

A symbolic image showing a pair of hands cupped together, holding dark brown soil. A small green seedling with two leaves is growing out of the soil in the center of the hands. The background is a warm, golden-yellow color with a textured, painterly appearance.

The Link Between Nutrition & Agriculture

By Jerry Brunetti

**PASA
February 1-3, 2007
State College, PA**



Digestion

The Soil of the Body

“All Diseases Begin in the Gut”

Hippocrates, 460-370 B.C.

Stomach Eco-System

- pH: <2.0
- Empty Stomach: <10,000/ml streptococci, staphylococci, lactobacilli, fungi
- After Eating: 100,000/ml streptococci, prevotella, lactobacilli, bifodobacteria, enterobacter
 - Origins from oral cavity & food (raw & fermented)

Stomach Eco-System

- HCL Excretion: Drops Microbe Levels to Near “Zero”
- Mucus Secretion
 - Protects Stomach & Intestine from HCl
 - Protects Stomach & Intestine from Abrasion
 - Acts as Barrier to Pathogens
- Mucus Integrity
 - Depends Upon Nutrition!
 - Can Be Breeched by Pathogens, if Poor
 - Can Nourish Pathogens, if Poor
 - Affects Lower Gut Ecosystem
 - Fruits & Vegetables Important!

Pre Biotics

- Fructooligosaccharides
- Inulin
- Arabinogalactose
- Lactiol
- Lactulose
- Manitol
- Oligomate
- Isomatooligosaccharides
- Palitnose
- Polydextrose
- Pyrodextrin
- Raftiline
- Sorbitol
- Soy oligosaccharide
- Xylitol

From “Bacteria for Breakfast” by Dr. Kelly Dowhower Karpa

Stomach Digestion Acidity

- Low pH (<2.0) stimulates Secretin & Cholecystokinin
 - Secretin
 - Prevents the production of HCl by stomach (natural “Brake”)
 - Causes Liver to Produce Bile
 - Causes Mucous Production on Intestinal Wall
 - Causes Pancreas to Produce Bicarbonate (raises pH)
 - Cholecystokinin
 - Produces pancreatic enzymes
 - Halts Stomach Activity
 - Gall Bladder Empties Bile
 - Pancreas Secretes Enzymes Protease, Amylase, Lipase
- Low pH (Acidity) Destroys Pathogens (e.g. Helicobacter pylori, Campylobacter pylori, Salmonella, Enterobacteria, Streptococci, etc.)
- 50% of 60 (+) years: Low HCl and 80% of 80 (+) years: Low HCl
- HCl necessary for B-12 absorption
- Secretion of Piccolinate (needed to absorb zinc)
 - Zinc needed to produce HCl

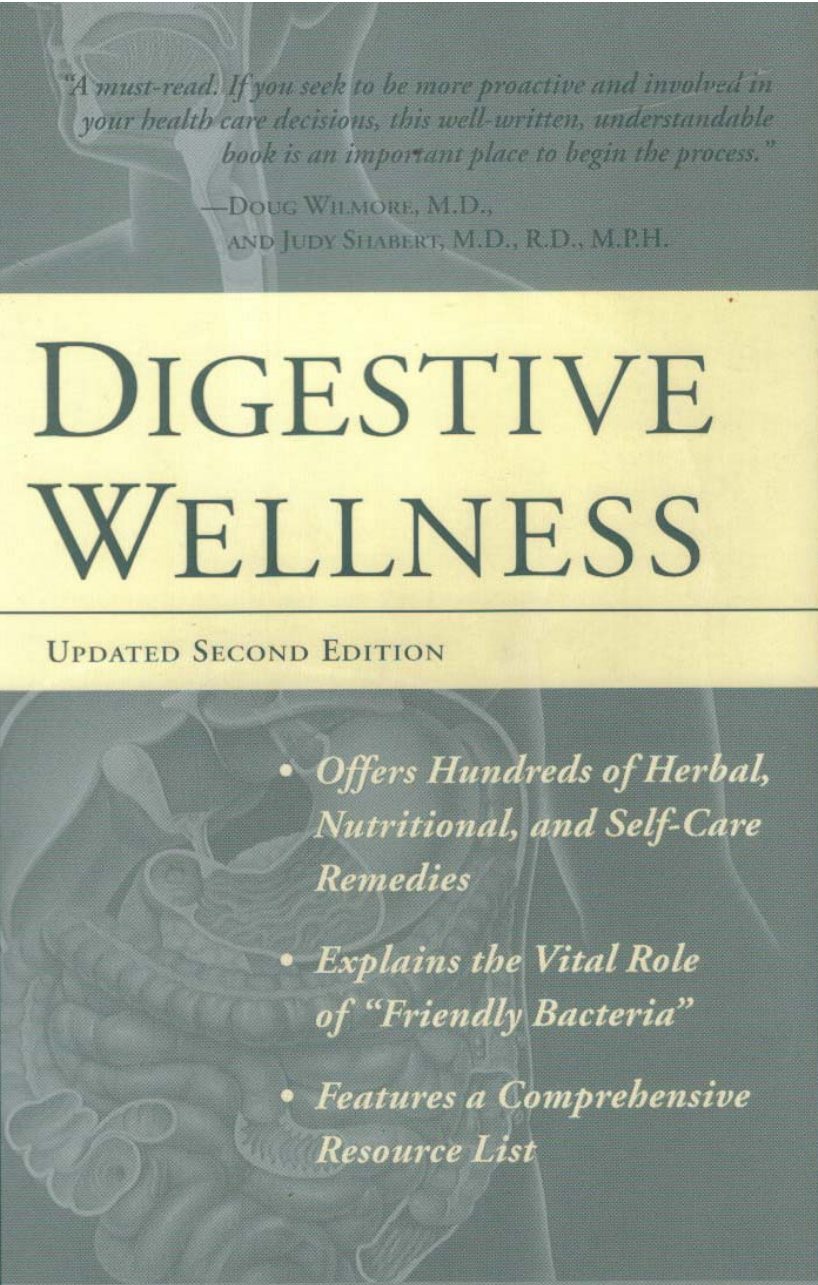
Low Stomach Acidity

- Creates deficiency of Secretin/cholecystokinin
- Creates absorption of Partially Digested Protein
 - Casomorphin & gliadomorphin (gluteomprohin)
 - Auto-immune reactions, allergies
- Creates Malabsorption of vitamins/minerals
- Creates Maldigested carbohydrates —→ food for pathogenic flora —→ alcohols, acetaldehydes
- Creates Mal-digested Fat —→ deficiency of fat soluble ADEK, EFA's

Intestinal Digestive System

Relative Importance of Site absorption within the Small Intestine

Location	Length	Exits to Blood
Duodenum	12-18 inches Susceptible To plaque Build up!	Chlorine, Sulfuric acid, Calcium, Magnesium, Iron, Zinc, Copper, Manganese Monosaccharides, Glucose, Galactose, Fructose B₁, B₂, B₆, Folate, C Fat (i.e., short-chain fatty acids, long-chain fatty acids, and partially split glycerides) Fat Soluble vitamins A, D, E, K
Jejunum	10 feet	Disaccharides, sucrose, maltose, lactose Water-Soluble vitamins: thiamine, pyridoxine, riboflavin, folic acid Proteins and amino acids
Ileum	12 feet	Cholesterol Vitamin B₁₂ Bile Salts
Digestive Wellness by Dr. Elizabeth Lipski MSCNN		



"A must-read. If you seek to be more proactive and involved in your health care decisions, this well-written, understandable book is an important place to begin the process."

—DOUG WILMORE, M.D.,
AND JUDY SHABERT, M.D., R.D., M.P.H.

DIGESTIVE WELLNESS

UPDATED SECOND EDITION

- *Offers Hundreds of Herbal, Nutritional, and Self-Care Remedies*
- *Explains the Vital Role of "Friendly Bacteria"*
- *Features a Comprehensive Resource List*

ELIZABETH LIPSKI, M.S., C.C.N.
FOREWORD BY JEFFREY S. BLAND, Ph.D.

