



**UT Southwestern**  
Medical Center

**2025 Carolyn P. Horchow  
Women's Health Symposium**

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# The Scoop on Supplements

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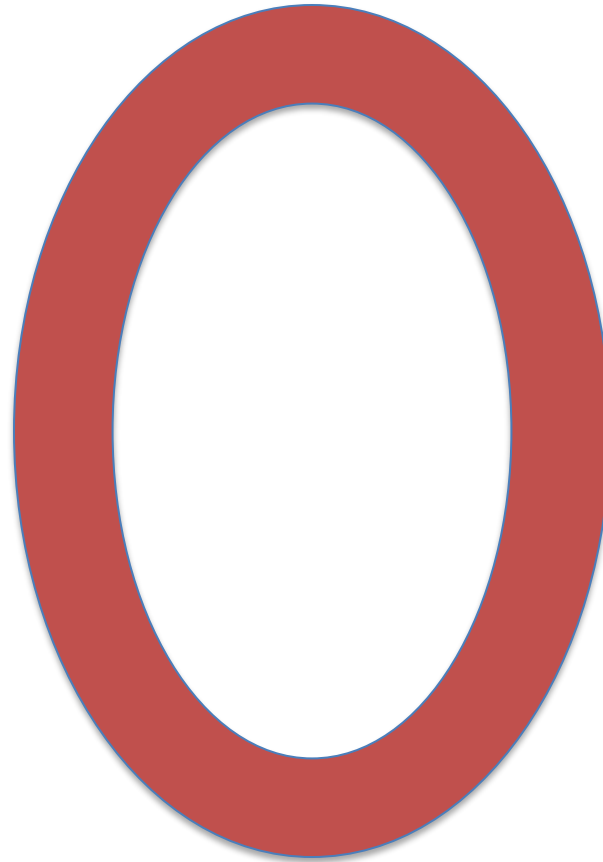
# Supplements and Heart Health

# 1 in 4

## **Patients with Heart Disease Take at Least one Supplement**

# How Many Supplements Have Been Shown to Prevent Heart Attacks or Strokes?

# How Many Supplements Have Been Shown to Prevent Heart Attacks or Strokes?



# But What About . . .



# Types of Health Claims



01

## Authorized Health Claims

- FDA reviewed
- Supported by the totality of evidence
- Scientific consensus

For example, *"Adequate calcium and vitamin D as part of a healthful diet, along with physical activity, may reduce the risk of osteoporosis in later life."*

# Types of Health Claims



02

## Qualified Health Claims

- Evidence is insufficient / no scientific agreement
- Some data suggests benefit
- Requires mitigating language



# Types of Health Claims



03

## Structure and Function Claims

- From the FDA: “Describe the role of a nutrient or ingredient on the structure or function of the human body . . .
- Or body system, organ, or function affected by the supplement”

### EXAMPLES

**“Heart Health”, “Heart Function”, “Brain Health”,  
“Brain Function”**

# Fish Oil Claim for Coronary Heart Disease

“

“Supportive but not conclusive research shows that consumption of EPA ...and DHA ... may reduce the risk of coronary heart disease.”

”

Dual Spectrum Omega-3 with Krill Oil is sourced from both krill and fish. Each serving provides you with 1,085 mg of Omega-3s – and you're getting these important Omega-3s from two ends of the spectrum. In addition to supporting heart health and healthy circulation, Omega-3s provide an energy source for your body, and support healthy joints.\* These rapid release liquid softgels provide you with the Omega-3s you need to be your healthy best.\*

\*\*Supportive but not conclusive research shows that consumption of EPA and DHA Omega-3 fatty acids may reduce the risk of coronary heart disease. See nutrition information for total fat and cholesterol content.

**WARNING:** If you are pregnant, nursing, taking any medications, including blood thinners, planning any medical or surgical procedure or have any medical condition, consult your doctor before use. Discontinue use and consult your doctor if any adverse reactions occur. Keep out of reach of children. Store at room temperature. Do not use if seal under cap is broken or missing.

\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Nutrition Questions or Comments?

Call 1-800-433-2990

Mon. - Sat. 9 AM - 7 PM ET



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# Fish Oil Claim for Coronary Heart Disease



Approved in 2003, **based on observational data**

“

“Supportive but not conclusive research shows that consumption of EPA ...and DHA ... may reduce the risk of coronary heart disease.”

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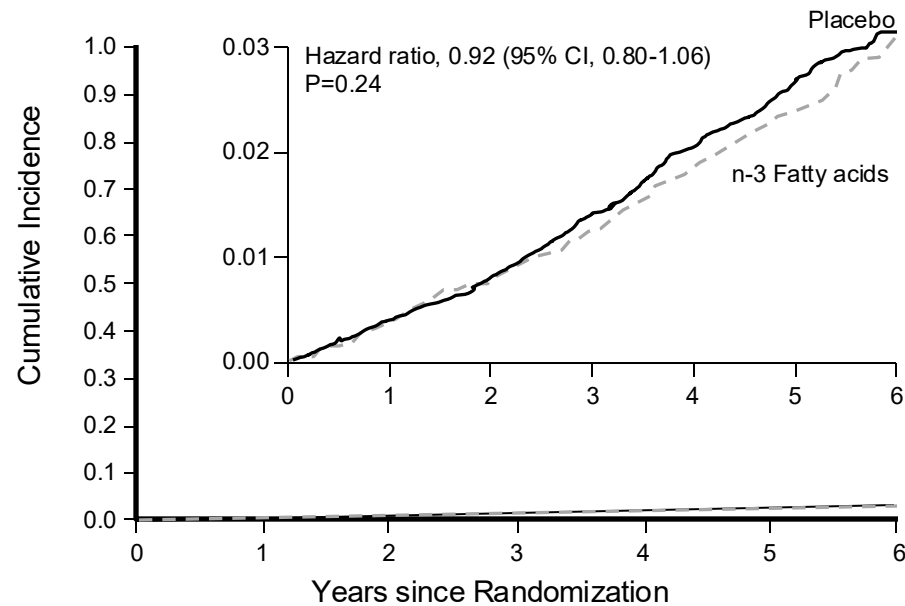
# A Warning about Observational Research on Diet and Vitamins



# Randomized Trials of Fish Oil vs Placebo: No Benefit

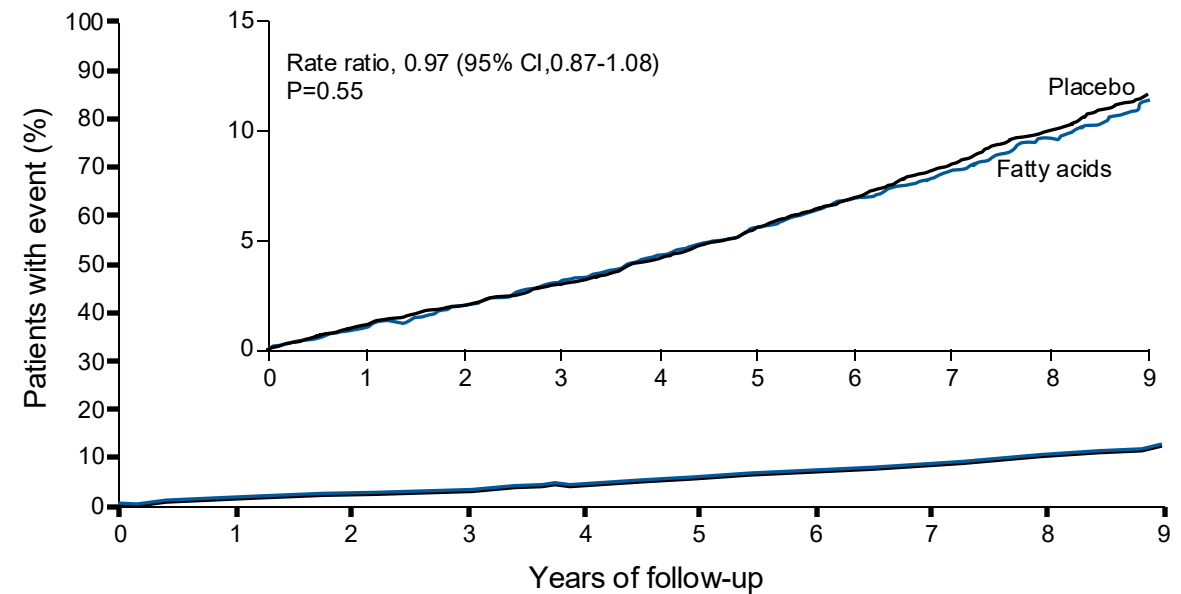
## VITAL: Fish Oil in 1° prevention n=25,871

