Value not established.

Centrum Silver Women

Multivitamin/Multimineral Supplement

This is the most current labeling information and may differ from labels on product packaging. If there are any differences between this website labeling and product packaging labeling, this website labeling should be regarded as the most current.

Ingredients: Calcium Carbonate, Magnesium Oxide, Potassium Chloride, Ascorbic Acid (Vit. C), Dibasic Calcium Phosphate, Microcrystalline Cellulose, Maltodextrin, DL-alpha Tocopheryl Acetate (Vit. E), Modified Corn Starch. **Contains <2% of:** Beta-Carotene, BHT (to preserve freshness), Biotin, Blue 2 Lake, Calcium Pantothenate, Cholecalciferol (Vit. D_3), Chromium Picolinate, Copper Sulfate, Corn Starch, Crospovidone, Cyanocobalamin (Vit. B_{12}), Ferrous Fumarate, Folic Acid, Gelatin, Hypromellose, Lutein, Magnesium Stearate, Manganese Sulfate, Medium-Chain Triglycerides, Niacinamide, Phytonadione (Vit. K), Polydextrose, Potassium Iodide, Pyridoxine Hydrochloride (Vit. B_6), Red 40 Lake, Riboflavin (Vit. B_2), Silicon Dioxide, Sodium Ascorbate (to preserve freshness), Sodium Molybdate, Sodium Selenate, Talc, Thiamine Mononitrate (Vit. B_1), Titanium Dioxide, Tocopherols (to preserve freshness), Vitamin A Acetate, Zinc Oxide.

As with any supplement, if you are pregnant, nursing, or taking medication, consult your doctor before use.

WARNING: Accidental overdose of iron-containing products is a leading cause of fatal poisoning in children under 6. Keep this product out of reach of children. In case of accidental overdose, call a doctor or poison control center immediately.

If taking other supplements, read label, since supplements may contain the same ingredient.

Store at room temperature. Keep bottle tightly closed.

Bottled sealed with printed foil under cap. Do Not Use if foil is torn.

Marketed by: Pfizer, Madison, NJ 07940 USA

Questions? Comments?
Call 1-877-CENTRUM (236-8786)

Updated supplement fact label 2020

KNOWN Dangerous Levels for Adults (per day)

Nutrient	Upper Limit	Possible Effect
Calcium	*2.5 gm*	*kidney stone, joint pain, kidney problems, heart disease*
Choline	*425 mg*	
Chromium	*1,100 mg*	*hypoglycemia, kidney problems*
Copper	*10,000 mg*	*GI distress, liver damage*
Fluoride	*10 mg*	*teeth discoloration, bone pain*
Folate	*1,000 mcg*	*nerve damage, masks lack of Vitamin B12*
Iodine	*1,100 mcg*	*elevated TSH lab value*
Iron	*45 mg*	*heart disease, GI distress*
Magnesium	*350 mg/d*	*weakness, low blood pressure, diarrhea*
Molybdenum	*2,000 mcg*	*gout; loss of copper in urine*
Niacin	*35 mg*	*flushing, itching, GI distress*
Phosphorus	*4,000 mg*	*bone problems, interference with calcium absorption*
Selenium	*45 mg*	*hair loss, brittle nails*
Vitamin A (retinal)	*3,000 mcg*	*dry skin, heart failure, birth defects*
Vitamin B2 (riboflavin)		*none known*
Vitamin B6	*100 mg*	*numbness in fingers, toes*
Vitamin C	*2,000 mg*	*diarrhea, kidney stones, excess iron absorption*
Vitamin D	*50 mcg*	*hypercalcemia*
Vitamin E	*1000 mg*	*uncontrolled bleeding*
Zinc	*40 mg*	*reduced copper status*

Warn about known interactions!

For example: Anticoagulant Effect

↑

- Black cohosh
- Dong quai
- Feverfew
- Fish Oil
- Garlic
- Ginger
- Gingko biloba
- Glucosamine
- Pyncogenol
- Saw Palmetto
- Sweet Woodruff
- Vitamin E
- Cranberry juice
- Fenusgreek
- Alfalfa
- Capsicum
- Celery
- Horseradish
- Licorice
- Turmeric
- Omega-3 fatty acids

↓

- Coenzyme Q10
- Green tea
- Vitamin K
- St. John’s Wort

↑/↓

- Ginseng

No data

- Vitamin A
- Policosanol
- Pomegranate juice

Kolasa 1.2012

Dietary Supplement Label Database

- www.dsld.nlm.nih.gov/dsld
- Label information from dietary supplements both on the market and discontinued
- Example: Put in vitamin D in "quick search"
  - 342 products with Vitamin D in the name
  - 1,426 product with Vitamin D as ingredient

  - Supported by NIH and Office of Dietary Supplements

9.2014

Many believe if sold in a pharmacy…

…it must be good…

Quality concerns: contamination; adulteration; ingredients & label don't match

Common Nutrient Deficiencies in Aging

Make sure you discuss with your doctor or registered dietitian nutritionist (RDN)

Did a long term vitamin B12 deficiency drive Mary Todd Lincoln to dementia?

Dementia : a decline in mental abilities severe enough to interfere with daily life

Different types of dementia but primary ones are Alzheimer's Disease, vascular dementia and Lewy body dementia

Dementias associated with nutrient deficiencies include Hypocobalaminemia (B12) and pellagra (niacin)

Low B12 intake over time increases risks for pernicious anemia

- LEADING TO:
  - Confusion
  - Depression
  - Memory Loss and Dementia—if also have high homocysteine levels aaaaaa91000=500 mcg to correct)
  - Hematologic abnormalities

  Early symptoms: fatigue, tingling and numbness in hands and feet, muscle weakness, loss of reflexes, tongue soreness, unintentional weight loss, disorientation, low blood levels

- Prevention requires the DRI --2.4 ug/day
- No Upper Tolerable Limit (UL)

- Metformin/Glucophage and also stomach acid reducers or "the purple pill" deplete B12 due to decreased absorption from the B12-intrinsic factor complex. Reversible with supplementation

- Supplements contain much higher 250-3000 mcg (Multi 50 mcg)

What's the evidence that vitamin B12 affects cognitive decline?