Digestive Wellness
By Elizabeth Lipski,
M.S., C.C.N

Healthy Gut Eco-System

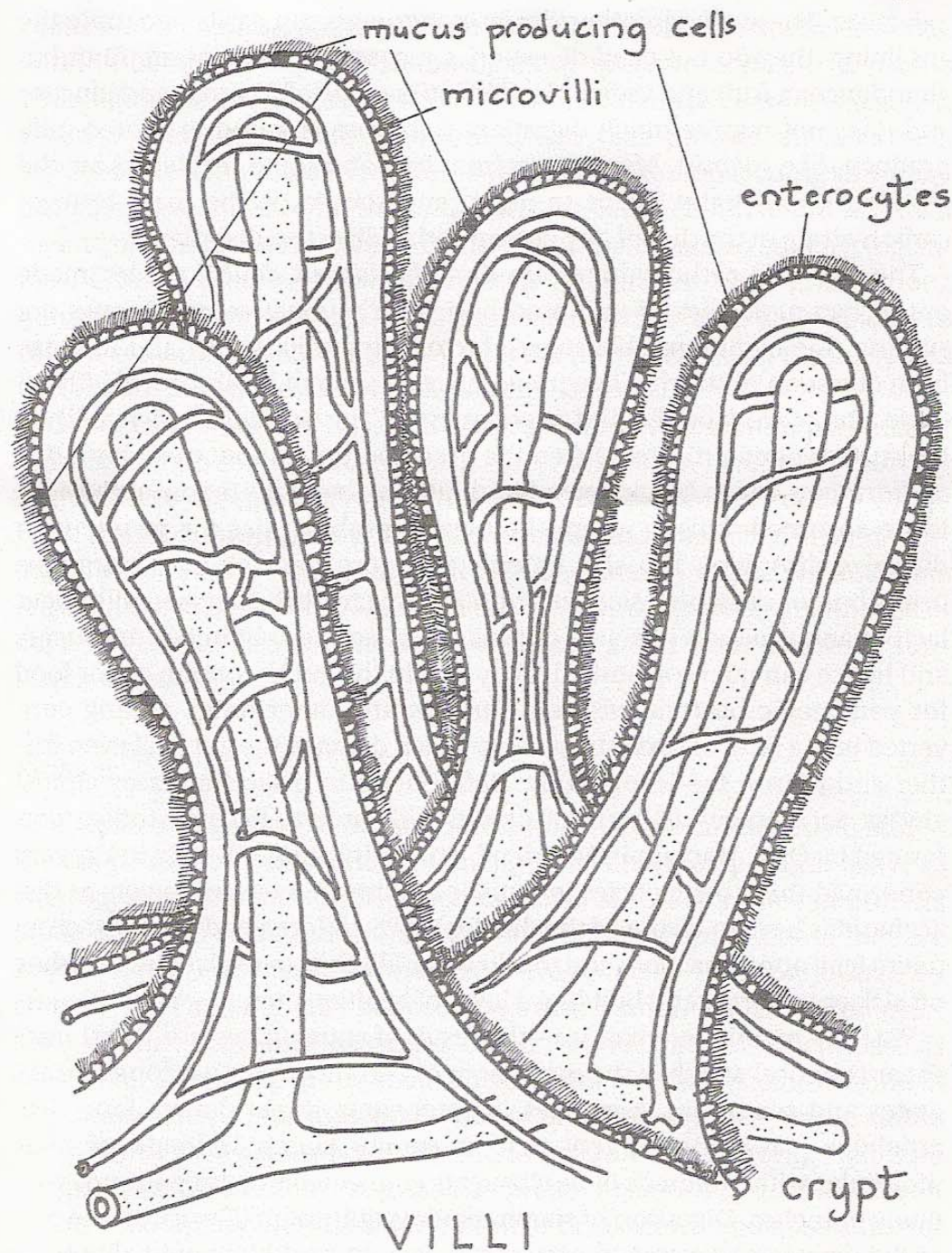
- 3-5 lbs of 500 species of Bacteria-greater than number of cells in the body! Only 30% identified!
- Essential: Bifido, Lacto, Propiono, E. coli, Enterococci, Peptostreptococci
- Gut flora produce steady stream of water-soluble B vitamins, amino acids, vitamin K.
- Produce antibiotics, anti-virals, anti-fungals
- Organic acids: Gut wall pH=4.0-5.0
- Immune substances: interferon, lysozyme, surfactants
- Neutralize toxins: nitrates, indoles, skatoles, phenols, histamine
 - chelate heavy metals
 - suppress hyperplastic processes
- Normal Gut Flora
 - Nourish gut epithelia (60-70% energy from bugs!)

Main Bacteria Types in Our Bodies

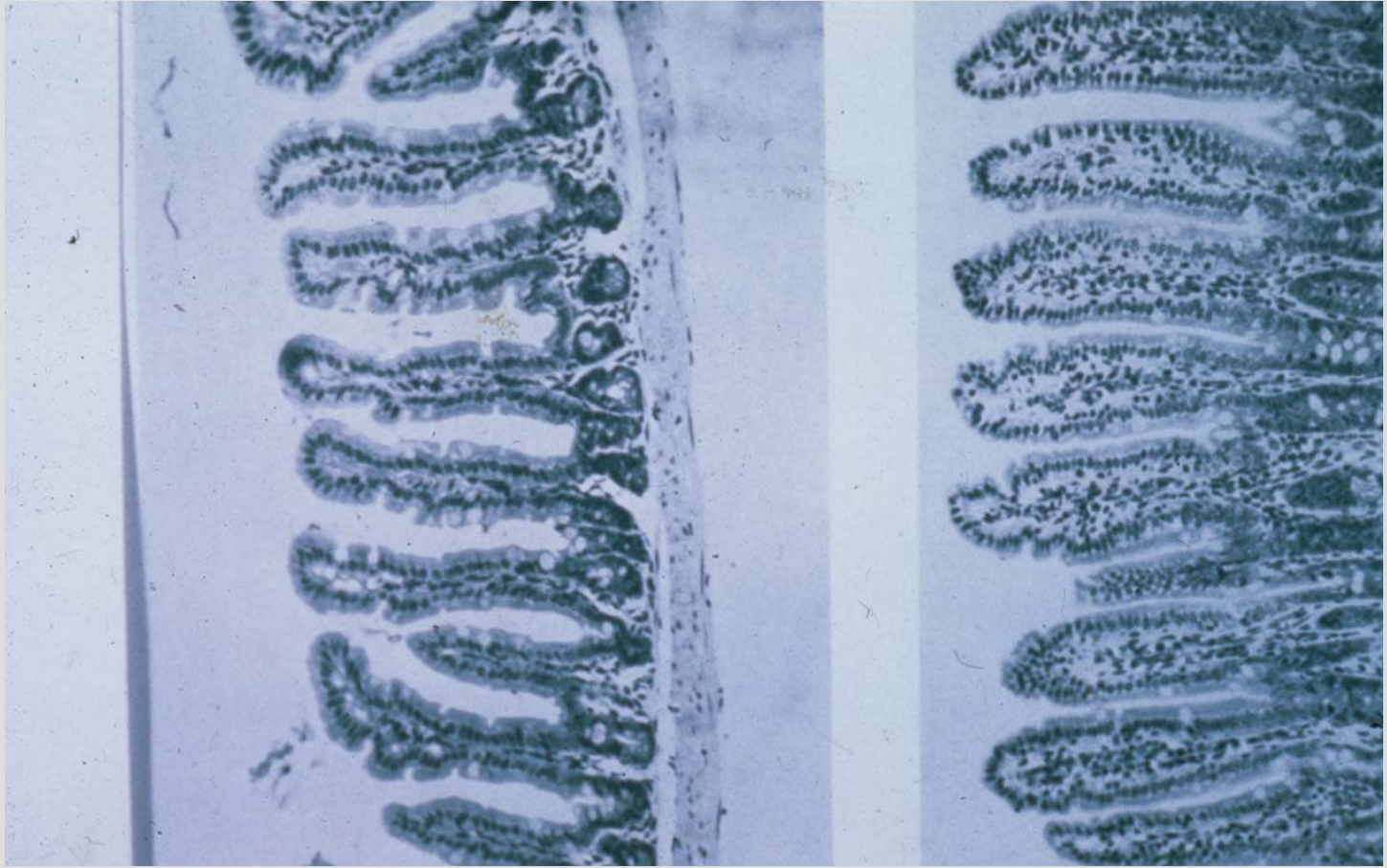
Type	Aerobic/Anaerobic	Percent
<i>Bacteroides, twenty species</i>	Anaerobic	Almost 50
<i>Bifidobacterium</i>	Anaerobic	11
<i>Pepto streptococcus</i>	Anaerobic	8.9
<i>Fusobacteria, five species</i>		7
<i>Rheumanococcus, eleven species</i>		4.5
<i>Lactobacillus</i>	Both	2-2.5
<i>Clostridia</i>		0.6
<i>Enterobacteria, E. coli, Klebsiella, Aerobacteraerobacter, etc.</i>		Less than 0.5

Gut Associated Lymphoid Tissue (G.A.L.T.)