### Time to Major Cardiovascular Events



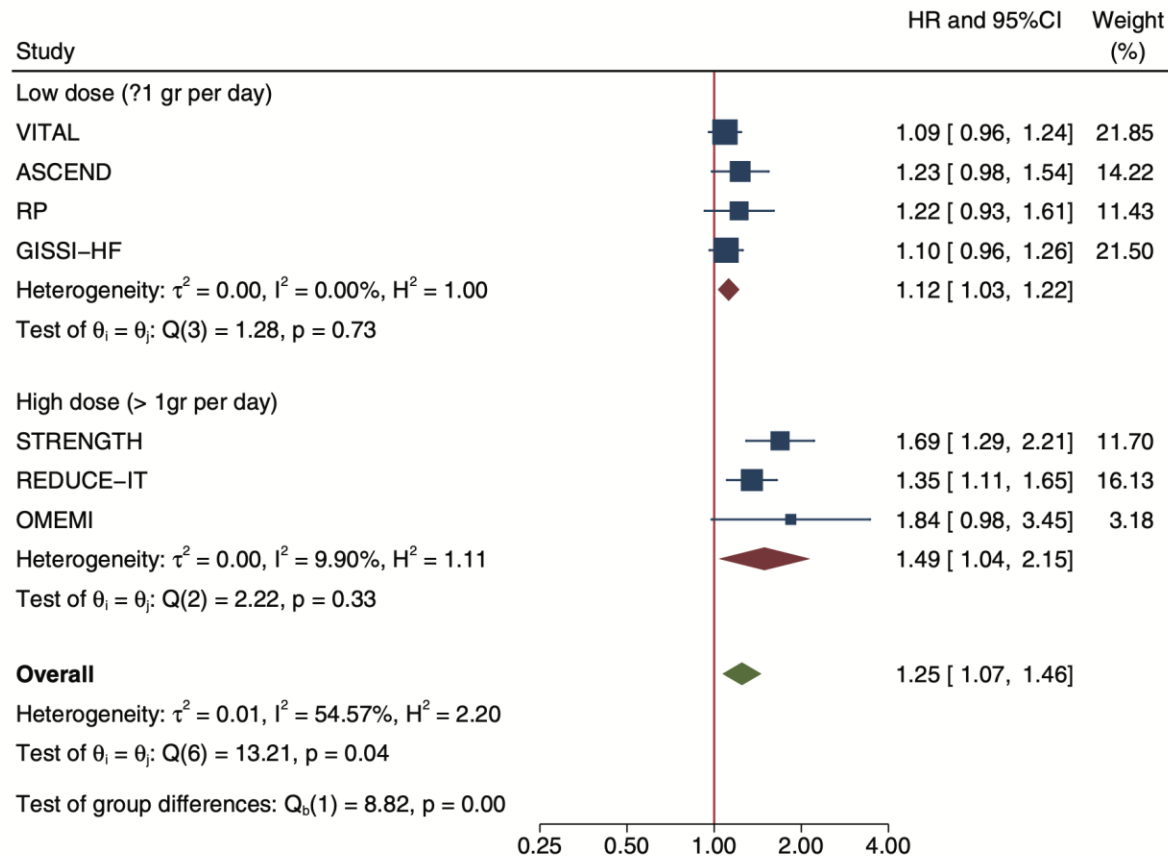
## ASCEND: Fish Oil in 1° prevention DM2 n=15,480

### Time to First Serious Vascular Event



Manson, J. E., et al. (2019). New England Journal of Medicine 380(1): 33-44.  
Bowman, L., et al. (2018). New England Journal of Medicine 379(16): 1540-1550.

# Fish Oil → 25% Increased Risk of Atrial Fibrillation



Gencer. Circulation. 2021;144:1981–1990



# FDA Approved Fish Oil Claim for Blood Pressure



Approved in 2019



104 studies evaluated, only 36 showed benefit . . .



Consuming EPA and DHA combined may help lower blood pressure in the general population and reduce the risk of hypertension. However, FDA has concluded **that the evidence is inconsistent and inconclusive.**



**DIRECTIONS:** Take one (1) softgel daily, preferably with a meal.

**WARNING:** Consult your healthcare provider prior to use if you are pregnant, nursing, taking any medication or have any

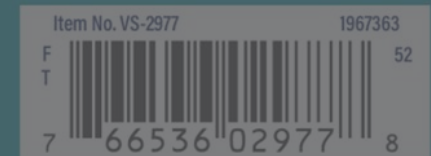
Consuming EPA and DHA combined may reduce the risk of CHD (coronary heart disease) by lowering blood pressure.\* However, FDA has concluded that the evidence is inconsistent and inconclusive. One serving of this Omega-3 fish oil provides 500 milligrams of EPA and DHA.

provides 500 milligrams of EPA and DHA.

▼ These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

**STORE IN A COOL, DRY PLACE. KEEP OUT OF REACH OF CHILDREN.**  
**TAMPER EVIDENT** Do not use if outer seal is broken or missing.

