Probiotics/Nutriceuticals: Healthy Bacteria and Supplements

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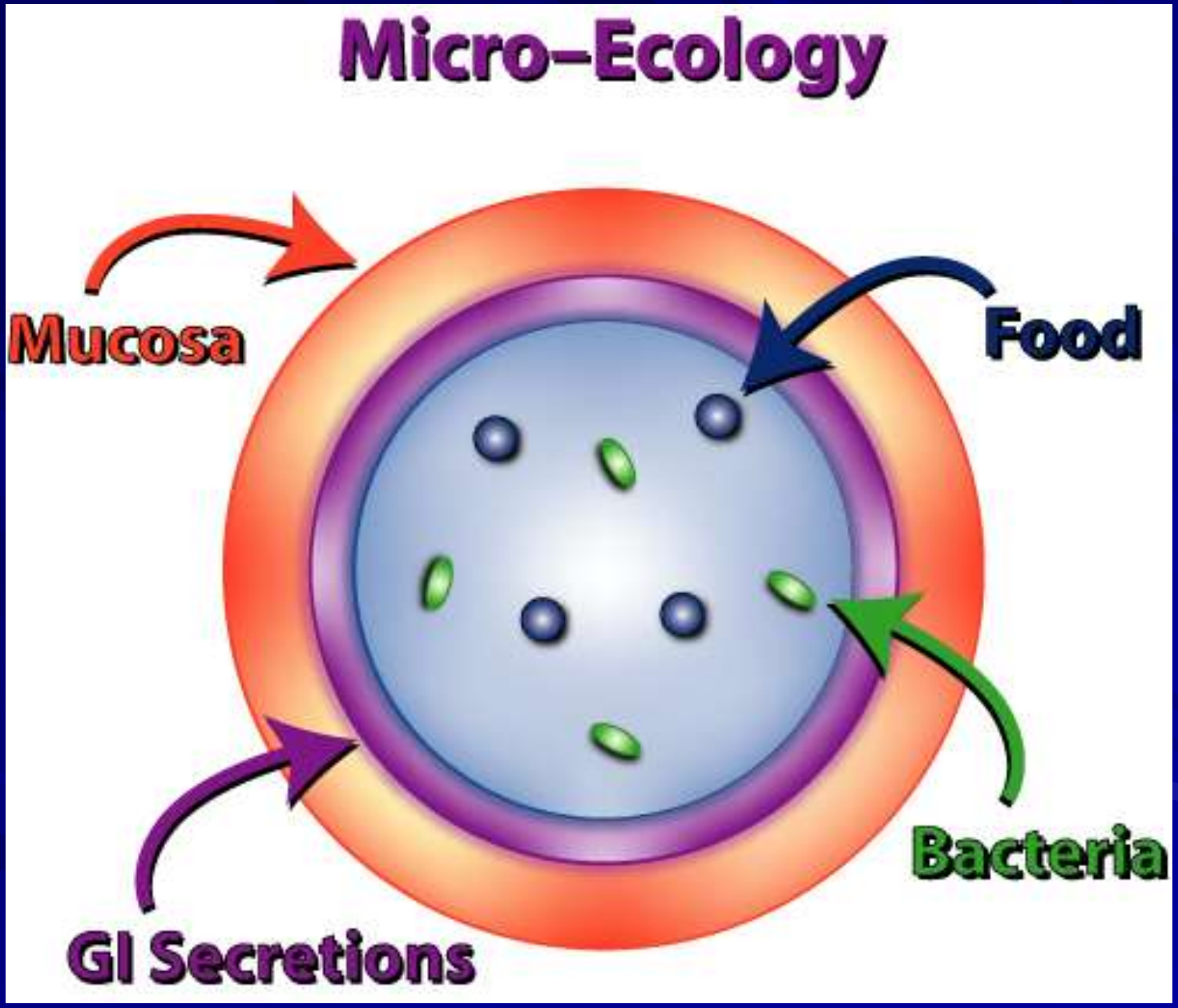
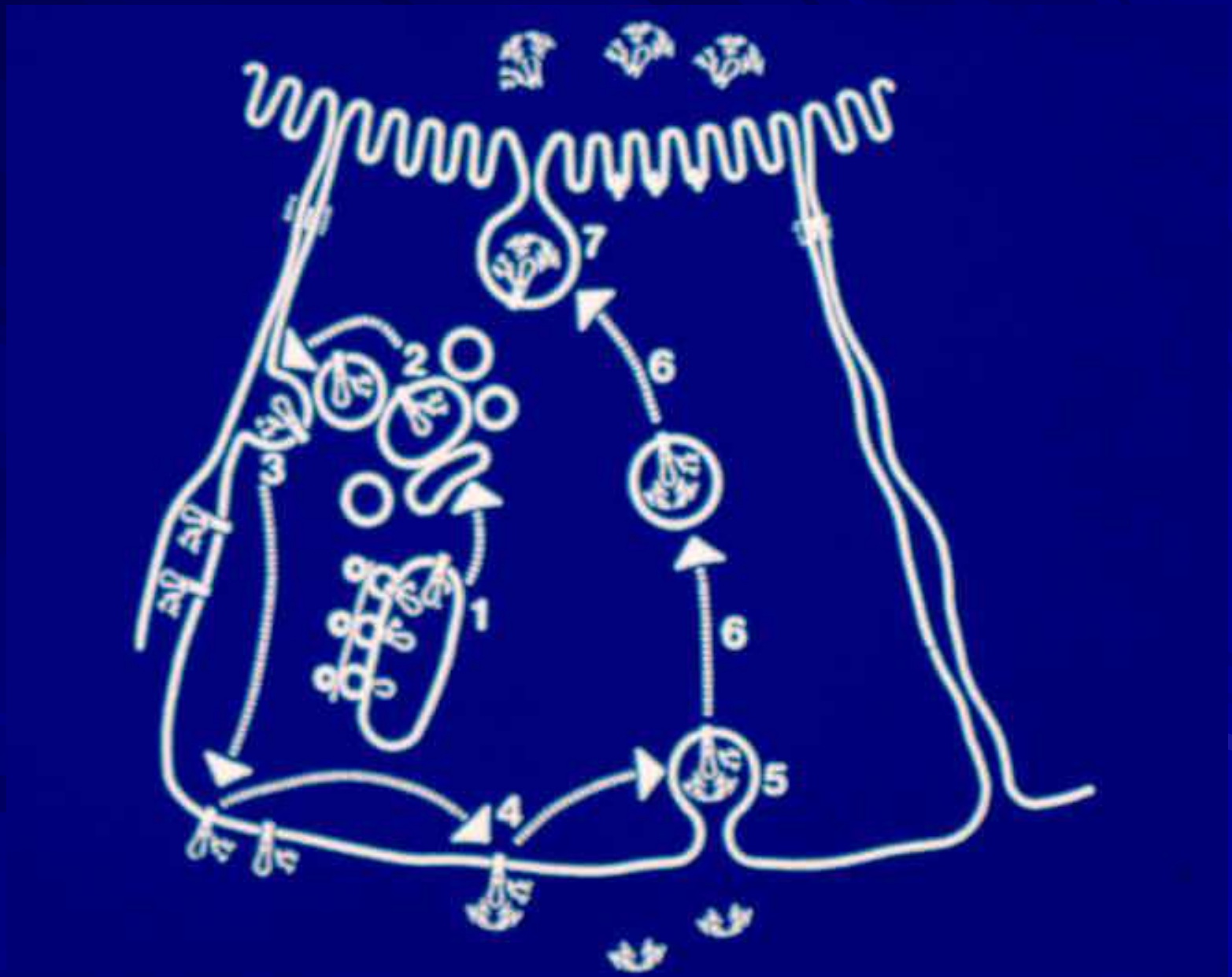
Micro–Ecology