- 70% Immune System Located in Gut
- Antigen $\xrightarrow{\text{M-Cells}}$ Peyers Patches
- Peyers Patches (lymph nodes) 1-25 mm
 - Alert B-cells, T-Cells \longrightarrow Transport antigens to mucosa: macrophage ingestion
 - Filters Lymph (imprisons pathogens)
 - Produces Lymphocytes



Enterocytes begin in crypt as “stem” cells, mature as they migrate upwards into enterocytes, slough off every 3-5 days



Gut-Brain Connection

“The Second Brain”

- ADHD
- Dyslexia
- Autism
- Schizophrenia
- Allergies
- Asthma
- Eczema
 - Milk and wheat proteins: disaccharide sugars

Gut and Psychology Syndrome

Natural treatment for



Dr. Natasha Campbell-McBride MD,
MMedSci(neurology), MMedSci(nutrition)

Gut and Psychology Syndrome

By Natasha
Campbell-McBride
MD

Opportunistic Microbes

- Bacteroids, Peptococci, Staph, Strep, Bacilli, Clostridia, Enterobacteria (Proteus, Klebsiella, Citrobacteria), Fuzobacteria, Eubacteria, Catenobacteria
- Iron Loving: Actinomycetes, Mycobacteria, E. coli, Corynebacterium, etc.
 - Create anemia

Proteins

Stomach → Pepsin → Duodenum →
Pancreatic Protease → Peptide →
Villi Enterocyte → Peptidases →
Amino Acids → absorption

• Damaged gut wall → peptides (e.g. gluten/casein) leak through gut wall

Best Proteins: Eggs, Fish, Meat (broiled, stewed, poached)

Carbohydrates

- Monosaccarides
 - Glucose/fructose (fruit & vegetables, honey)
 - Galactose (soured milk) from lactose
- Disaccarides (Disaccaridases from microvilli)
 - Sucrose (also unripe fruit)
 - Lactose
 - Maltose (digestion of starch)
- Poor Gut Lining —————> Damaged microvilli
 - Disaccarides = substrate for pathogens (no absorption)

Large Intestine

- Length 3-5 Feet
- 2.5 Gallons Water per day (80% removal)
- Colon Bacteria
 - Lower pH
 - Synthesize vitamins A,B,K
 - Ferment Fiber
 - Create Short Chain Fatty Acids (Butyric, Propionic, Acetic, Valeric)
 - Energy For Colonic Cells
 - Deficiency = colitis, cancer, IBS
 - Excretion of Degraded Hormones (Beta-glucuronidase = cancer marker)
- Stool Transit Time: 1-2 B.M.'s/day
 - <12 hours: malabsorption
 - 12-24: optimal
 - >24: poor
 - Stool transit test: 5-6 charcoal tablets or 3-4 red beets
- Stool Excretion
 - Americans: Average 5 oz. stool/day
 - Africans (Traditional diet): Average 16 oz.stool/day
- Fiber
 - American Average Fiber: 12 grams/day vs. NCI recommendation: 20-30 grams/day
 - High Fiber-good when healthy flora is present!
 - High Fiber- bad when unhealthy flora is present

Large Intestine Eco-System

- 350 (+) Species- Especially Bacteroides, Bifido & Eubacteria
- 100 Billion-10 Trillion CFU's/gram of Feces
- Obligate Anaerobes
- Receives Undigested Raw Materials as Food & Energy Resources: Gastric Mucus, Fibers, Starches, Complex Sugars, Some Proteins & Fats

Microbial Families in Large Intestine

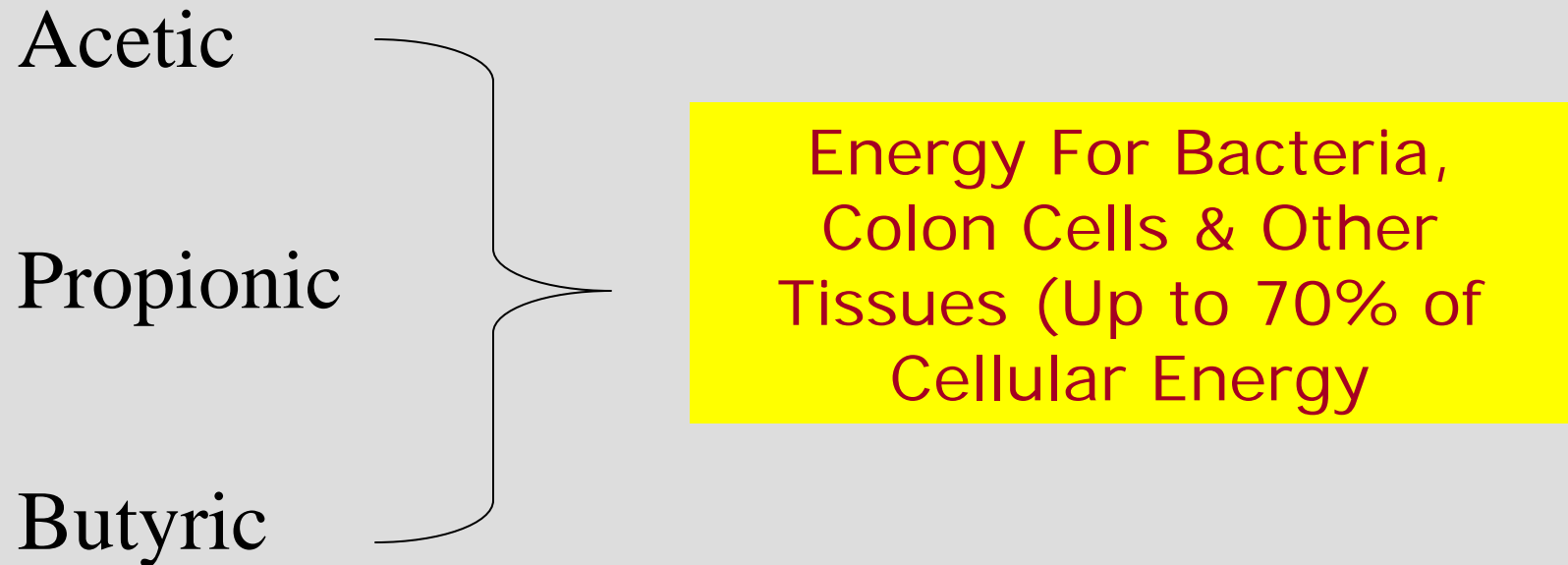
- Gram Negative Anaerobic Rods (Non-Spore)
 - E.g. Bacteroides Genus: produce Bacteriocins
 - E.g. Fusobacterium Genus: produce Butyric Acid
- Gram Positive Anaerobic Rods (Non-Spore)
 - E.g. Eubacterium; Lactobacillus, Bifidobacterium Produce Butyric Acid; Lactic Acid
 - Produce Peroxide, Bacteriocins
 - Produce Enzymes for Cellulose, Saccharides, Proteins, Mucin
- Gram Positive Cocci
 - E.g. Peptostreptococci, Enterococci- Produce Lactic Acid
- Gram Positive Anaerobic Rods (Spore)
 - E.g. Clostridial sp. (in low %'s)
 - Watch Anti-biotic Therapy!
 - Contained by Bile Acids
- Coliforms
 - E.g. Enterobacteria (E. coli) 100-1 Billion/gram
 - Remain Localized; Disease Causing When Outside Intestinal Tract (Injury, Dysbiosis)
 - Contained by Butyric Acid