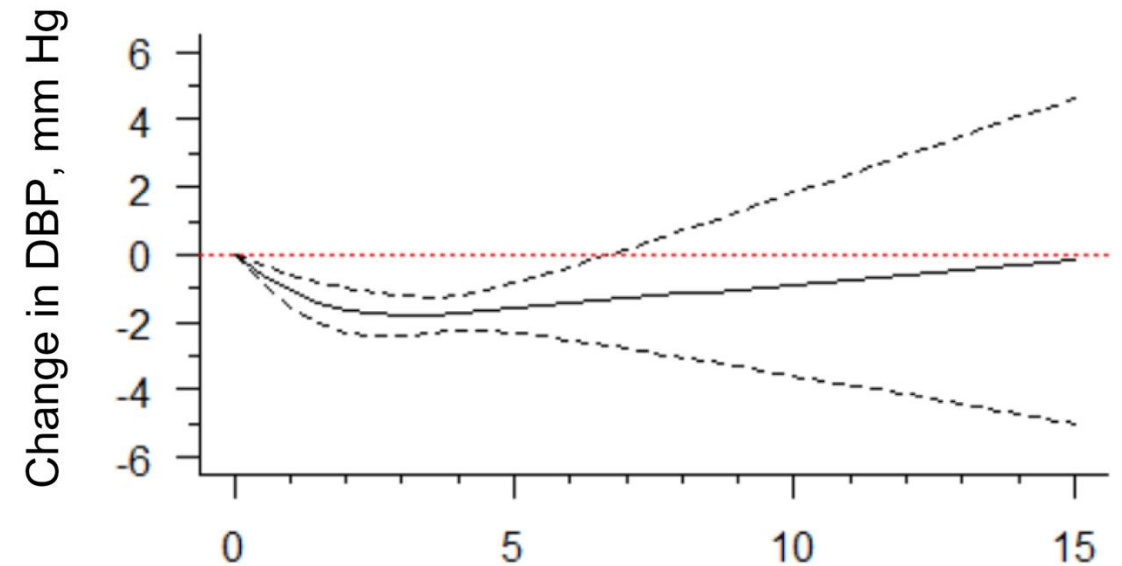
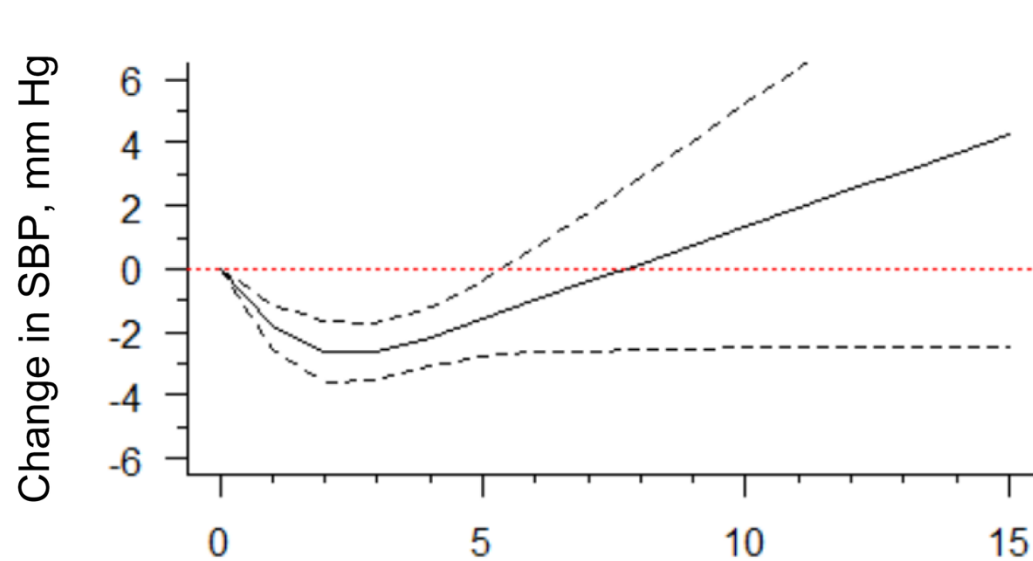
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Secaucus, NJ 07094  
Visit [www.vitaminshoppe.com](http://www.vitaminshoppe.com)  
or call 1-866-293-3367.





# Fish Oil May Lower BP by a Tiny Bit

- Approved in 2019
- Meta analysis: 2 mmHg drop in systolic and diastolic BP at 2 gm/day







Zhang X et al. Omega-3 Polyunsaturated Fatty Acids Intake and Blood Pressure: A Dose-Response Meta-Analysis of Randomized Controlled Trials. JAMA Jun 2022.

# What Have Randomized Trials Taught Us About Other Vitamins/Supplements for Heart Health?

Supplement	Trials	Heart Outcomes
Multivitamin	14,541 Male MDs Multivitamin vs Placebo, >10 y	No risk, no benefit
Vitamin E	7 large randomized trials	No risk, no benefit
Vitamin D	Multiple randomized controlled trials, largest with 25,871 participants	No risk, no benefit
Calcium	Many small randomized trials, limited data quality	Small increase in risk of heart attack

## **CENTRAL ILLUSTRATION: Vitamin D and Calcium Supplements for Cardiovascular Health: Evidence From Observational and Interventional Studies and Clinical Recommendations**

	Vitamin D Supplements	Calcium Supplements
Observational Studies	<p>Multiple studies report associations between low blood Vitamin D levels and worse CV health</p> <p>Potential for confounding, reverse causation and other biases</p>	<p>Several studies suggest calcium supplements might increase risk of CVD</p> <p>Potential for confounding, reverse causation and other biases</p>
RCTs	<p>In RCTs, Vitamin D supplements did not prevent CVD</p> 	<p>Some RCTs and trial meta-analyses suggest that calcium supplements increase risk of MI and stroke</p> 
Recommendations	<p>Obtain Vitamin D through adequate diet plus moderate sun exposure</p> <p>Consider supplementation if Vitamin D inadequacy/insufficiency, although effects for bone health likely modest</p> 	<p>To improve bone health, increase physical activity and intake of calcium from diet</p> <p>If supplements are considered, incorporate potential risks of CVD into the clinician-patient discussion</p> 

**Michos, E.D. et al. J Am Coll Cardiol. 2021;77(4):437-49.**

## 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines FREE ACCESS

### Clinical Practice Guideline

Writing Committee Members, Salim S. Virani, L. Kristin Newby, Suzanne V. Arnold, Vera Bittner, ... [SEE ALL AUTHORS](#) ▼

J Am Coll Cardiol. 2023 Aug, 82 (9) 833–955

***The use of nonprescription or dietary supplements, including fish oil and omega-3 fatty acids or vitamins, is not recommended in patients with chronic coronary disease given the lack of benefit in reducing cardiovascular events.***