CONCEPT:
OUR MICROFLORA ARE PROTECTIVE

- Assist in lactose breakdown
- Enhance “Barrier” - unstirred layer
- Produce Vitamin K
- Boost our immune system (G.A.L.T.)
- Make substrate for “Colon Food”

G.A.L.T.



CONCEPT: "WESTERN" vs "ASIAN" DIET

- ↑ Fat, ↑ meat, ↑ sugar
- ↓ In fruits, veggies, & fiber
- ↑ Bacteroides, ↑ carcinogens
- ↓ SCFA, butyrate = leaky gut = ↓ colon food
- ↑ Large molecules in blood stream
- ↑ Antigen / antibody
- Environmental Sensitivity

DYSBIOSIS:
ALTERED FLORA = Sx, DISEASE

- Indigestion
- Diarrhea
- Constipation
- Bloating
- Flatulence
- Food allergies
- IBS
- Crohn's / U.C. (IBD)
- Pruritis ani
- Steatorrhea

ADDITIONAL SYSTEMIC DISORDERS

- Psoriasis
- Eczema
- Acne
- Urticaria
- Asthma
- Autoimmune disease
- Arthritis
- Colon cancer

FARM KIDS

- ASTHMA RATES

6% vs. 12%

- ALLERGY RATES

18% vs. 40%

ADDITIONAL FACTORS

- Antibiotics → wipe out “healthy” flora
- ↑ Enteric pathogens
- ↑ Candida
- ↑ C. difficile
- Laxatives → ↓ nutrients, ↑ damage
- Stress ?

ADVERSE RESULTS OF ABSENT NORMAL FLORA

- Starvation = atrophy, leaky gut
- ↓ fiber diet (↓ “pre”-biotic)
- Antibiotics
- Overwhelming GI infection

PROTECTIVE DIET

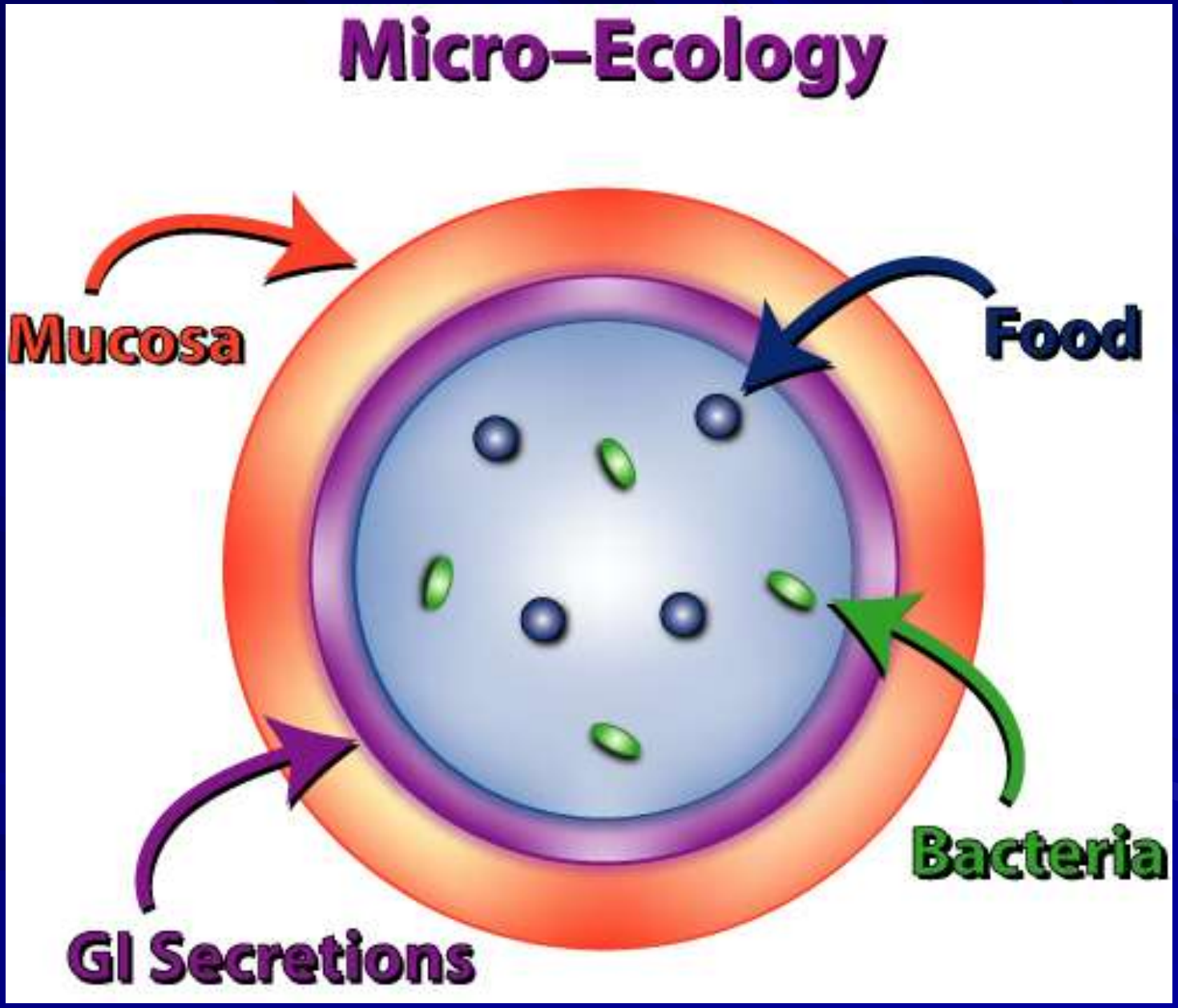
- Soluble fiber: prunes, flax seed meal
- Non-starchy vegetables, fruits, cold-water fish, nuts, and seeds
- “Hunter- Gatherer” diet
- Adequate fluids = 6-8 glasses/day