Primary Volatile Fatty Acids of Large Intestine

Acetic

Propionic

Butyric



Energy For Bacteria,
Colon Cells & Other
Tissues (Up to 70% of
Cellular Energy)

Pre-Biotic Food Sources (Fruits/Vegetables)

- Onions
- Garlic
- Leeks
- Chicory
- Asparagus
- Jerusalem Artichokes
- Bananas
- Kefir



Pre-Biotic Requirements

Healthy Bowel Needs: 4-8 gms/day

Clinical Trials: 10-15 gms/day

Western Diet: 2 gms/day

Pre-Biotic Benefits

- Improve Calcium Absorption
- Improve Lipid Levels
- Inflammatory Bowel Disease
- Gallstone
- Colon Cancer Protection
 - VFA's
 - Mucosal secretion
 - Enzyme Stimulation (Gs-Trans)

Human Breast Milk

Contains Glyco Proteins & Oligosaccarides That Bind
Pathogens & Toxins

E. Coli	Cravito, 1991
Campylobacter jejuni	Newburg, 1997
Streptococcus pneumoniae	Anderson, 1986
Vibrio cholera	Laegreid, 1987
Shigella toxin	Newburg, 1992
Rotavirus	Newburg, 1998

From: Bacteria for Breakfast by Dr. Kelly D. Karpa

BACTERIA FOR BREAKFAST

Probiotics for Good Health



Dr. Kelly Dowhower Karpa

Testing

- CSDA (Comprehensive Digestive & Stool Analysis)
 - Levels & Types of bacteria, Candida
 - Efficiency of Protein, Fat, Carbohydrate Digestion
 - Levels of Pancreatic Enzymes
 - Short Chain Fatty Acids & Butyric Acid
 - Dysbiosis Index
- Leaky Gut Syndrome/Intestinal Permeability
 - Mannitol & Lactulose Test
 - Mannitol/Lactulose Mixture Followed by Urine Collection for (6) Hours

Healthy	High Mannitol	Low Lactulose
Leaky Gut	High Mannitol	High Lactulose
Malabsorption	Low Mannitol	Low Lactulose
Celiac/Chron's	Low Mannitol	High Lactulose

Testing (Con't)

- Food & Environmental Sensitivity Testing
 - Elimination Diet (7-14 days):
 - Consume
 - Any fruit (except citrus)
 - Any vegetable (Except Nightshade)
 - White Rice
 - Olive Oil
 - After Fast, Slowly Introduce Foods, Measure Reaction
 - Sleepy following wheat?
 - Cheese causes diarrhea?
 - Oranges causes itching?
 - Tomatoes create Joint Pain?
- Blood Test for Foods, Molds, Pollens, Chemicals
 - IgG-4 & IgE Anti-body
 - IgA & IgM
 - Sensitivity: “Normal to Severe”
- Testing Laboratories
 - Doctor's Data
 - Immuno Sciences Lab
 - Great Smokies Diagnostic Labs

The Nutrition Solution

*A Guide to Your
Metabolic Type*

Harold J. Kristal, D.D.S.
& James M. Haig, N.C.

Foreword by John R. Lee, M.D.

Internationally renowned authority on natural hormones and best-selling
author of the *What Your Doctor May Not Tell You About . . .* series



Digestive Relief For Distress

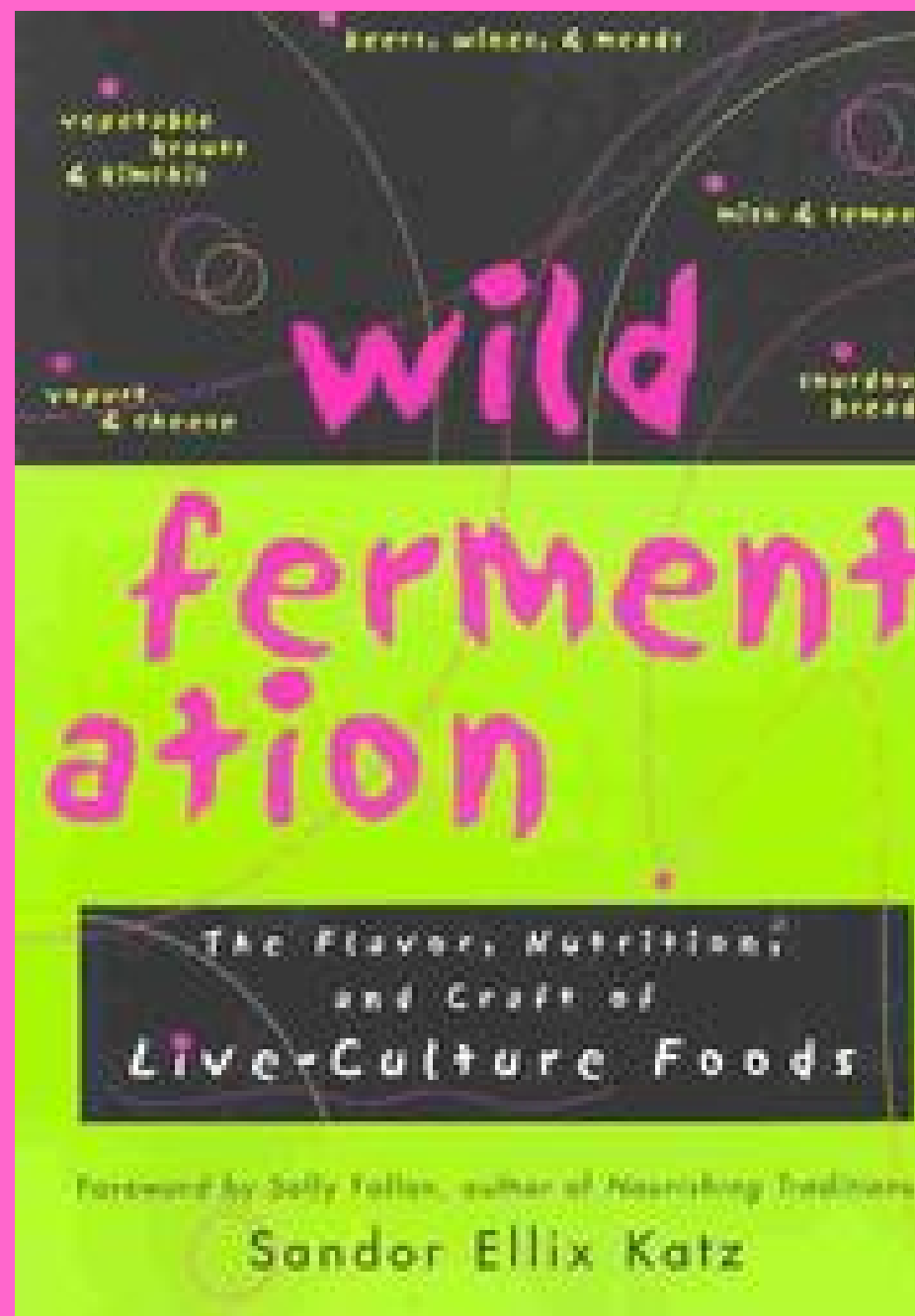
- Betaine HCl (200-300 mg) & Pepsin (100 mg Pepsin)
- Apple Cider Vinegar (1) tsp/glass of water
- Digestive Enzymes
 - Digestitol (Pancreatic) (National Enzyme Co): 1 capsule per meal. Mega-Zyme (Ensymatic Therapy)
 - N-Zimes (Plant Enzymes) (National Enzyme Co.): 1-2 capsules per meal and 1 capsule in between meals (Omega-Zyme)
- Probiotics: First thing in the morning or in between meals
 - Nature's Biotic
 - Primal Defense
 - Kefir, Yogurt
- Swedish Bitters: 30 minutes prior to eating stimulates HCl and Liver
- Sauerkraut, kim chi, miso, etc.
- Zinc aspartate: 40-50 mg Zn; necessary for HCl synthesis
- Chew Thoroughly