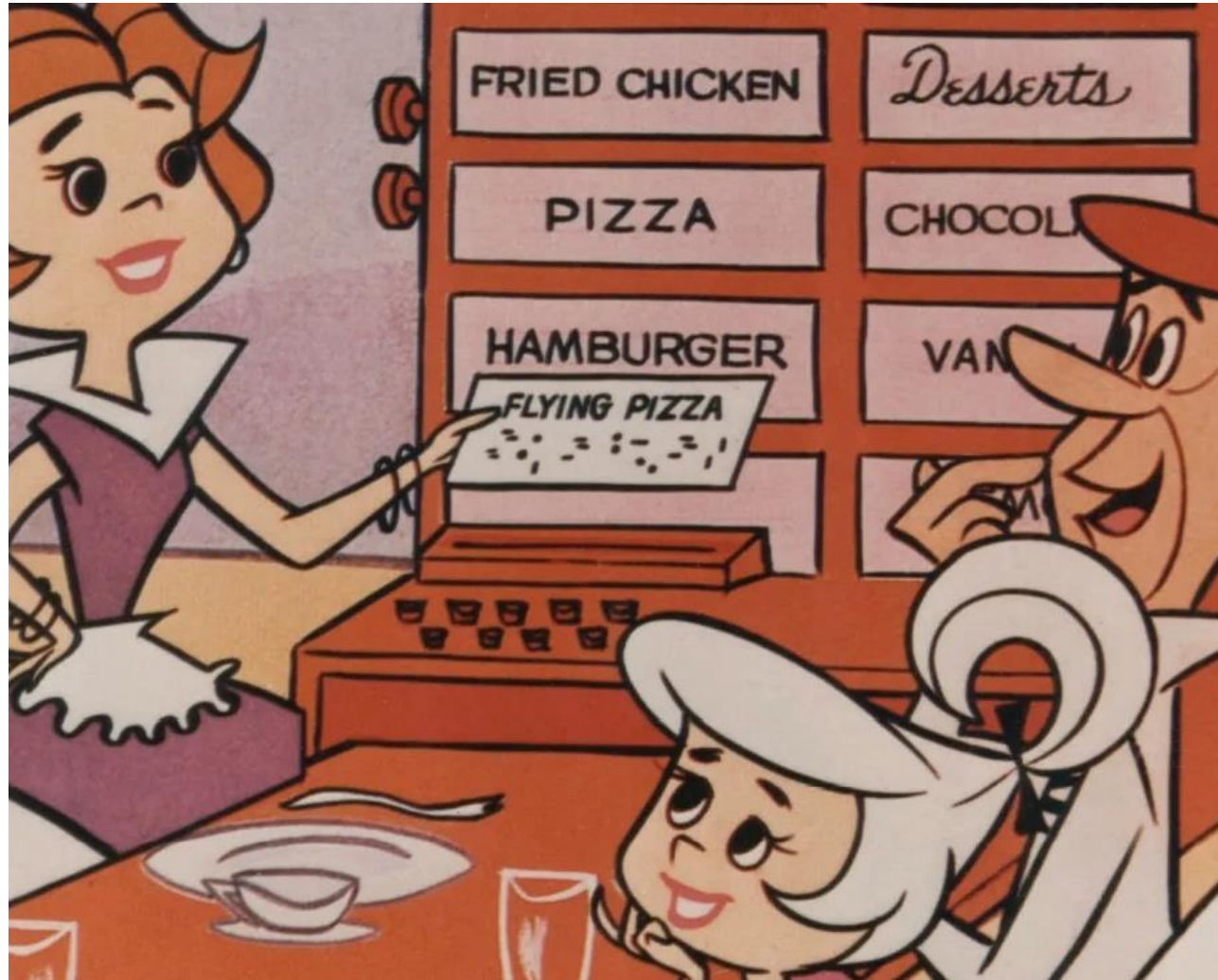
# Co-Q-10 aka Ubiquinol

- Several small (most <50 people) studies suggest Co-Q-10 may improve exercise tolerance in people with heart failure
- One randomized trial of 420 people showed benefit in people with heart failure with almost unbelievably good results (Q-SYMBIO)
  - Nearly 50% reduction in mortality
- Larger studies have yet to be conducted . . .
- Mixed results but may help in statin intolerance

*Ref: Mortensen SA et al. JACC HF 2014., Qu H et al. JAHA 2018.*



# Despite Our Best Efforts, There is No Replacement for a Heart Healthy Diet



# Snake Oil Was a Real Thing



“In the [1860s](#), Chinese laborers immigrated to the United States to work on the Transcontinental Railroad. At night, they would rub their sore, tired muscles with ointment made from Chinese water snake (*Enhydris chinensis*), an [ancient Chinese](#) remedy they shared with their American co-workers.”

<https://www.collectorsweekly.com/articles/how-snake-oil-got-a-bad-rap/>



# (Water) Snake Oil Was High in EPA → The Original Fish Oil!

## CORRESPONDENCE

RA Kunin. West J Med. 1989 Aug; 151(2): 208.

### Snake Oil

TO THE EDITOR: The snake has been a part of Western medicine since the time of the ancient Sumerians, 4,000 years ago. Ningishzida, their god of healing, was draped with twin snakes, an emblem still in fashion in medical circles today. Snake was an ingredient of a famous theriaca used by Andromachus, physician to Nero, and of a theriaca of Galen, which was in use until the efforts of William Heberden to ban it in 18th century England. It was still quite popular in colonial America, however, and only in the past century have snake and snake oil become synonymous with quackery.

Another kind of oil has come into fashion recently: fish oil has been elevated to the front rank of medical therapeutics because of convincing clinical and laboratory research that documents effects on platelets, white blood cells, and blood vessel walls. Clinical benefits in treating inflammatory disorders, cardiovascular disease, and even cancers are now subjects of serious research. These effects are known to be related to the presence in fish oil of  $\omega$ -3 essential fatty acids, which are precursors of prostaglandin hormones. It is well known that the biology of both plants and animals commonly adapts to cold temperature by producing more of the  $\omega$ -3 unsaturated fatty acids with one more double bond than the  $\omega$ -6 fatty acids.

TABLE 1.—Fatty Acid Fractions in Snake Oils,  
% Concentration

Source	$\omega$ -3			$\omega$ -6			
	ALA	EPA	DHA	LA	GLA	DGLA	ArA
Chinese snake oil	0.001	19.6	0.001	4.4	0.001	0.001	2.4
Black rattlesnake .	1.4	4.1	0.1	9.7	0.7	2.8	4.7
Red rattlesnake . .	0.5	0.6	5.4	20.8	0.06	0.1	12.8

ALA= $\alpha$ -linolenic acid, ArA=arachidonic acid, DGLA=dihomo  $\gamma$ -linolenic acid, DHA=docosahexaenoic acid, EPA=eicosapentaenoic acid, GLA= $\gamma$ -linolenic acid, LA=linolenic acid

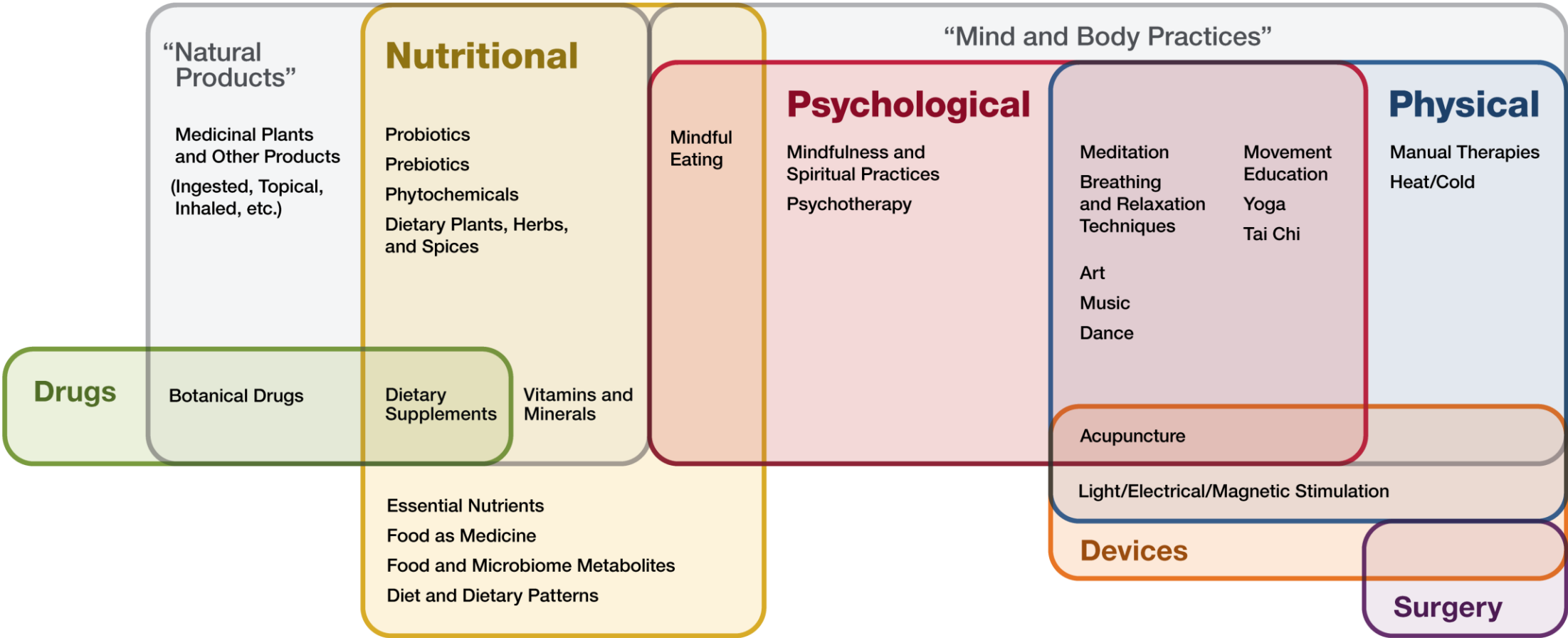
from Arizona (*Crotalus tigris*).