Fiber	Dose	Grams of Fiber	Soluble	Insoluble
Citrucel	1T	2gm	X	
Citrucel Caplets	2	1gm	X	
Metamucil	1T	3gm	X	
Metamucil Wafer	2	6gm	X	
Fibercon (500mg Polycarbophil)	2	0gm		X

CONCEPT: PROBIOTICS AS THERAPY

- Live microbial food supplements
- Lactobacilli, Bifidobacteria, yeast
- Yogurt vs capsule
- Non pathogenic, non-toxic
- GOAL: Adherence

Micro–Ecology



SYMBIOSIS

- Barrier resistance / surface protection
- Resist pathogen colonization
- Ferment CHO / Fat to ↑ nutrients
- Metabolize & detoxify toxins
- ↑ Immune system (GALT)

AVAILABLE PROBIOTICS

- Culturelle (lactobacillus G.G.)
- Floragen
- Pro-biotica
- VSL #3 (Bologna)
- Optiflora by Shaklee
- Florastor (S. Boulardii)
- Align

Probiotic Costs:
1/1 Dose/Day x 30 days

Opti Flora (Shaklee)	$15.31
Cuturelle (LactobacillusGG)	$17.00
Floragen	$8.99
Pro biotica	$6.48
VSL #3 (10 packets/box) 1packet/day	$28.00

CLINICAL USES OF PROBIOTICS

- C. difficile treatment
- C. difficile prevention
- Non-specific diarrhea
- Pouchitis (p̄ ileo anal)
- Active U.C.

TRAVELERS DIARRHEA

- Egypt: mixture of probiotics:

  ↓ diarrhea: 71% to 43% ($P<0.001$)

- Turkey: L. rhamnosus GG as placebo

  7.4% vs 3.9% ($P<0.05$)

C. DIFFICILE (A.A.C.)

PROBIOTICS FOR C. DIFFICILE

- Adding S. Boulardii to Vanco

  C. diff recurrence: 16.7% vs 50% (P<.01)

- Lactobacillus GG (culturelle)

  12% vs 43% (P<.01)

Dysbiosis
Excess “Bad” Bacteria

- Gas/Bloating
- Abdominal pain
- Foul Flatulence
- Diarrhea
- Oily stool
- Weight Loss

Dysbiosis Self-care

Colon Cleanse

- Tanalbit 2 pills 3x per day for 3 wks
- If casein sensitive use Viracin

Probiotics (good bacteria)

- Primal defense one daily, or
- Culturelle one daily, or
- Florajen3 one daily, or
- Florastor one daily

FUNCTIONAL FOODS
NUTRICEUTICALS
SUPPLEMENTS

HIPPOCRATES:

“Let food be your medicine, and your medicine be food.”