DATA are MIXED

- Women at high risk of CVD in the Women's Antioxidant and Folic Acid Cardiovascular Study took daily supplements of vitamin B12 (1 mg), folic acid (2.5 mg) vitamin B6 (50 mg), or placebo .
  - At 1.2 yrs, supplementation **did not affect** mean cognitive change from baseline.
- In a subset with **low baseline** intakes of B vitamins, supplementation **significantly slowed** cognitive decline
- Two Cochrane reviews and a systematic review of trials of the effects of B vitamins on cognitive function found i**nsufficient** evidence
- Large clinical trials of vitamin B12 supplementation are needed to assess effect on cognitive function and dementia
- Treatment with pills or injection both work

Cook et al. Arch Intern Med. 2007;167:1610-1618; Kang et al. Am J Clin Nutr, 2008;
Malouf et al; Cochrane Database Syst Rev 2003;(3):CD004326;
Malouf et al. Cochrane Database Syst Rev. 2008 Oct 8;(4):CD004514.
https://ods.od.nih.gov/factsheets/VitaminB12-HealthProfessional

Ad for Consumerlab.com

-lots of free content

-product specific content by subscription

-reminds us how poorly this industry is regulated

Be Careful Choosing B Vitamins

19% of B Vitamins Fail Our Review. See Which Are Best.

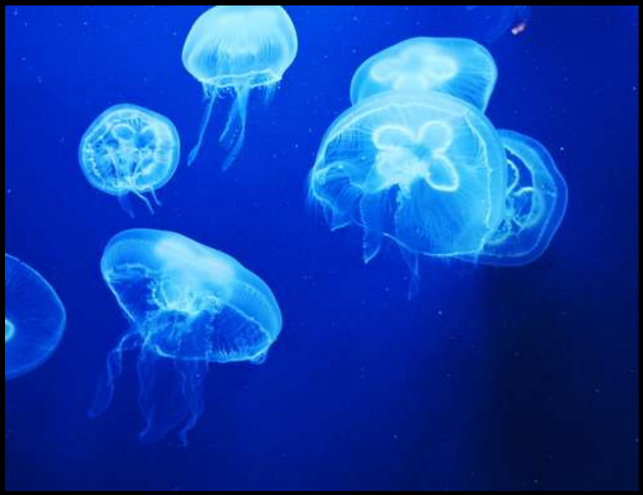
Dietary supplements thought to have possible benefit for memory

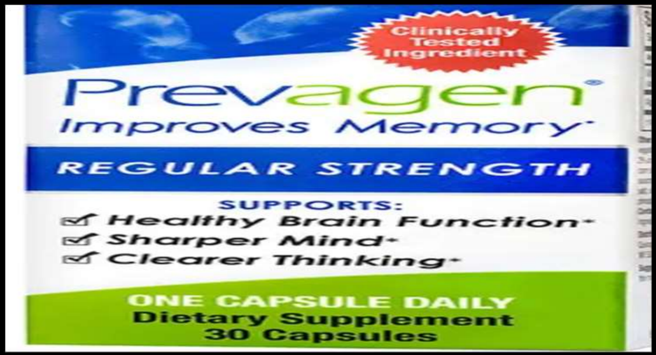
- Gingko biloba: After a reasonable amount of study, **no** conclusive evidence is efficacious in preventing or slowing dementia or cognitive decline.
- Vitamin E: A recent systematic review found **no** evidence it prevents progression from mild cognitive impairment to dementia, nor improves cognitive function. However, there is moderate quality evidence from a single study that it may slow functional decline in Alzheimer's disease.
- Curcumin: Only been a few clinical trials examining the effects of curcumin on cognitive function and Alzheimer's disease - inconclusive at this time.

https://nccih.nih.gov/health/providers/digest/alzheimers
Morris MC, Diet for the Mind, 2017

A word on curcumin/ turmeric

- Lots of interest in both using it as a spice and as a dietary supplement, especially to reduce inflammation
- Can interact with blood thinners, blood pressure and diabetes medicines. It might also increase some individual's risks for calcium oxalate kidney stones
- Other side effects if taking too much can include headache, nausea, diarrhea, and yellow stools.
- Consuming 8-12 grams/day appears tolerated
- Until recently, its poor bioavailability from both food and supplements limited its potential effectiveness; if product has black pepper extract with piperine
- Study dosages vary from 1,000-1,500 mg/day in a dietary supplement or 1/4 – 1/2 teaspoon of the spice





-CONVINCING DECEPTIVE ADVERTISING

-INVALID SCIENTIFIC EVIDENCE

-$ HARM TO CONSUMER

-FDA WARNING LETTERS

AXONA 100% MCT from coconut and palm oil
No RTC ; tested 140 pts
Improved score on cognitive impairment test at 45 days
-Nutr. Metab 6:31, 2009.

Nutrition Facts

Serving Size pkg

Amount Per Serving	
Calories 217	Calories from Fat
	% Daily Valu
Total Fat 12g	1
Saturated Fat -	
Cholesterol -	
Sodium -	
Total Carbohydrate 12g	
Dietary Fiber -	
Sugars -	
Protein 12g	
Vitamin A -	Vitamin C -
Calcium -	Iron -

* Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Medical food

Supplement Facts

Serving Size: 3 Vegetarian Capsules
Servings Per Container: 30

Amount Per Serving		% DV
Calories	5	
Total Carbohydrate	1 g	<1%
Cocoapro® Cocoa Extract (bean)	1650 mg	‡
Cocoa Flavanols (including 105 mg (–)-epicatechin)	750 mg	‡

Percent Daily Values (DV) are based on a 2,000 calorie diet.