Chinese snake oil contains almost 20% eicosapentaenoic acid (EPA), about triple the concentration in the American rattlesnakes. I understand the Chinese product includes snake oil from water snakes that feed on fish. This almost certainly would increase the content of EPA in their tissues. In human subjects fed cod liver oil, there was a sevenfold increase of EPA in neutrophils and monocytes. It was also found that arachidonic and docosahexaenoic acids did not increase and that leukotrienes decreased; hence the inference



# **Supplements: A Whole Person Approach**

# National Center for Complementary and Integrative Health



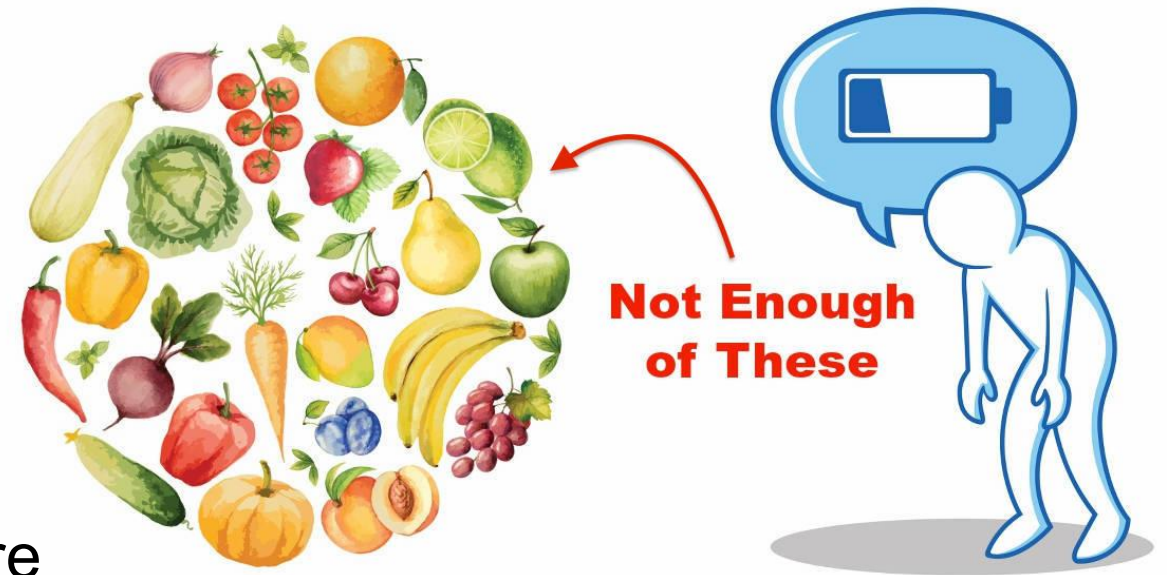
# Integrative Approach to Dietary Supplementation

- **Food first**, individualized, whole person approach
  - Medical and social history
  - Symptomatology
  - Co-occurrent diseases
  - Long term medications
  - Dietary sources
  - Safety: risks and monitoring



# Groups at Higher Risk for a Nutrient Deficiency

- Older age
- Pregnancy
- Malabsorption
  - Celiac disease, IBD, cystic fibrosis
- Certain surgeries
  - Gastric bypass, Whipple's procedure
- Restrictive diets
- Alcohol use disorder



# Overview

- Vitamin B12
- Vitamin D
- Calcium
- Multivitamins
- Magnesium
- Ashwagandha
- Curcumin





# Common Vitamin Deficiencies Among Older Adults

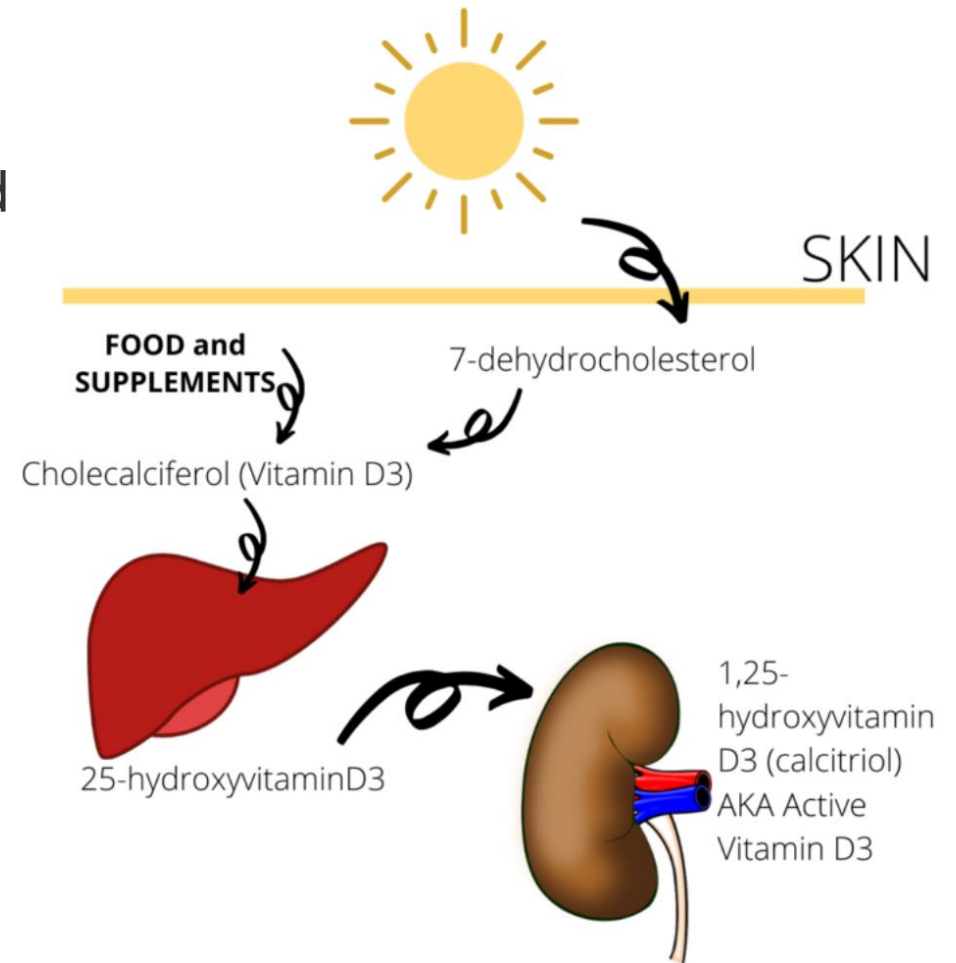
**Vitamin B12** - People older than 50 years might need to obtain the recommended amounts from fortified foods or dietary supplements.

- Water soluble vitamin
- Recommended dietary allowance (RDA) for women: 2.4 mcg/day
- Reduced absorption
  - Low stomach acid production
  - Long term medications - PPI, metformin