HERBAL MEDICINE / NUTRICEUTICALS

- 1997: 60 million users - $3.2 billion
- Research: Europe / Germany
- German Commission “E” (1978): 1400 drugs (Ref 1)
- U.S.: Self selection, not Rx
- No FDA regulations for “supplements” (DSHEA ‘94)
- Special risk groups: peds / OB / elderly
- Assumptions: “Natural” = safe,
  “organic” > synthetic

“BUYER - BEWARE!”

- No quality standards
- No labeling standards
- No preparation standards
- MD CME - lacking / skeptical
- Website (Ref 2):
  http://www.naturaldatabase.com

SELECTED NUTRICEUTICALS

- Ginger: nausea, motion sickness
- Blackberry tea (tannin): diarrhea
- Cranberry juice: UTI
- Horse chestnut seed (aescin): varicose veins
- Echinacea: immune boost, common cold
- Melatonin: Jetlag, insomnia
- Glucosamine / chondroitin SO_4: DJD

SELECTED NUTRICEUTICALS

- L-carnitine: CHF
- CQ10 (ubiquinone): CHF
- Chromium picolinate: D.M.
- Milk Thistle: Liver disease
- St. John’s Wort: Depression
- Ginseng (panax): Stress/ fatigue
- Gingko biloba: Dementia

St. John's Wort

St. John's Wort: Hypericum Perforatum: General

- Bright flower: Blooms June 24
  (birthday of St. John the Baptist)
- 20% of world supply = Australia
- AKA: Amber Touch-and-Heal, Demon Chaser, Goat Weed, Tipton Weed
- Hypericin, Hyperforin
- Oral use: Depression, Dysthymia, anxiety, lack of drive, OCD, PMS
- Topical use: bruises, abrasions, wound healing

Gingko Biloba

Gingko Biloba: General

- AKA: Japanese Silver Apricot, Kew Tree
- Unique leaf
- Use: Dementia, Alzheimer's, cerebral vascular insufficiency, memory loss
- Macular degeneration
- Sexual dysfunction

Ephedra

Ephedra: General

- AKA: Ma Huang, Herbal Ecstasy, Yellow Horse, Sea Grape
- Not to be confused with “Mormon Tea”: American Ephedra, non-toxic
- FDA restrictions pending
- 28 states: varying restrictions

Ephedra: Adverse Reactions

- Anorexia
- Psychosis
- Myopathies
- Cardiovascular: MI, ↑ BP, stroke, myocarditis
- General: RISK > Benefit: especially with caffeine

FUNCTIONAL FOODS

- Physiological benefit beyond nutrients
- Known food with functional ingredient(s)
- Entirely new food, with functional ingredient(s)

SPECIFIC FUNCTIONAL FOODS: F.O.S.

- Fructo-oligo-saccharides (FOS)
- Short chain FOS: glucose - 2,3,4 fructoses
- Non-digestible oligo saccharides (NDO's)
- Plants: onion, garlic, blueberries, leeks
- Metabolized: SCFA
- ↓ colon pH
- ↑ IgA: infectious diarrhea

PREBIOTICS (F.O.S.)

- ↑ “Healthy” bacteria
- Bifido > lactobacillus
- Displaces C. diff, Klebsiella
- ↑ Ca^{++} solubility / absorption
- Possible ↑ Mg^{++} / Fe^{++} absorption
- ↓ lactose intolerance
- ↑ cholesterol excretion

PREBIOTICS (F.O.S.)