Digestive Healing Modalities

- Licorice DGL: increases healing prostaglandins for mucous secretion, cell proliferation. Chew 2-4 tablets 3X/day
- Aloe Vera Juices
- Gamma-Oryzanol (from rice bran oil)
 - 100 mg 3X daily for 3-6 weeks (minimum dose/minimum duration)
 - Very effective for ulcers, gastritis, IBS
 - Normalizes TG, cholesterol
- Cabbage Juice: one quart daily for two weeks
- Glutamine: 8 grams/day for four weeks

Candida Remedies

- Tanalbit (Plant tannins)
- Mathake (South American Herb)
- Lactoferrin-300 mg 1-3X/day
- Cilantro Extract
- Samento
- Silver (Hydrosol or Ionized- Argentyn 23/Sovereign)
Silver
- Garlic (Raw)
- Grapefruit Seed Extract
- Oil of Oregano
- Monolaurin (Lauricidin)
- Caprylic Acid



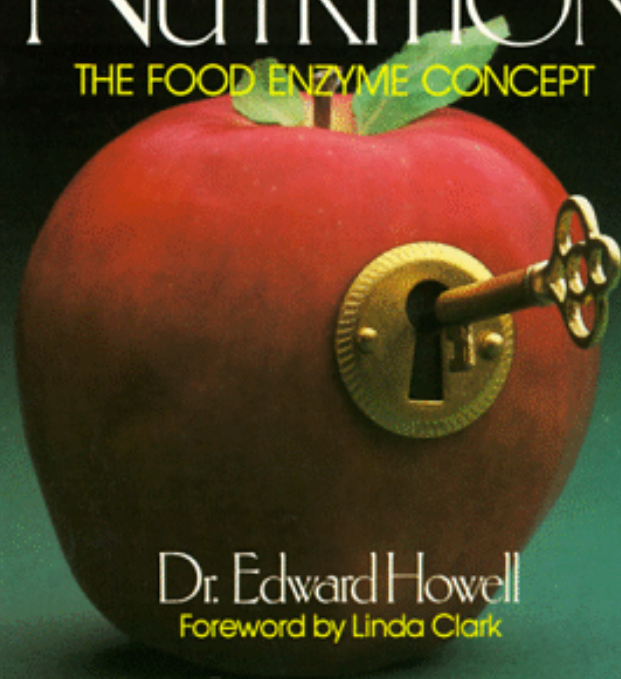
FERMENTATION CHEMISTRY

- LACTIC ACID
- BENZOIC ACID
- LACTOPEROXIDASE
 - NICIN
 - ACIDOLIN
- HYDROGEN PEROXIDE
 - ENZYMES (!)
 - VITAMIN C
 - VITAMIN K₂
 - VITAMIN B-12

UNLOCKING THE SECRETS OF EATING RIGHT
FOR HEALTH, VITALITY AND
LONGEVITY

ENZYME NUTRITION

THE FOOD ENZYME CONCEPT



Dr. Edward Howell
Foreword by Linda Clark

Fully Updated Second Edition
Includes the Five-Step Jump-Start Enzyme Program

"Dr. Cichoke offers strong testimony that the key
to body power and vitality is enzymes."

Journal of the American Chiropractic Association

Enzymes & Enzyme Therapy

how to jump start
your way to lifelong
good health

Anthony J. Cichoke, D.C.
Preface by Abram Hoffer, M.D., Ph.D.

THE ENZYME CONNECTION

5,000 Known Enzymes: 3 Groups

- **Metabolic Enzymes (Breathing, Talking, Walking, Immune System, Metabolism, Thinking, Vision, Hearing, etc.)**
- **Digestive Enzymes: Assembled Primarily by Pancreas**
- **Food Enzymes: Initiate Digestion in Mouth and Stomach**

Fermented Vegetables Sauerkraut, Kimchi, Relishes, Chutneys





VEGETABLES OF THE CROSS

CRUCIFEROUS VEGETABLES

◇RADISH

◇BROCCOLI

◇KALE

◇CABBAGE

◇CRESS

◇CAULIFLOWER

◇KOHLRABI

◇MUSTARD

◇RUTABAGA

◇TURNIP

◇BRUSSEL SPROUTS

◇HORSERADISH

CRUCIFEROUS VEGETABLES

Anti Cancer Compounds: chlorophyll, dithiothiones, flavonoids, indoles, isothiocyanates, phenols (caffeic & ferulic acids),
Vitamins C & E

“Number One” Vegetables in Protecting Against Cancer
(Univ. of Minnesota, SUNY-Buffalo, John Hopkins, NCI)

- Stimulates Production of Antibodies
 - Powerful Detoxifiers
 - ◊ Glutathione
 - ◊ Enzymes that attach Glutathione

Affect cancers of: colon, rectum, esophagus, larynx, prostate
and bladder

Eating Cruciferous Vegetables

- University of Hawaii: 1600 Men
 - Cut Prostrate Cancer Risk 40%
 - Cut Colorectal Cancer by 50+%
- Harvard University
 - Cut Bladder Cancer by 50%
- Vanderbilt University: China Study
 - 50% Reduction in Breast Cancer

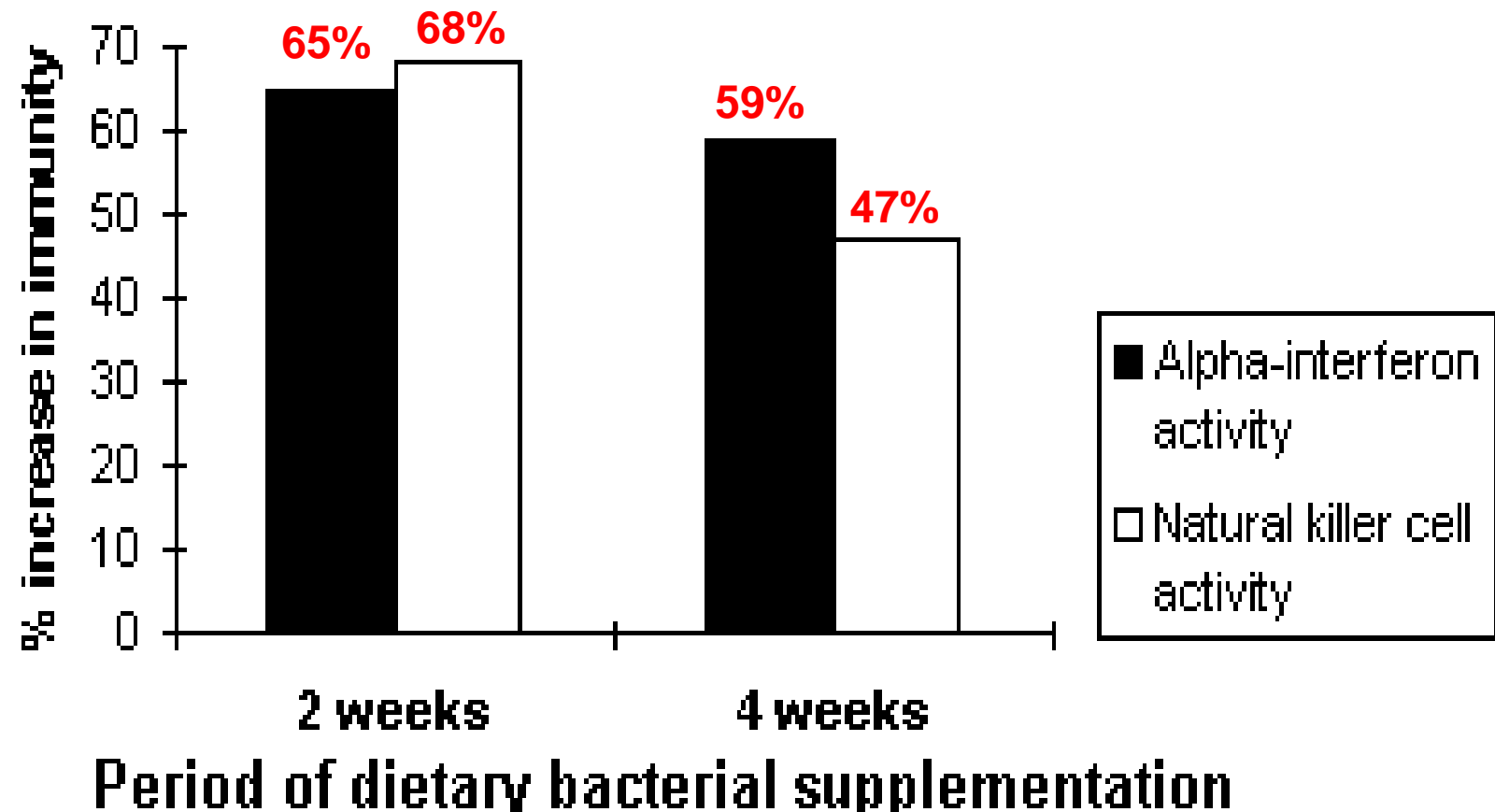
I3C (INDOLE 3 CARBINOL)