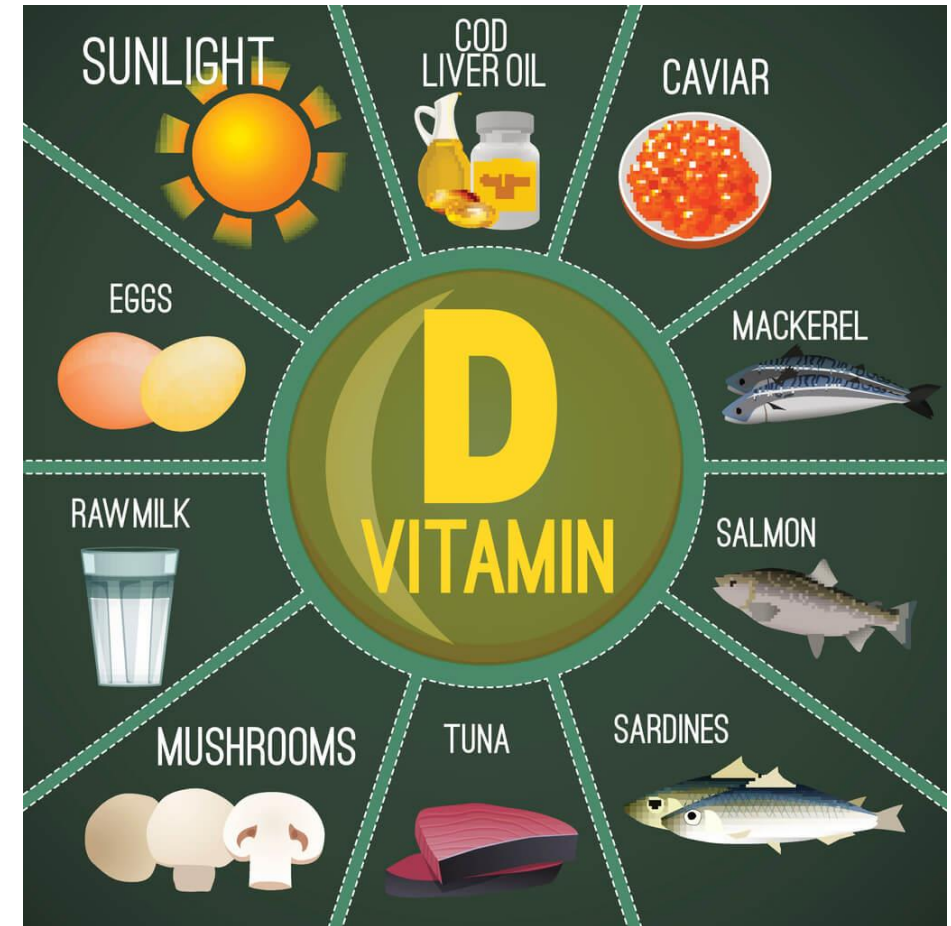
# Vitamin D: A Nutrient and a Hormone

- Essential for bone health
  - Promotes calcium absorption in the gut
  - Maintains serum calcium and phosphate blood levels
- Other functions might include modulating:
  - Inflammation
  - Cell growth
  - Neuromuscular function
  - Immune function
  - Glucose metabolism



# Vitamin D: The Sunshine Vitamin

- Sun exposure
- Vitamin D2 – plants and fungi
- Vitamin D3 – animals and produced by skin
- Rich sources
  - Fatty fish – salmon
  - Fish liver oils
  - Egg yolks
  - Cheese
- Fortified foods
  - Dairy
  - Plant milks



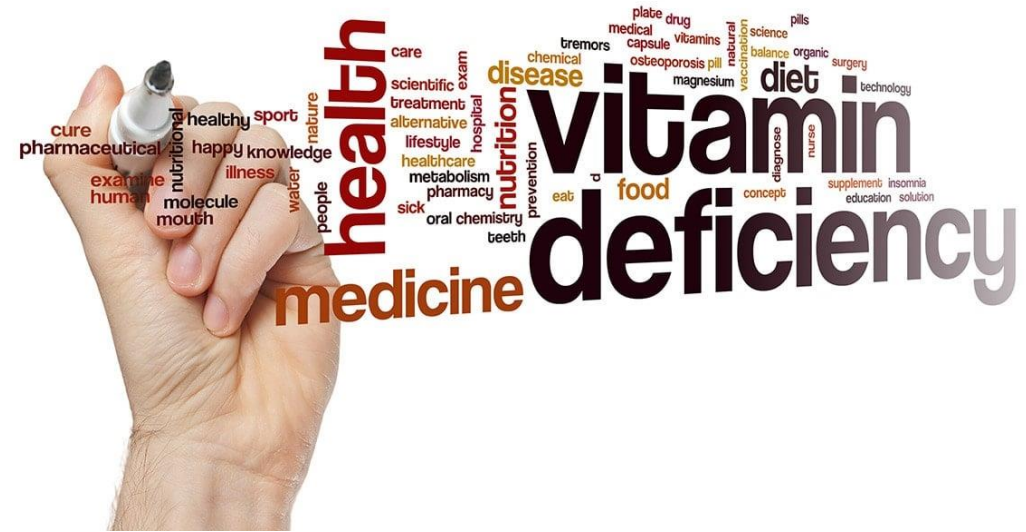


# Vitamin D Supplementation: How Much?

- National Academy of Medicine – Recommended dietary allowance (RDA)
  - 600 IU/day - ages 1 to 70
  - 800 IU/day - ages 70 and older
  - Upper limits - 4,000 IU (100 mcg) daily for adults and children ages 9+

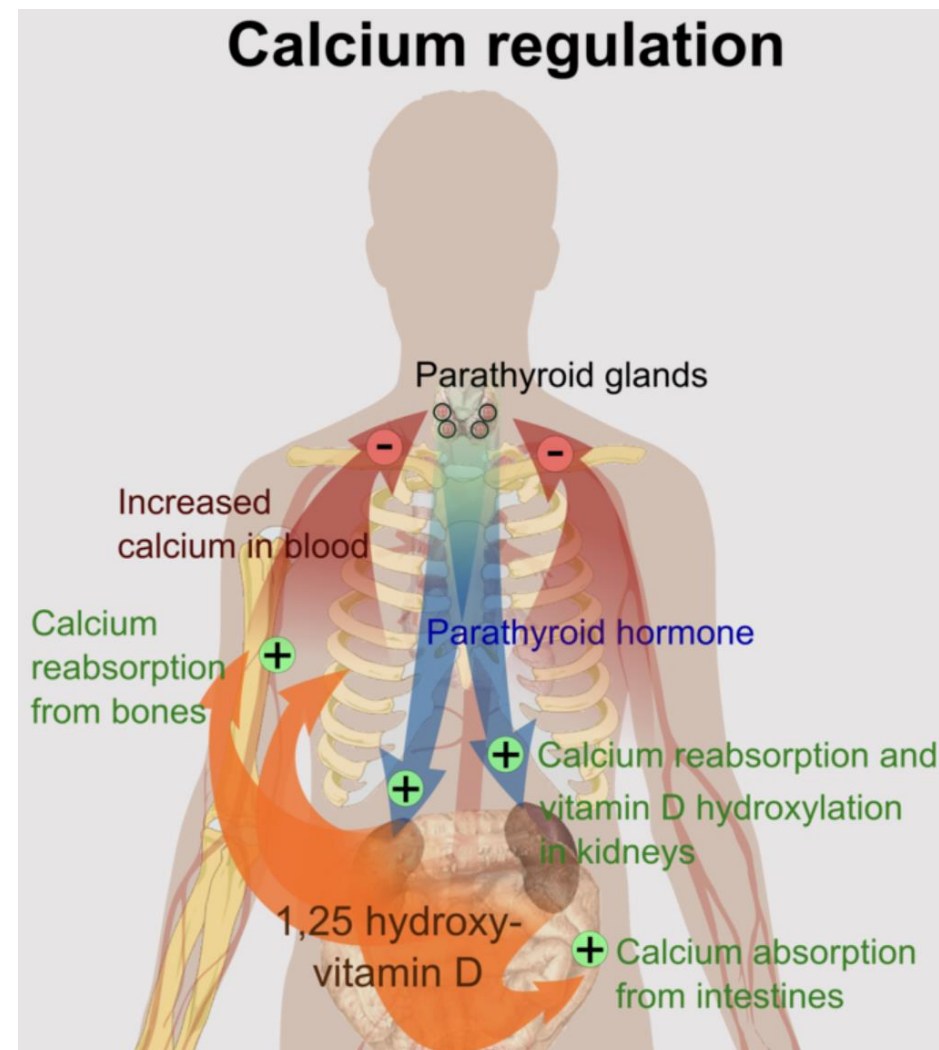
# Vitamin D: Groups at Risk for Deficiency

- Bariatric surgery status
- Malabsorption
- Long term medications
- **Chronic Kidney Disease**
- **Darker skin pigmentation**
- **Limited sun exposure**
- Advanced age



# Can We Talk About Vitamin D Without Talking About Calcium?

- Calcium is a mineral
- Essential in bone health
- 99% stored in bones
- Blood levels maintained by:
  - Food intake
  - Bone resorption