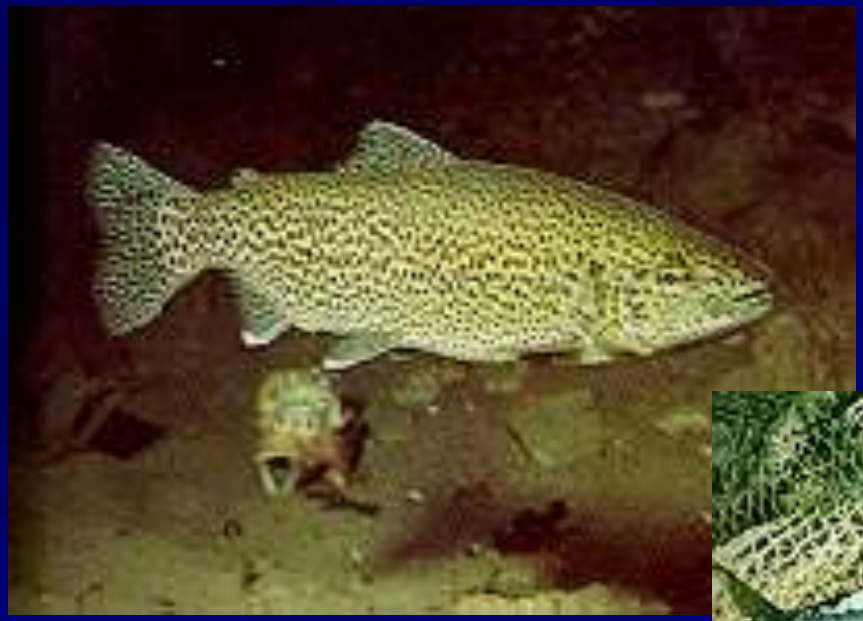
- 10% ↓ in LDL bad cholesterol
- Good bacteria ↑ SCFA (butyrate)
- Colonocyte “colon food”
- Possible Rx for colitis
- Possible Rx for Diverticulitis
- Possible ↓ colon polyp / cancer

FUNCTIONAL FOODS IN CV DISEASE: BIO FLAVENOIDS

- Fruit / vegetable phenols
- ↓ CV, cerebrovascular disease
- ↓ platelet aggregate
- ↓ free radicals / oxygenation
- Phenolic acids → tannins
- Isoflavenoids: also in soy, tofu, soy milk
- Anthocyanin: berry dye
- ? Protective for dementia

FUNCTIONAL FOODS IN CV DISEASE: BIO FLAVENOIDS

- Anti- inflammatory
- Anti-coagulant
- Anti- arthritic
- Anti- allergic
- Anti- cancer
- 5-9 servings / day (fruits + veggies)



FUNCTIONAL FOODS IN CV DISEASE: OMEGA-3 FATTY ACIDS

- Omega-3 FA in fish oils: (salmon, mackerel, other deep cold water fish)

- Plant omega-3 FA:
  - flax seed, walnuts, almonds, sea algae
- Cardio protection:
  - Anti- arrythmic
  - lower bad blood fats
  - Anti- coagulant
  - Vasodilator

Flaxseed: reduce risk of heart disease, cancer, stroke, and diabetes.

- This tiny seed was cultivated in Babylon since 3000 BC. King Charlemagne so strongly believed in the health benefits of flaxseed that he ordered his subjects to consume it. Preliminary research supports what the king suspected many years ago.