‡Daily Value not established.

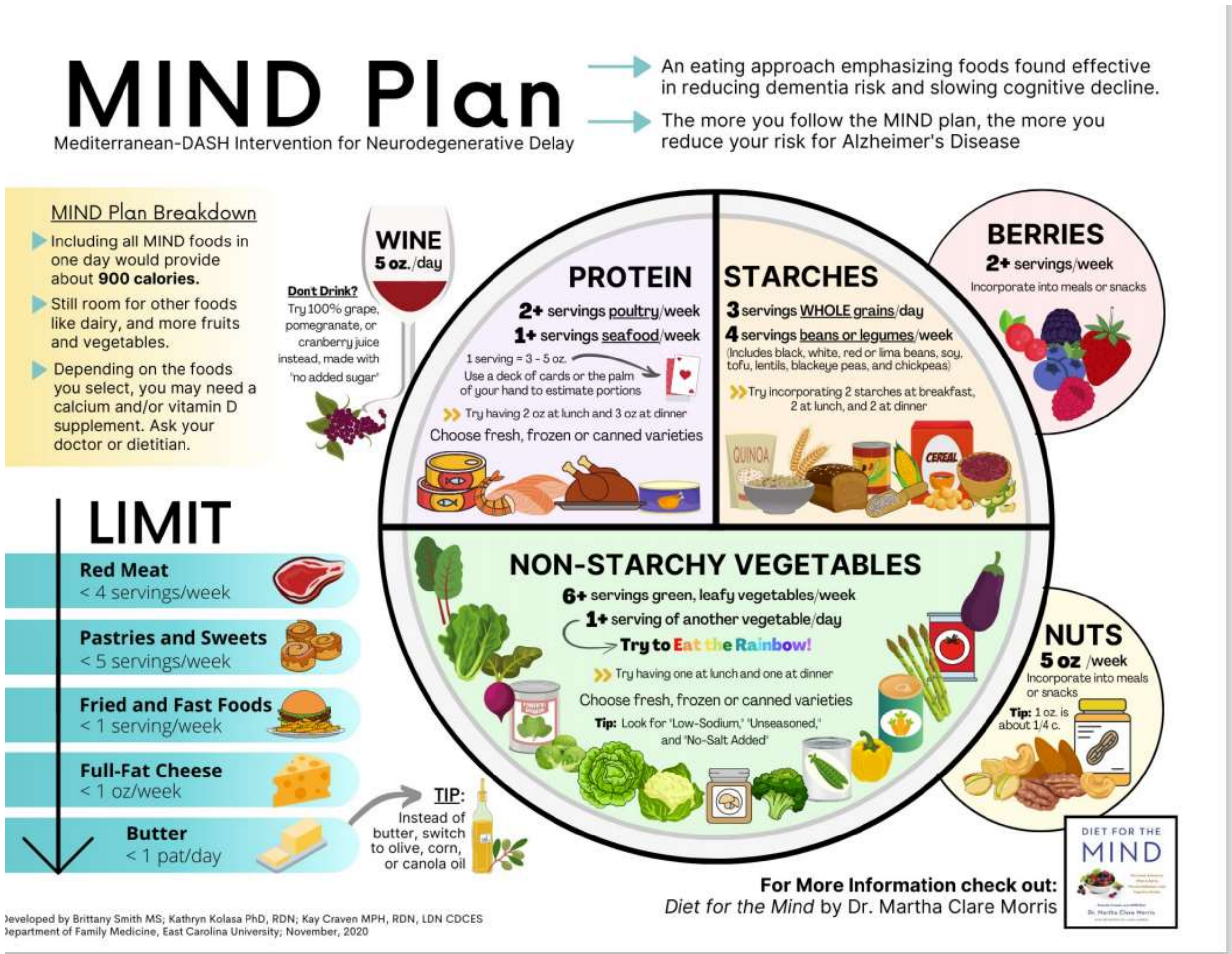
OTHER INGREDIENTS: HYPROMELLOSE CAPSULE, ASCORBYL PALMITATE,

Supplement

CURE for Alzheimer's?

120 calories / T

- Dr. Mary Newport's story
  - http://www.carbohydratescankill.com/3588/86-dr-mary-newport-on-alzheimers-disease
- Researchers suggest
  - Cells do produce ketones when metabolizing Medium Chain Triglycerides (MCT), but not high enough levels
  - See Medical Food on next slide