# Calcium Supplementation: How Much?

Age	Male	Female	Pregnant	Lactating
0–6 months*	200 mg	200 mg		
7–12 months*	260 mg	260 mg		
1–3 years	700 mg	700 mg		
4–8 years	1,000 mg	1,000 mg		
9–13 years	1,300 mg	1,300 mg		
14–18 years	1,300 mg	1,300 mg	1,300 mg	1,300 mg
19–50 years	1,000 mg	1,000 mg	1,000 mg	1,000 mg
51–70 years	1,000 mg	1,200 mg		
>70+ years	1,200 mg	1,200 mg		

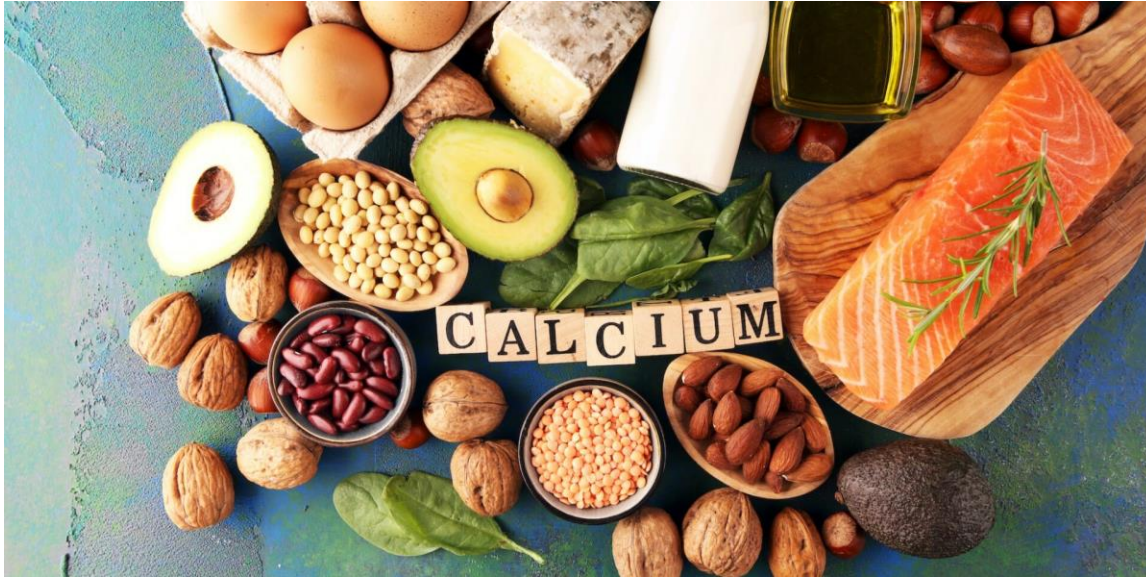
National Academy of Medicine

The Recommended Dietary Allowance (RDA) for calcium:

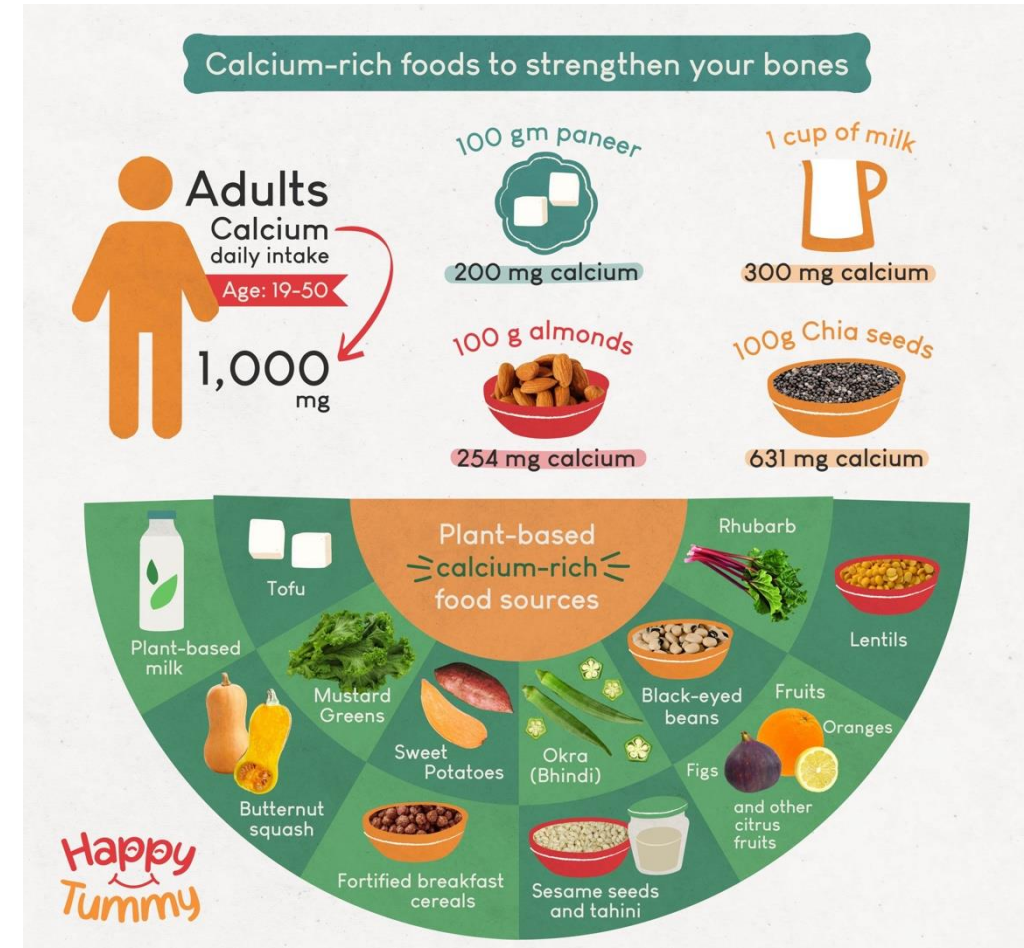
- Women ages 19 to 50: 1,000 mg
- Women ages 51+: 1,200 mg



# Calcium Bioavailability



- Bioavailability – the amount that is absorbed by the body
- Calcium bioavailability – plant sources > dairy products



# Calcium Supplements

- Calcium carbonate
  - Requires stomach acid for absorption, **better absorbed with food**
  - Examples: Caltrate, Viactiv Calcium Chews, Os-Cal, and Tums
- Calcium citrate
  - **More readily absorbed**, can be taken on an empty stomach
  - Example: Citracal
- General recommendations
  - Prioritize nutrient-rich food sources
  - **The body cannot absorb more than 500 mg of calcium at a time**



# Groups at Risk for Calcium Inadequacy

- Post menopausal women
- Inflammatory bowel disease
- **Low parathyroid hormone levels**
- **Vitamin D deficiency**
- **Low magnesium**
- **Long term medications**
  - Proton pump inhibitors
  - Steroids





# Should I Take a Multivitamin?

- I am eating a limited diet, or my appetite is poor.
- I am following a restricted diet.
- I have a condition that reduces my body's ability to absorb nutrients.
- I have undergone surgery that interferes with the normal absorption of nutrients.
- I have increased nutrient needs, such as being pregnant.
- I'm very busy and just can't eat a balanced diet every day.