- Inhibits Growth of Estrogen- Receptor Positive Breast Cancer Cells by 90% vs. Tamoxifen @ 60%
- Stops Human Cancer Cells From Growing (54-61%) and Initiated Apoptosis
- Increases Conversion of Estradiol to Estriol by 50% in (1) Week (12 Subjects)
- Prevented Aflatoxin Induced Liver Cancer, Leukemia, Colon Cancer & Chemically Induced Breast Cancer 70-96% (Lab Rats)
- Restores p21 and Other Proteins That Correct Adducts (Tamoxifen No Effect)
- Hoechst Marrion Roussel: New Generation of Indole Drugs to Replace Estrogen Drugs
- Dose 200 mg 2-4x / Day As Per Body Wt.

BACTERIOCINS ISOLATED FROM DIFFERENT LACTOBACILLUS SPECIES

Substance	Producing species	Substance	Producing species
Acidolin	L. acidophilus	Lactolin	L. plantarum
Acidophilin	L. acidophilus	Plantaricin B	L. plantarum
Lactacin B	L. acidophilus	Lactolin 27	L. helveticus
Lactacin F	L. acidophilus	Helveticin J	L. helveticus
Bulgarin	L. bulgaricus	Reuterin	L. reuteri
Plantaricin SIK-83	L. plantarum	Lactobrevin	L. brevis
Plantaricin A	L. plantarum	Lactobacillin	L. brevis

Effect of Dietary *L. brevis* on the Immune System Response



Encyclopedia of Fermented Fresh Milk Products

An International Inventory of
Fermented Milk, Cream, Buttermilk,
Whey, and Related Products

Joseph A. Kurmann
Jeremija Lj. Rašić
Manfred Kroger

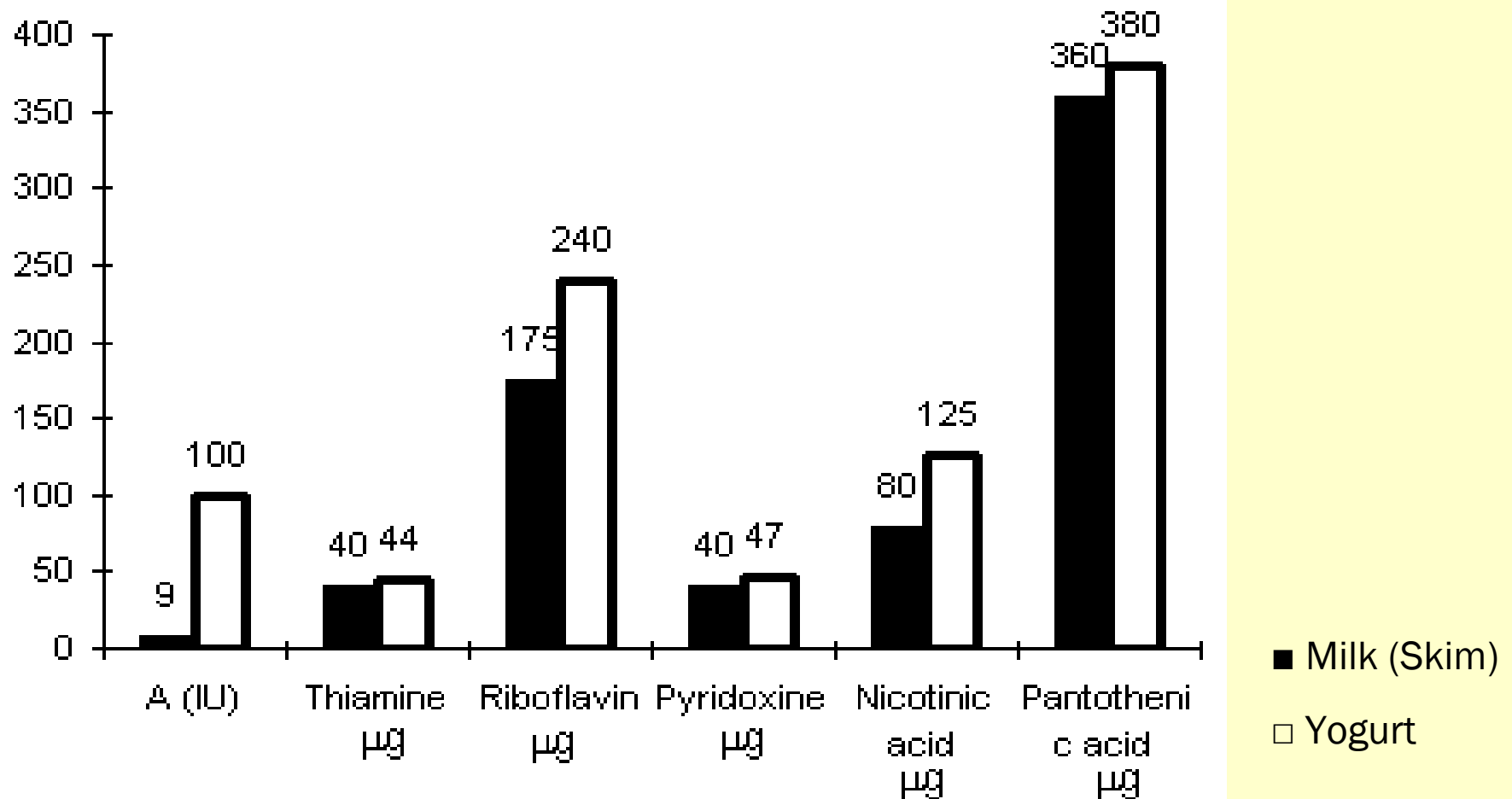
- Clabbered Milk
- Buttermilk
- Cheese
- Kefir
- Yogurt
- Sour Cream