MIND Plan
Mediterranean-DASH Intervention for Neurodegenerative Delay
An eating approach emphasizing foods found effective in reducing dementia risk and slowing cognitive decline.
The more you follow the MIND plan, the more you reduce your risk for Alzheimer's Disease
MIND Plan Breakdown
Including all MIND foods in one day would provide about 900 calories.
Still room for other foods like dairy, and more fruits and vegetables.
Depending on the foods you select, you may need a calcium and/or vitamin D supplement. Ask your doctor or dietitian.
WINE
5 oz./day
Don't Drink?
Try 100% grape, pomegranate, or cranberry juice instead, made with "no added sugar"
PROTEIN
2+ servings poultry/week
1+ servings seafood/week
1 serving = 3 - 5 oz.
Use a deck of cards or the palm of your hand to estimate portions
Try having 2 oz at lunch and 3 oz at dinner
Choose fresh, frozen or canned varieties
STARCHES
3 servings WHOLE grains/day
4 servings beans or legumes/week
(Includes black, white, red or lima beans, soy, tofu, lentils, blackeye peas, and chickpeas)
Try incorporating 2 starches at breakfast, 2 at lunch, and 2 at dinner
QUINOA
CEREAL
BERRIES
2+ servings/week
Incorporate into meals or snacks
LIMIT
Red Meat
< 4 servings/week
Pastries and Sweets
< 5 servings/week
Fried and Fast Foods
< 1 serving/week
Full-Fat Cheese
< 1 oz/week
Butter
< 1 pat/day
TIP:
Instead of butter, switch to olive, corn, or canola oil
NON-STARCHY VEGETABLES
6+ servings green, leafy vegetables/week
1+ serving of another vegetable/day
Try to Eat the Rainbow!
Try having one at lunch and one at dinner
Choose fresh, frozen or canned varieties
Tip: Look for "Low-Sodium," "Unseasoned," and "No-Salt Added"
NUTS
5 oz /week
Incorporate into meals or snacks
Tip: 1 oz. is about 1/4 c.
For More Information check out:
Diet for the Mind by Dr. Martha Clare Morris
DIET FOR THE MIND
eveloped by Brittany Smith MS; Kathryn Kolasa PhD, RDN; Kay Craven MPH, RDN, LDN CDCES
epartment of Family Medicine, East Carolina University; November, 2020

HOW DOES YOUR DIET STACK UP?

Read through the table below and think about how you usually eat. In each blank write down how many servings of that food group **you eat** compared with the MIND Plan.

Foods to ADD	**Whole Grains** 3 servings / day 1 serving = 1/2 c. cooked cereal or grain, 1 c. ready-to-eat cereal, or 1 slice bread, **I eat:** ________servings/day	**Green Leafy Veggies** 6+ servings / week 1 serving = 1 c. raw, or 1/2 c. cooked **I eat:** ______servings/week	**"Other" Veggies** 1+ servings / day 1 serving = 1 c. raw, or 1/2 c. cooked **I eat:** ________servings/day
Foods to ADD	**Nuts** 5 oz / week 1 oz is about the same as 1/4 c. **I eat:** ______servings/week	**Berries** 2+ servings / week 1 serving = 1/2 c. **I eat:** ______servings/week	**Beans/Legumes** 4 servings / week 1 serving = 1/2 c. cooked **I eat:** ______servings/week
Foods to ADD	**Fish** 1+ servings / week 1 serving = 3 - 5 oz. **I eat:** ______servings/week	**Poultry** 2+ servings / week 1 serving = 3 - 5 oz. **I eat:** ______servings/week	**Wine** 5 oz / day **I have:** ______oz/day
Foods to LIMIT	**Red Meat** < 4 servings / week 1 serving = 3 - 5 oz. **I eat:** ______servings/week	**Fried/Fast Food** < 1 serving / week **I eat:** ______servings/week	**Pastries/Sweets** < 5 servings / week **I eat:** ______servings/week
Foods to LIMIT	**Butter** < 1 pat / day 1 pat = 1.5 tsp. **I eat:** ________servings/day	**Full-Fat Cheese** < 1 oz / week **I eat:** ______oz/week	Cutting back on cheese can be hard. These tips and tricks may help:

DECIDE.

What change can you make **TODAY** to start supporting your brain health?

Set a Goal.

Make it **S**pecific, **M**easurable, **A**chievable, **R**ealistic/Relevant and **T**ime-bound:

Example:

I will eat one more serving of green, leafy vegetables each day, for 7 days a week, for the next two weeks.

Write your own SMART goal here:

____

CONCERNED ABOUT EATING HEALTHY AND SUPPLEMENTING APPROPRIATELY…. BRODY HAS GREAT TEAM OF RDNS

Who can create an individualized healthy eating plan

Multivitamin mineral

Nutrition Facts	
Serving Size 218 g	
Amount Per Serving	
Calories 1879	Calories from Fat 1879
	% Daily Value*
Total Fat 218g	335%
Saturated Fat 189g	943%
Trans Fat	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Sugars 0g	
Protein 0g	
Vitamin A 0% • Vitamin C	0%
Calcium 0% • Iron	0%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

- Ingredients vary widely by product & brand
- Usually has sufficient B12, D, some calcium
- Efficacy undetermined (NIH consensus conference) -- no established standards for a multi vitamin-mineral supplement
- Some recommend no iron containing, if not anemic.
- Pay no more than 10 cents/day for good quality vitamin

NIH State-of-the-Science Conference Multivitamin / Mineral Supplements and Chronic Disease Prevention, Annals Intern Med 2006;145:364-371.

What Your MULTI Should Contain

Vitamin A	700–1,050 mcg (2,300–3,500 IU)
Vitamin C	60–300 mg
Vitamin D	20–25 mcg (800–1,000 IU)
Vitamin E	13–35 mg (20–80 IU)
Vitamin K	20 mcg or more
Thiamin (B-1)	1.1 mg or more
Riboflavin (B-2)	1.1 mg or more
Niacin (B-3)	14–20 mg
Vitamin B-6	1.7–6 mg
Folate	
Premenopausal women	660-680 mcg DFE (400 mcg folic acid)
Everyone else	400-680 mcg DFE (235-400 mcg folic acid)
Vitamin B-12	2.4 mcg or more
Calcium	Don't rely on a multi
Iron	
Premenopausal women	18 mg
Everyone else	No more than 8 mg
Iodine	150 mcg
Magnesium	40–350 mg
Zinc	8–24 mg
Selenium	18–55 mcg
Copper	0.5–2.2 mg
Chromium	25 mcg or more
Potassium	Don't rely on a multi

Notes: "Or more" doesn't mean that a nutrient is safe at any dose, but that levels in multivitamins are unlikely to be high enough to cause harm.