# Choosing a Multivitamin

- **Prenatal vitamins**
  - High folate
- **Older adults**
  - Less iron
  - More calcium, vitamin D and vitamin B12

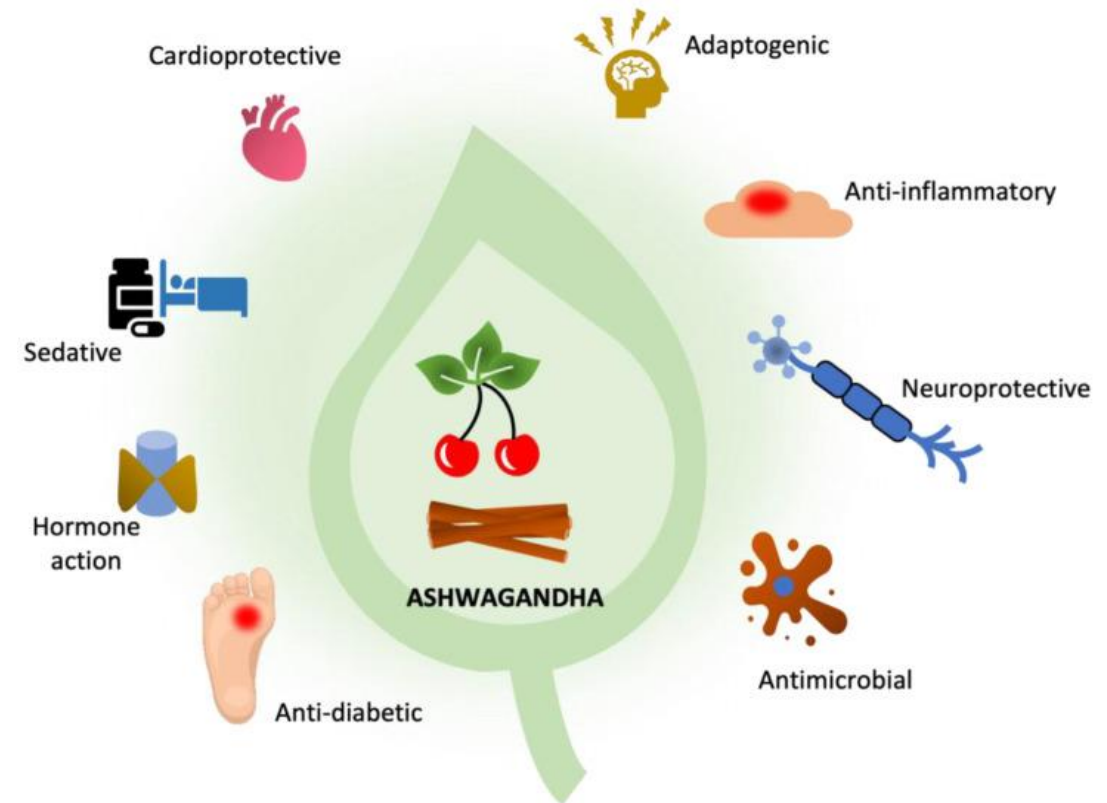
# Magnesium

- Essential for the heart, bones, muscle and nerves
- RDA for women ages 19 and above: 310 - 320 mg/day
- Food sources include dark leafy greens and nuts
- Emergent research: fibromyalgia, migraines, diabetes
- **Groups at risk for deficiency:** long term diuretics, proton pump inhibitors



# Ashwagandha

- Used for thousands of years in Ayurvedic medicine
- Dose: 250 - 500 mg/day for up to 3 months
  - Options include tea
- Benefits might include
  - Anti-inflammatory
  - Cognitive
  - Anxiety and stress relief



Learn more: [doi.org/10.3390/pharmaceutics15041057](https://doi.org/10.3390/pharmaceutics15041057)

Ashwagandha (*Withania somnifera*)—Current Research on the Health-Promoting Activities: A Narrative Review

# Curcumin

- Active compound in turmeric
- Anti-inflammatory and anti-oxidant properties
- Dose: 500 - 2000 mg/day
- Food sources:
  - Turmeric spice - black pepper increases absorption
- Emergent applications:
  - Osteoarthritis
  - Cancer research
  - Digestive health - IBD



# Supplementing Your Skin Regimen



# Is There an Anti-aging Supplement???





## Fountain of Youth Supplement System

\$79.00

Shipping calculated at checkout.

**For \$80 you could  
give this a try....**

# What Supplements Should You Use?

Yes 	Maybe	No 

# Collagen

International Journal  
of Dermatology



Review

## Effects of hydrolyzed collagen supplementation on skin aging: a systematic review and meta-analysis

Roseane B. de Miranda MD, Patrícia Weimer MD, Rochele C. Rossi PhD ✉

First published: 20 March 2021 | <https://doi.org/10.1111/ijd.15518> | Citations: 35

Want to try it?

I would not recommend this



- No human studies have clearly proven that collagen you take orally will end up in your skin, hair, or nails.

# Biotin



## **UPDATE: The FDA Warns that Biotin May Interfere with Lab Tests: FDA Safety Communication**

- Key ingredient in Nutrafol hair growth supplements
- Leads to falsely low troponin results
- Interferes with thyroid function tests (falsely low TSH, high T4)

**Want to try it?**

**I would not recommend this!**



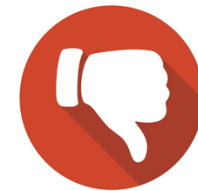
# Whey Protein



Often used to  
build muscle or for  
weight management

**Want to try it?**

**I would not recommend this!**



- Significant increased in acne
- Can cause flares in inflammatory skin disease (Hidradenitis suppurativa)



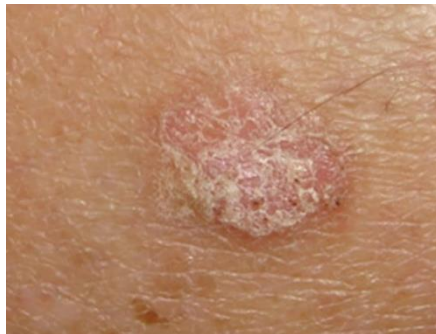
# Niacinamide



**Note: This is DIFFERENT  
than *Niacin***

**Want to try it?**

- **Oral: 500 mg twice daily**
- **Topical: 4-5% added to many topical serums**



# Probiotics – In Your Diet!



**Want to try it?**

**Increase the amount of  
fermented foods in your diet**



# Topical Vitamin C



**Want to try it?**



**Topical – daily to every other day**

- Has been shown to reduce dyspigmentation and wrinkles and to improve skin texture
- Increase in collagen after 6 months of daily 5% serum use

# Sunscreen



**Want to try it?**



**I recommend using sunscreen  
every day on your face, hands,  
and neck.**

But....what type should you buy??

**Whatever you will use!**



# Arnica



**Want to try it?**

- **Topical: 20% arnica twice daily**



- Accelerated resolution of laser-induced bruising with topical 20% arnica



# Alpha-Lipoic Acid (ALA)

**5% topical ALA cream can be used for anti-aging**



33 women used 5% ALA cream on one side of face and placebo on the other

- After 12 weeks, compared to control there was a statistically significant improvement of skin roughness on the ALA-treated half of the face.

**Want to try it?**



- **Oral: 300 to 600 mg daily**
- **Topical: 5% cream every other night**

Beitner. *B J Dermatol.* 2003



# Spirulina



## Positive potential for wound healing

- Promotes cutaneous fibroblast and keratinocyte proliferation, extracellular matrix, and collagen formation
- Antioxidant and anti-inflammatory activity

### Want to try it?

- Oral: 5mg daily 
- Topical: Right now, I would not recommend this 



Liu P. Int J Mol Med 2020.



# Topical Estrogen....

- This is a prescription, but it can prevent recurrent UTIs when used in the vagina!
- You may be a candidate for local vaginal estrogen even if you have had breast cancer.



Learn more about if you could add topical estrogen to your routine by talking to your doctor!

# What Supplements Should You Use?

Yes 	Maybe?	No 
Niacinamide	Arnica	Collagen
Probiotics	Alpha-lipoic acid	Biotin
Topical vitamin C	Spirulina	Whey protein
Sunscreen	Topical estrogen	

# TOP Tips for Supplementing Your Skin Regimen



**Sunscreen**



**Fermented  
foods**



**Topical  
Vitamin C**



**Oral  
Niacinamide**



# Questions

**Thank you!**

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