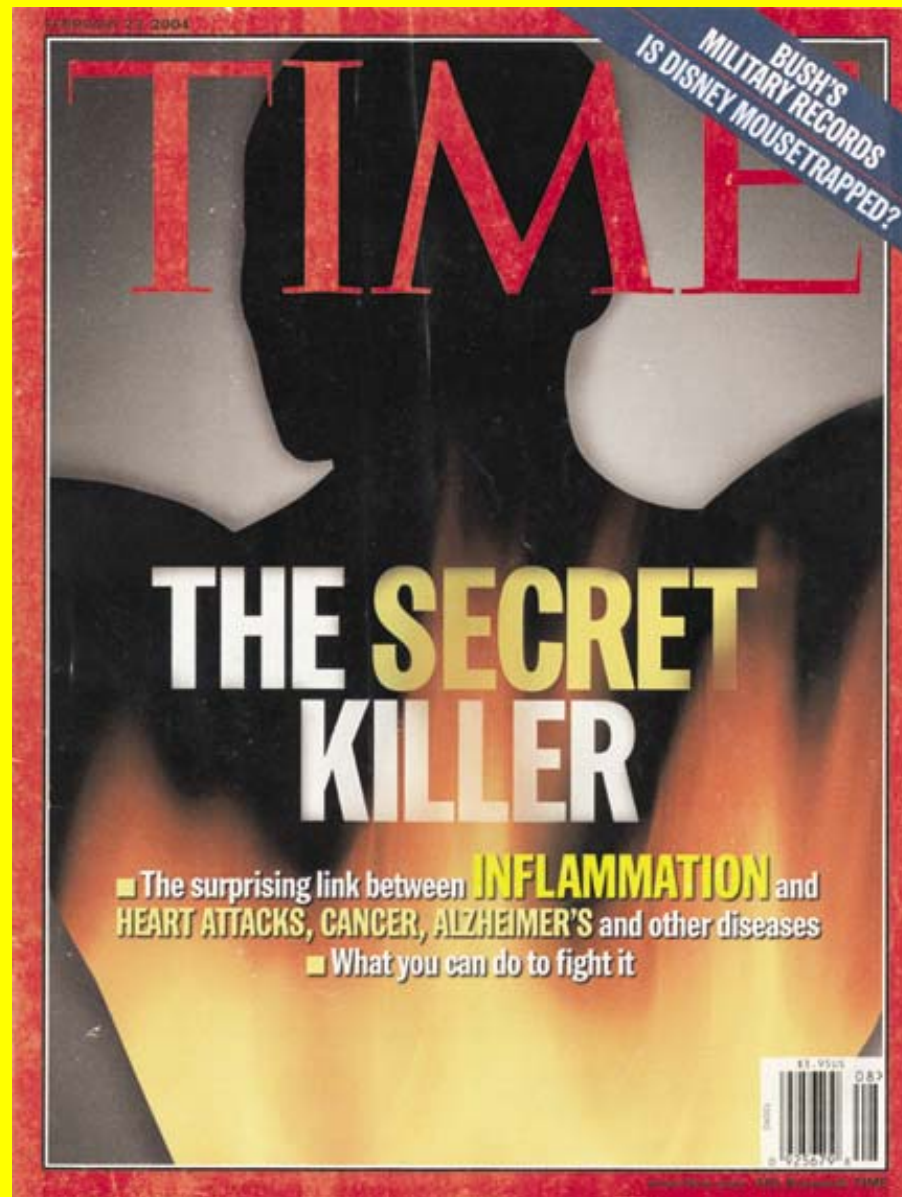
Enhanced Nutrient Content of Selected Dairy Foods (Fermentation)

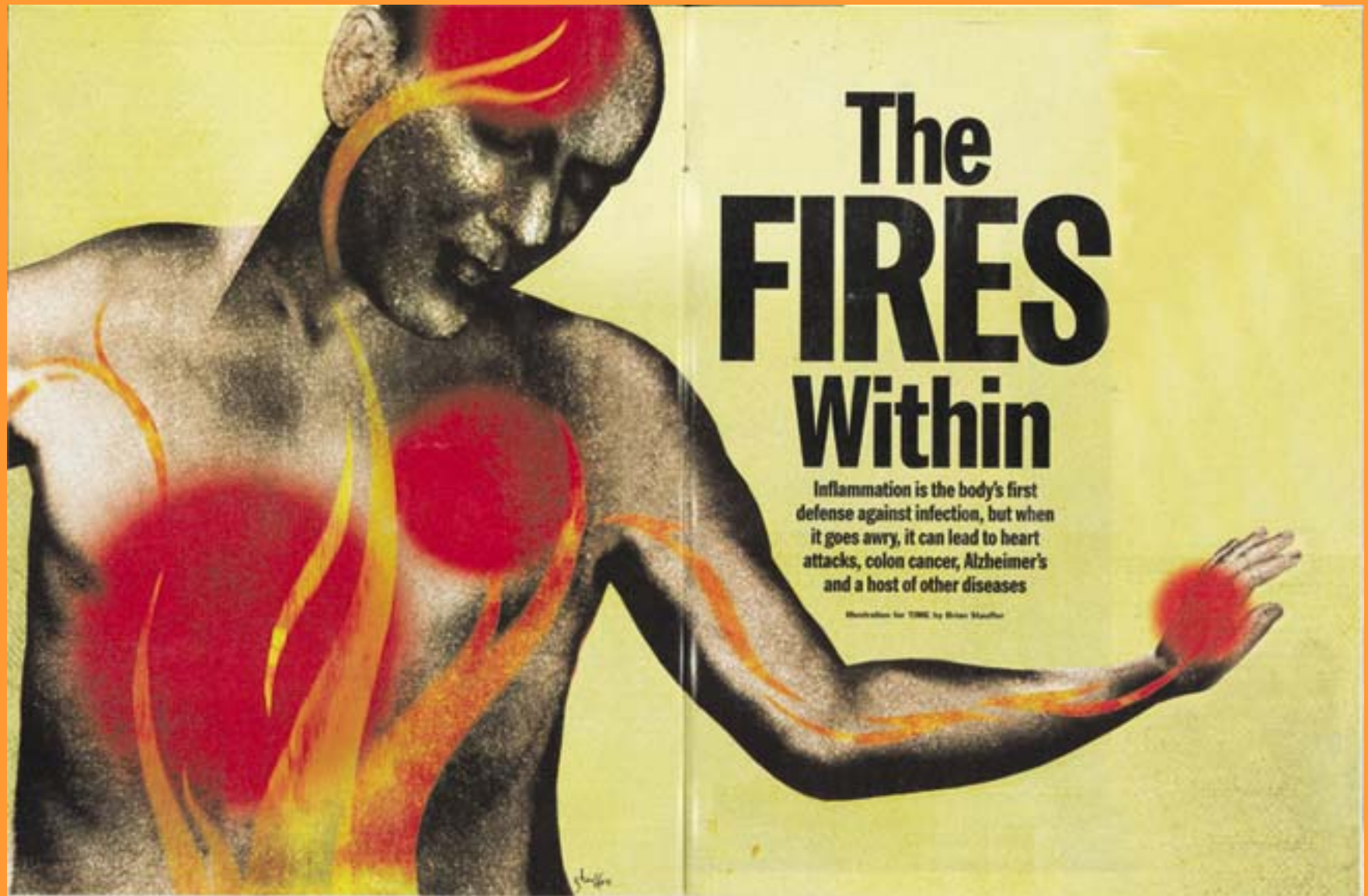
Fermentation = Exogenous Digestion, or Pre-Digestion

Original Food	Fermented/Cultured Food	Increased Nutrition
Milk	Cheddar Cheese	Vitamin B1, 3X
Milk	Cottage Cheese	Vitamin B12, 5X
Milk	Yogurt	Vitamin B12, 5-30X
Milk	Yogurt	Vitamin B3, 50X
Skim Milk	Low-fat yogurt	Vitamin A, 7-14X

Vitamin Content of Milk & Yogurt







The FIRES Within

Inflammation is the body's first defense against infection, but when it goes awry, it can lead to heart attacks, colon cancer, Alzheimer's and a host of other diseases

Illustration for TIME by Brian MacPhee

INFLAMMATORY CYTOKINES

(Vioxx or Celebrex??!!)