This list does not apply to prenatal multis for pregnant women. See your doctor.

Men and Postmenopausal Women (multis that contain iron are italicized)

- Centrum Silver Adults 50+
- Centrum Silver Men 50+
- *Centrum Silver Women 50+*
- CVS One Daily Women's 50+ Advanced
- CVS Spectravite Adults 50+
- CVS Spectravite Men 50+
- *CVS Spectravite Women 50+*
- Nature Made Men's Multi Softgels
- One A Day Men's
- One A Day Women's 50+ Healthy Advantage
- Target Up & Up Adults' 50+
- *Target Up & Up Women's 50+*

CSPI 2020

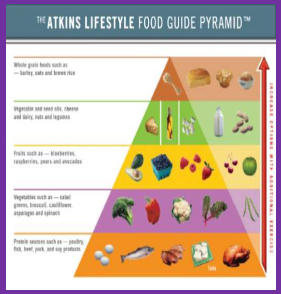
Assess Risks and Benefits of MVM

- Wound healing
  - Adequate Vitamin C 1,500 mg; Increase protein 1g/kg minimum; MVM; Positioning
- Gluten free
  - Common deficiencies: fat soluble vitamins; calcium; most GF not enriched (thiamin, riboflavin, niacin, folate)
- Restrictive diets (e.g. vegan)
- Gastric bypass
  - Supplements for life (chewable or crushed) (Grade C)—vary by surgeon but all include MVM From Matrana and Davis, 2010

ConsumerLab.com Review

May 2014 www.consumerlab.com

- 16 of the 42 (38%) multivitamins selected for testing failed to get approval
  - lower levels of nutrients than label claim
  - higher amounts than label claim
  - failure to properly list ingredients
  - time (>30 min) to break apart in solution
  - contamination (e.g. lead)
  - exceeded IOM upper tolerable limits (UL) for nutrients such niacin, vitamin A, vitamin E, and zinc.



Vitamin D

- 2010 DGA and 2010 DRI Report (only good for bones)
- **Vitamin D assuming minimal sun exposure**
  - **600 IU daily virtually everyone over age 1 to age 71**
  - **800 IU daily over age 71**
  - **Meet RDA with food and/or dietary supplement**
  - **No additional need during pregnancy or breastfeeding; rather supplement infant than lactating women**
  - **Upper Tolerable Limit is 4,000 IU/day (equivalent to 50 ng/ml); kidney and tissue damage; real damage seen >10,000 IU**
  - **No known benefit in amounts between 800 and 4,000 IU unless deficient (less than 20 ng/ml—some labs use 30ng/ml); 20ng/ml sufficient for BONE HEALTH**
  - **Laboratory tests are over-used and using cut-points too high; no central authority for lab analysis**

2011 Endoc Soc: use 50,000 1/wk/8 wks If <30 ng/ml

Vitamin D other reports

Levels ~90 nmol/L or 32 ng/ml may have benefits:

– Optimal calcium absorption

↓ risk some cancers, diabetes, osteoporosis, metabolic syndrome, asthma

↓ **Improved insulin resistance**

❑ **Discussion of 20** *vs* **30 ng/ml is complicated by data of increased risk for prostate cancer for men if levels too high**

- -2011 Endocrine Society Clinical Practice Guideline: **If <30 ng/ml , use 50,000 D2 or D3 1x/wk for 8 wks or 6,000 (IU/da); then maintain with 1,500-2,000 IU/d** ***(D3 may be better absorbed)***

IF you supplement >UL (50 mcg or 2,000 IU); reassure patient

- **-Refuted by IOM: need to differentiate between general population and population at risk. J Clin Endo Metab. 2012;97:146.**

Dietary sources of "D"

- Few foods naturally have vitamin D
- Fortified foods provide most

154/3 oz

447/3 oz

41

40/1 oz

115-124/8 oz

80/6 oz

HEALTH THRU NUTRITION®
Naturally

Vitamin D3
(cholecalciferol)
50 mcg (2000 IU)

100% **Natural** Cholecalciferol
Promotes Optimal **Mineral Absorption**†

100 Softgels | Dietary Supplement | 50 mcg (2000 IU)

Directions: Adults: Take one (1) softgel daily as a dietary supplement or as directed by your healthcare professional.

Supplement Facts

Serving Size: 1 Softgel

	Amount Per Serving	New % Daily Value
Vitamin D3 (as cholecalciferol)	50 mcg (2000 IU)	250%

Other Ingredients: Organic olive oil, gelatin, glycerin, purified water.

Manufactured for: Health Thru Nutrition
30 New York Avenue, Westbury, NY 11590
1-866-319-6299 | www.healththrunutrition.org
HTN0777 R0717

8 19193 02077 7

Since 2010 value of calcium debated

- Nat.Osteoporosis Fnd & Am Soc Prev Card: moderate-quality evidence (B level) calcium with or without vitamin D intake from food or supplements has no relationship (beneficial or harmful) to the risk for cardio vascular and cerebrovascular disease, mortality, or all-cause mortality in generally healthy adults

- Nat Acad Med: calcium intake from food plus supplements of 2000 to 2500 mg/d should be considered safe from a cardiovascular standpoint

- Experts: prudent to follow the DGA of **3 servings of dairy per day**. For every serving missed, take 300 mg calcium as a supplement or from fortified food.

- **Bottom Line: no additional benefit for more than 1,200 mg/day so assess intake b supplementing**

Dairy vs Plant "Milks"

- Dairy Intolerance
- Shift in perception that non-dairy is better for you
- Seeking plant based foods
- Concerns about hormones—inspite of FDA assurances of safety

Why drinking?