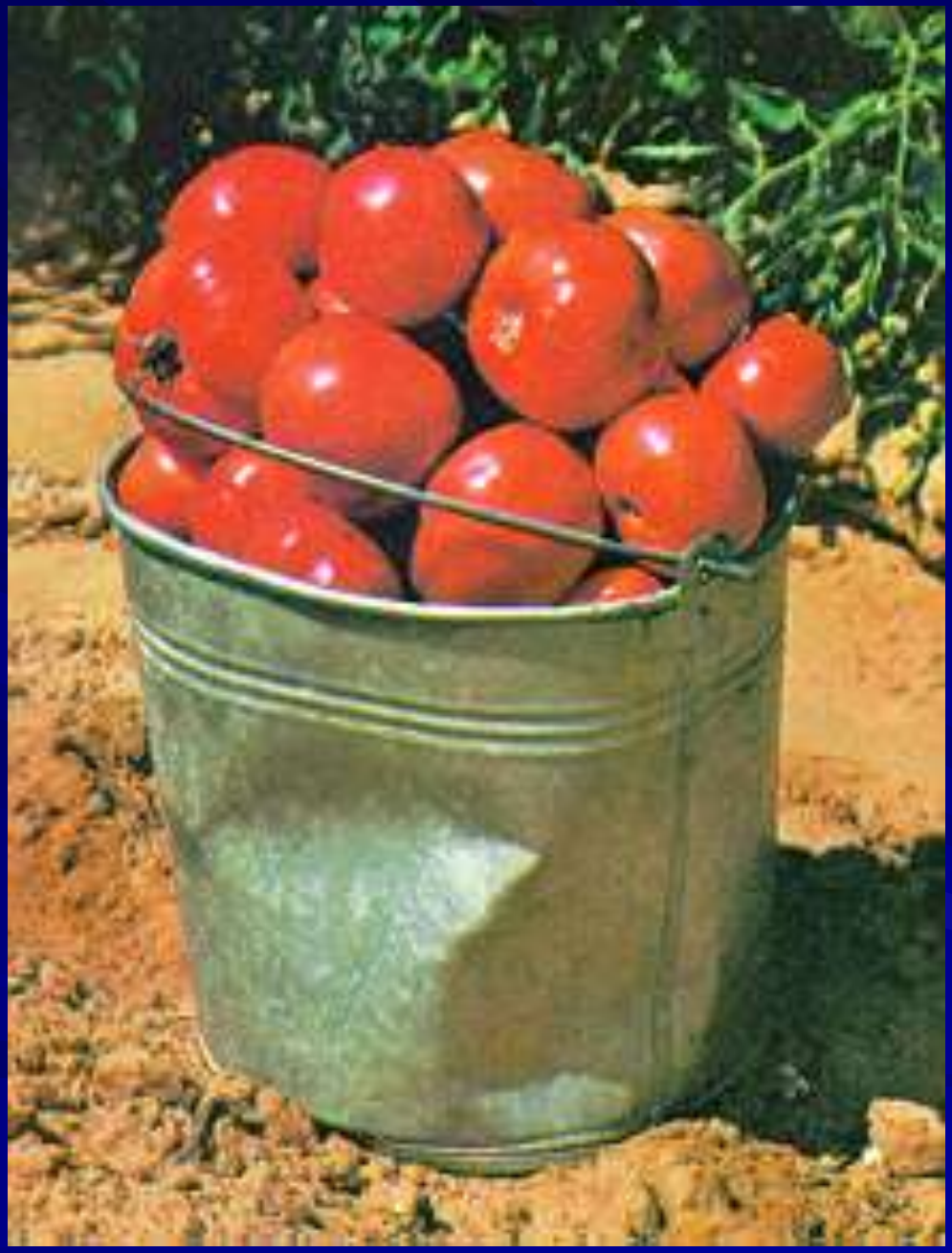
Flax Council of Canada

Flax Seed's Healthy Ingredients/Effects

- 1) Omega-3 = fatty acids, "good" plant fats.
- 2) Lignans = plant estrogen & antioxidant qualities.
- 3) Fiber = soluble and insoluble types.
- A complete protein with all essential amino acids
- Anti- inflammatory properties.
- Golden or brown flax seeds ok.

How to use flaxseed?

- Grind it in a coffee grinder & freeze.
- Add to cereal, soup/salad, smoothie, yogurt.
- 1-2 tablespoons a day.
- Store whole seed at room temp up to 1 yr.
- Flaxseed oil in refrigerator up to 3 mo.



OTHER "HOT" NUTRICEUTICALS

LYCOPENE (tomato red)

- Antioxidant, protection against epithelial cancers
- Significant suppression of prostate CA (Ref 9)

LUTEIN (dark leafy-green vegetables)

- Nonprovitamin A carotenoid
- ↓ macular degeneration / cataracts
- Bluelight filter: ↓ eye damage
- May decrease breast CA (Ref 10)

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