- Protein? Dairy, soy, pea –8 gm/8 oz the rest about 1 gm
- Calcium? Dairy 30% DV; others read the labels
- Vitamin D? Dairy 30%; others read the label

Bottom line: Assess before supplementing:

Serving Size: 6oz / 170g
Calories: 170
Calories from Fat: 15

Total Fat - Grams	1.5
% DV Fat	3
Saturated Fat - grams	1
% DV Saturated Fat	5
Trans Fat - grams	0
Cholesterol - mg	10
% DV Cholesterol	3
Sodium - mg	80
% DV Sodium	3
Potassium - mg	260
% DV Potassium	7
Total Carbohydrate - grams	33
%DV Carbohydrate	11
Dietary Fiber - grams	0
% DV Dietary Fiber	0
Sugars - grams	27
Protein - grams	5
% DV Protein	11
% DV Vitamin A	15
% DV Vitamin C	0
% DV Calcium	20
% DV Iron	0
% DV Vitamin D	20
% DV Phosphorus	15

"Adequate calcium and vitamin D throughout life, as part of a…

- No added benefit of intakes >1,200 mg/da
- www.iofbonehealth.org/calcium-calculator
- Food +Beverages = 700-1,000mg
- MVM adds 160 mg
- Other supplements add ?
- Read Supplement Facts Label
- Absorb only 30% at a time
- Reasonable: ~6 cents/500 mg

FEELING YOUR BEST WITH DIABETES

NUTRITION ✓ Evidence Based

10 Supplements to Help Lower Blood Sugar

https://www.healthline.com/nutrition/blood-sugar-supplements

*Cinnamon

- American Ginseng
- Probiotics

*Aloe Vera

- Berberine

*Vitamin D

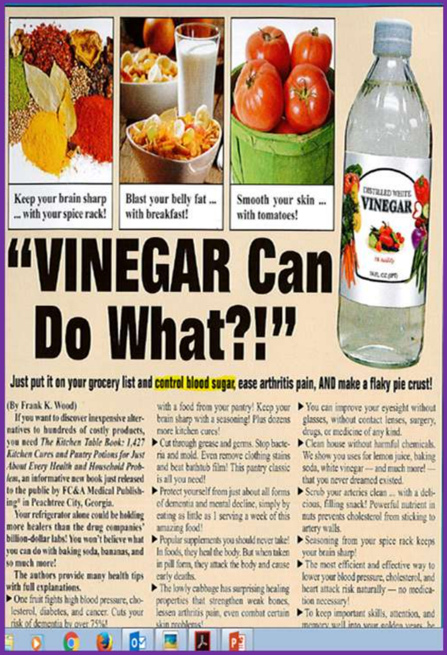
- Gymnema
- Magnesium
- Alpha Lipoic Acid

* Chromium

Little clinical evidence

- ADA-2021 No clear evidence vitamins, minerals (e.g. chromium, vit D), herbs, spices(e.g. cinnamon, aloe vera) can improve outcomes if no underlying deficiencies; not generally recommended for glucose control ©
- Chromium 50 mcg-200 mcg
- Cinnamon: (1-3 g/d (1 T ground) gives <0.1% drop in A1C; or 24mg/dL drop in BG; not clinically significant nor reliable drop
- Am ginseng: 1 gm extract (9.7% gensenosides) 3x/da, 40 min before meals
- Yogurt (12 oz/5 da/wk) reduce risk 11%; eat prebiotic foods: yogurt, kefi, pickles, tempeh, sauerkraut, kombucha, apple cider vinegar
- Aloe vera: only tested in animals
- Berberine: 500 mg, 2-3x/da

Vinegar… ”takes the sweetness out of my blood”



- 2 Tbsp before each meal; and/or before bedtime
- $4/gallon apple cider vinegar; $40/gallon vinegar waters
  - Take note of sugar content of vinegar waters
  - 5-20% acetic acid
  - 18 calories/T for vinegar; ~130 cal/4 oz in some vinegar drinks

- Attenuates the response glucose and insulin response to sugar or starch load.
- Improves postprandial insulin sensitivity in insulin-resistant. Diabetes Care 2004; 27:281-282
- Effect of chronic vinegar consumption on glucose homeostasis is needed. Lim. Molec Nutr & Fd Res, 2016:60:1837

Cinnamon

cinnamaldehyde

- Mixed results
  - Original study showed significant improvement in blood glucose
  - 2008 meta analysis did not confirm.
  - 2013 systematic review found sig reduction of FPG, TC, TG; increase HDL-C w/high degree heterogenicity. Allen et al. Ann Fam Med. 2013;452
  - 2016 narrative review (meta analysis not possible): modest effects on FPG and HbA1c (Costello et al, JAND; 2016:116:1794)

  - Bottom line: preferred dose and duration of therapy are unclear (1-3 g/d (1 T ground) gives <0.1% drop in A1C; or 24mg/dL drop in BG; not clinically significant nor reliable drop

Others affecting hyperglycemia and A1c

Caiapo

White sweet potato extract

Dose 4 gm
-0.2 to -05 A1C units
-with Biotin, Chromium, Banaba, Guggul, Bitter Mellon, Cinnamon, Gymnema, Alpha Lipoic Acid and Other Herbals

Fenugreek

Trigonella foenum-graecum

Dose 6.8 gm (~1 tsp)
-about 3 cents capsules
-1 tsp in most recipes
-about – 1 A1C units over placebo

Milk Thistle

Silybum marianum

Dose 200 mg
-about -1 A1C units over placebo

-JFP 2014;63(6):336-8

Others affecting hyperglycemia and A1c

Nopal
Prickly pear cactus

Dose: ~pound grilled stems/paddles (~100 kcal)
Capsules no benefit
-interact w/oral hypoglycemic agents

Gymnema slvestre
Gurmar

Dose: 200-400 mg 2x/d
-reduction in BG and A1c
-interact w/oral hypoglycemic agents

Gingseng
red

Dose: 5 mg
-mixed results

PROTECTING VISION

- Age Related Eye Disease Study (AMD) (Grade A)
  - www.nei.nih.gov/amd/summary.asp
  - AREDS 1 formula: 500 mg vit C, 400 IU vit E*, 15 mg beta c., 80 mg zinc oxide, 2 mg copper (cupric oxide)
  - Slow 25% over 6 yrs.
  - AREDS 2 formula: 500 mg vit C, 400 IU vit E, 2 mg copper.   Some got 10 mg lutein, 2 mg zeaxathin, 350 mg DHA, 650 mg EPA, 25,000 IU beta carotene, 25 or 80 mg zinc
    - Best results: 10 mg lutein, 2 mg zeaxanthin, 25 mg zinc, 500 mg vitamin C, 400 IU vitamin E every day
- Perhaps help for cataract prevention: evidence that Centrum lowered risk of the more common nuclear cataract; but increased of posterior subscapular (more troubling) cataracts.

BOTTOM LINE

- AMD is the most common cause of irreversible vision loss in elderly people. There is no known cure.
- AREDS2 formula helps
- -omega 3s neither beneficial nor harmful for eyes; good to eat fish 2x /week
- -lutein and zeaxanthin better than beta carotene (20%) and even better if from food (also helped with cataracts)
- -beta carotene blocks absorption of lutein and zeaxanthin
- -no difference in high and low zinc, so use lower zinc

DRI is 14 grams/1,000 calories

BENEFITS OF DIFFERENT TYPES OF FIBER

psyllium

- Helps prevent or treat constipation (B)
  - cellulose, polydextrose, psyllium
  - 4-5 gm bulking effect/ 1 gm fiber
- Supports weight management (B, V)
  - Whole foods, functional fibers
  - 20-27 gm whole food; up to 20 gm supplements
- Improves gut health; improves satiety (F)
  - Prebiotics: chicory root, inulin, FOS
- Lowers LDL-cholesterol, blood pressure (V)
  - guar gum, pectin, psyllium, resistant starch, inulin, flax
  - 12-33 gm from food; up to 42.5 gm supplements
- Improves blood sugar control (30-50 gm) (V)
  - guar gum, inulin, beta glucans, pectin, psyllium, resistant dextrins, resistant starch

inulin

JADA. 2008:108:1716-1731

Dietary Supplements for osteoarthritis?

Perhaps?

For some? Who? Dosage?

- **Glucosamine sulfate** for women for prevention of knee
  (Runhaar et al., 2016)
- **Glucosamine** and **chondroitin sulfate** combos ..not sure who benefits—controversy continues
  (Georgive et al., 2019)
- **Turmeric/Curcumin** with limited study, no definitive dosage (1,500 mg/d), frequency, formulation.
  (https://www.consumerlab.com/osteoarthritis/)

Dietary Supplement Continued

- Cat's Claw. 20 mg, 3x/day—reduce morning stiffness, joint pain
- Variety of **functional foods** reported to reduce symptoms (avocado soybean unsaponifiables (ASU), strawberries, pomegranate juice, fish oils, probiotics (Salehi, et al.,2020; Schell et al., 2017; Rasheed et al., 2010; Boe et al., 2015)
- **Vitamin C**—limited study. 200 mg in men/150 mg in women decreases pain (Marks R., et al., 2019)
- **Vitamin D**—early small studies showed possibility of benefit if deficient; later studies no effect (Georgiev et al., 2019)

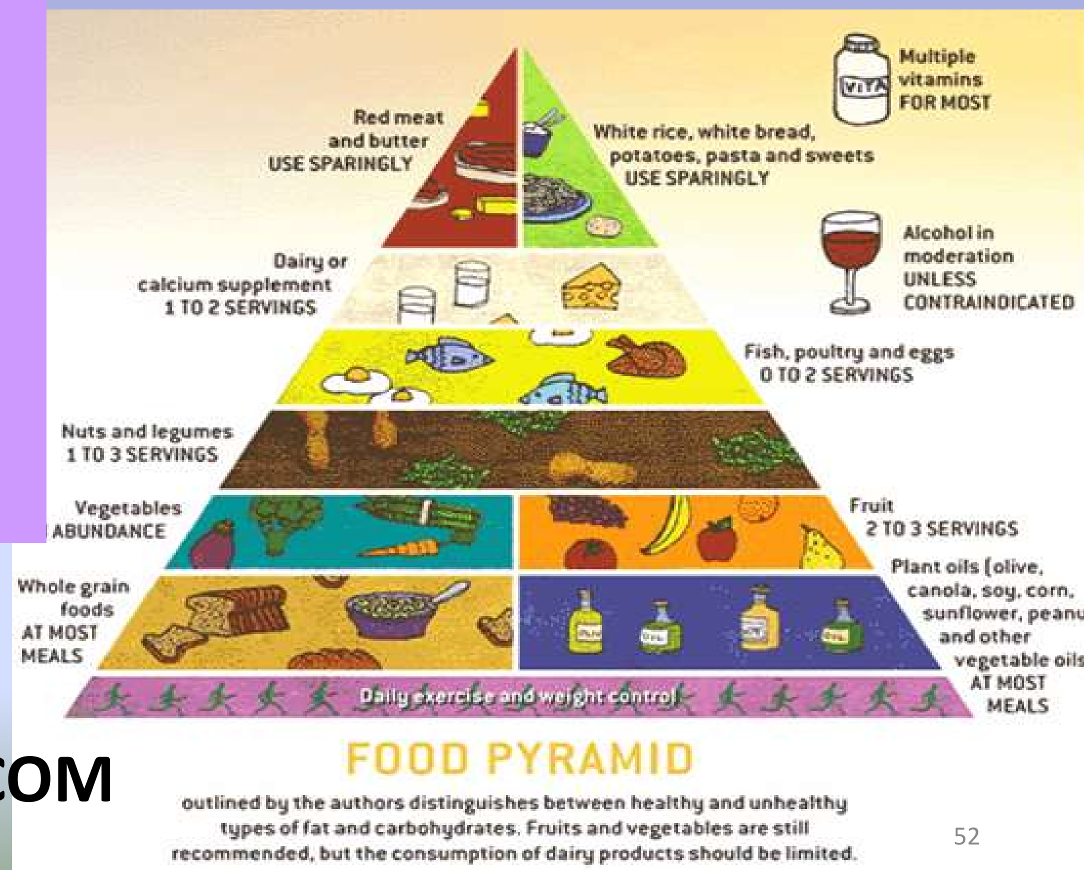
What does it take to go MED in the US?

Usual U.S., Med and DASH

	Food Pyramid	Med	DASH
Vegetables: total (c)	1.6	1.2 -4.1	2.1
Beans & Peas (c)	0.1	< 0.1 – 0.4	See protein
Starchy Veg (c)	0.5	0.6	-
Fruit & Juices (c)	1.0	1.4 -2.5	2.5
Grains: total (oz)	6.4	2.0 -5.4	7.3
Whole grains (oz)	0.6	-	3.9
Milk & Milk Products (c)	1.5	1.0 – 2.1	2.6
Protein foods: total (oz)			
Meat (oz)	2.5	3.5 – 3.6	1.4
Poultry (oz)	1.2	-	1.7
Eggs (oz)	0.4	1.9	-
Fish/seafood (total) (oz)	0.5	0.8 – 2.4	1.4
Beans & peas (oz)	See vegs	See vegs	0.4
Nuts & seeds (oz)	0.5	See fruits	0.9
Oils (g)	18	19 – 40	25
Added Sugar (g)	79	24	12 (snacks/sweets)
Alcohol (g)	9.9	7.1 – 7.9	Not specified

http://www.health.gov/dietaryguidelines/default.htm

From Dietary Guidelines for Americans



VISIT MEDINSTEADOFMEDS.COM

Common ingredients that may have modest effect in weight loss or reduced waist circumference

Ingredient	Efficacy	Safety	Side Effects
African Mango	Few small sample trials	<3,150 mg/day not to exceed 10 weeks	Headache, insomnia, gas/flatulence
Caffeine	Short-term trials, caffeine combined with other products	Not to exceed <400-500 mg/day	Shakiness, irritability, vomiting, and increased HR
Carnitine	Trials showed wt. loss as secondary outcome	2 g/day for 12 **months** or 4 g/day for 56 days	N/V, diarrhea, abdominal pain, "fishy" body odor, increased risk for CVD
Green Coffee Bean Extract (contains caffeine)	Few trials with poor methodology	<200 mg/day not to exceed 12 weeks	Headache and UTIs
Green tea and Green Tea Extract	Several trials with good outcomes on green tea catechins	• No safety concerns when consumed as a beverage • Concerns with extract	Constipation, abdominal pain, nausea, increased BP and liver damage *may interact with Coumadin
White Kidney Bean	Several trials, methodology quality varied	<3,000 mg/day not to exceed 12 weeks	Headache, soft stools, constipation, and flatulence

NIH, Dietary Supplements for Weight Loss October 17, 2019
https://ods.od.nih.gov/factsheets/WeightLoss-HealthProfessional/#h2

Supplements popular for wt loss that have no data of effectiveness in humans

Other dietary supplements …have been/are popular

- 7-keto DHEA
- Bitter orange
- Calcium
- Stimulant herbal blends
- Cariallum fimbriata
- Cha de burge
- Chitosan
- Chromium
- Diuretics
- Forskolin
- Glucomannan
- Hoodia
- Hydroxycitric acid (HCA)
- Pyruvate and 1-dihyroxyacetone-DH
- Raspberry ketones
- Stimulant laxatives
- Ephedra (Banned)
- Weight loss patches

Microbiome Supplements ?

- Human microbiome: the population of 100+ trillion microorganisms living in gut, mouth, skin

- Needed to digest food, prevent disease-causing bacteria from invading the body, synthesize essential nutrients and vitamins

- Diet & supplements purport to restore balance to gut flora
- Garlic, berberine, wormwood, grapefruit extract, digestive enzymes, pre- and pro-biotics

- FDA says it is not a supplement
- Happy to share Reflector article medical student wrote with me
- Evidence of benefit comes with significantly larger doses (several 100 mg/da) than marketed
- Look for amount of CBD or cannabidiol/serving; hemp extract not hemp oil
- Full spectrum MAY haveTHC (tetrahydrocannabinol, a psychoactive compound)

Your Questions not answered above

- Collagen as a supplement

- CoQ10. I was asked if this is recommended with a statin. I said, yes some people experience pain and muscle weakness and for them this works. Kay added the story of her dad. Here is some additional information I did not provide in the tape:
  - symptoms of depletion:increasing LDL-C on lab test; loss of coordination/balance; muscle weakness; abnormal eye movement; hearing loss; other cognitive decline that can be confused with dementia like loss of attention
  - ubiquinol is better absorbed by people over age of 60 years... a bit more expensive than Q10. If take Q10 double dose compared with ubiquinol

  My recommendation (and does not appear to be any harm, long as dont megadose

  Can take 30 days or so to seem improvement/replete the muscle

  50 mg ubiquinol 2 times a day with food or 100 mg Co-Q 10 2 times a day with food

Questions

- Please don’t hesitate to send to Dr. Kathy Kolasa kolasaka@ecu.edu