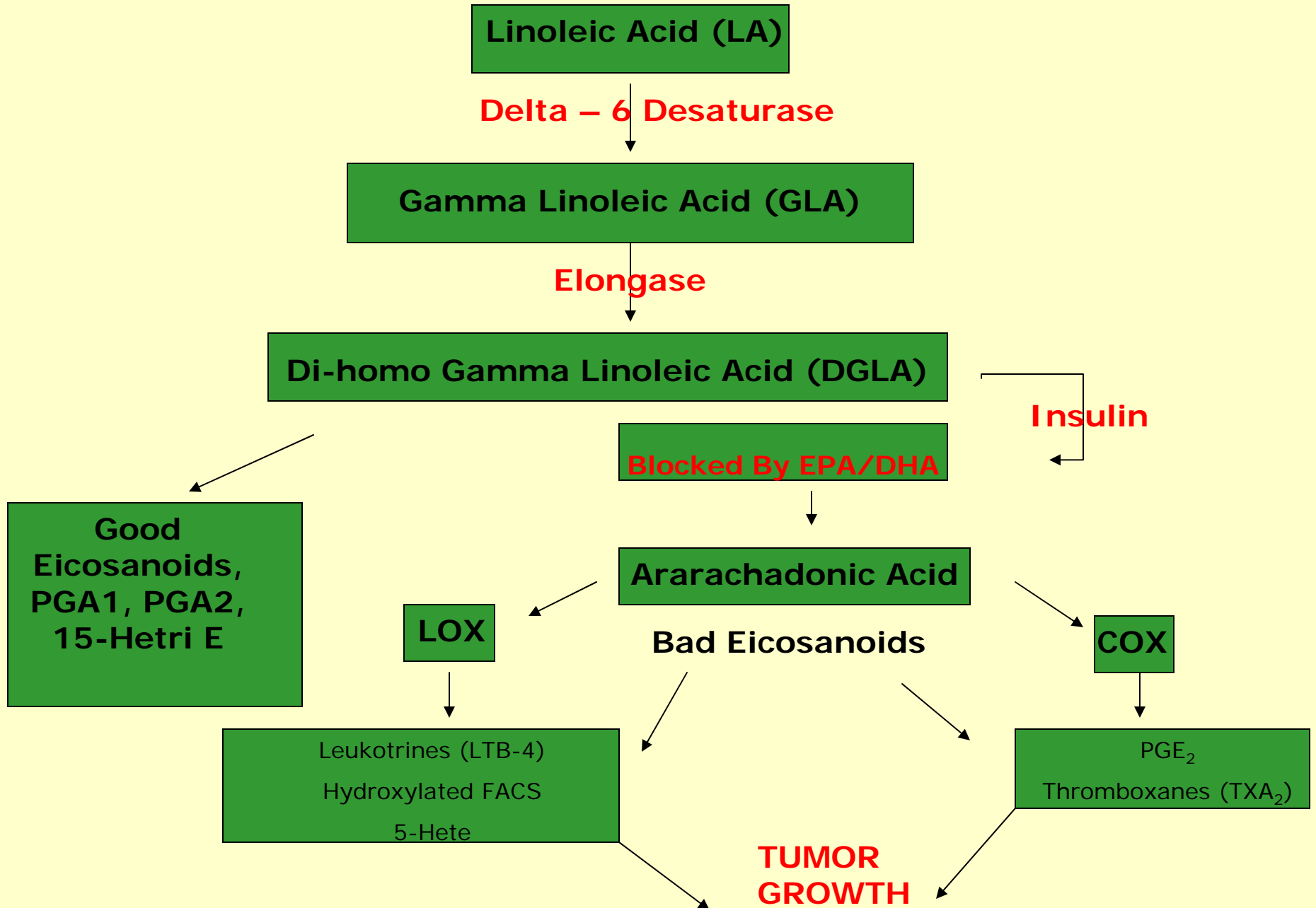
- Tumor Necrosis Factor-alpha (TNF-a)
 - Interleukin 1-beta (IL-1b)
 - Interleukin 6 (IL-6)
 - Interleukin 8 (IL-8)
- Nuclear Factor Kappa B (NF-kB)

INFLAMMATORY CYTOKINES

(Vioxx or Celebrex??!!)

- Result of Excessive Insulin (Sugar!)
- Result of Excessive Omega 6's (Grain)
- Result of Deficiency of Omega 3's

INFLAMMATORY EICOSANOIDS & ENZYMES



Percentage of Essential Fatty Acids in Human Body Fat (1991-1992)

Society	% Omega-6	% Omega-3	Ratio
New Zealand Maori	2.6	0.93	2.8:1
Japanese	14.8	3.2	4.6:1
American	10.2	0.58	17.6:1

(Source: Erasmus, 1993)

OMEGA 3 FATTY ACIDS IN FRESH SEAFOOD (mg/3½ oz raw)

Roe, Fin Fish	2345 mg
Atlantic Mackerel	2299 mg
Pacific Herring	1658 mg
Atlantic Herring	1571 mg
Pacific Mackerel	1441 mg
Sable Fish	1395 mg
Chinook King Salmon	1355 mg
Spanish Mackerel	1341 mg
Whitefish	1258 mg

Blue Fin Tuna	1173 mg
Sockeye Red Salmon	1172 mg
Pink Salmon	1005 mg
Greenland Turbot	919 mg
Shark (Mixed)	843 mg
Ohio Silver Salmon	814 mg
Blue Fish	771 mg
Striped Bass	754 mg

NUTRITIVE VALUE OF OMEGA EGGS

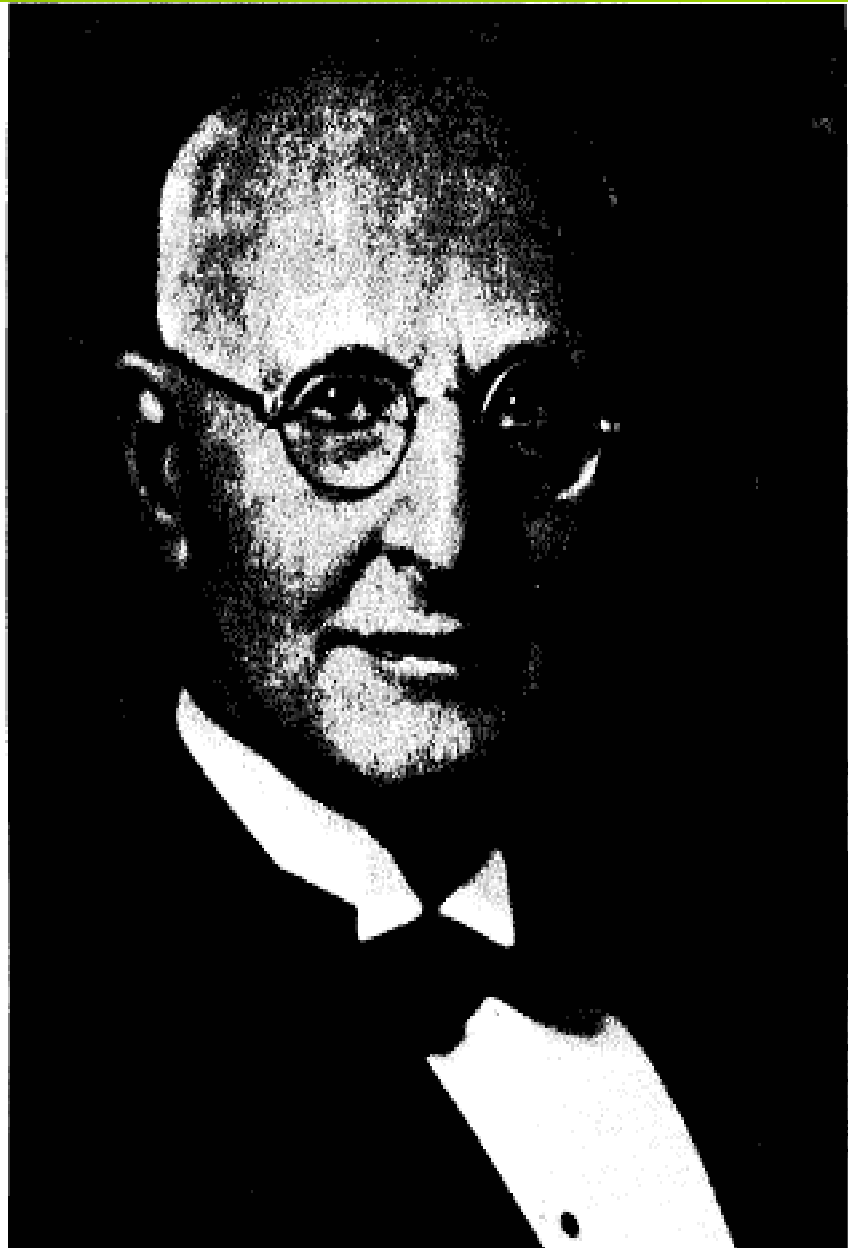


	Omega Egg 60 g – large egg	Standard Egg 60 g – large egg
Calories	75.0	75.0
Protein	6 grams	6 grams
Carbohydrate	.6 grams	.6 grams
Total Fat	6.0 grams	6.0 grams
Saturated Fat	1.5 grams	2.2 grams
Polyunsaturated Fat	1.35 grams	.90 grams
n-6 Fatty Acids	750 mg	800 mg
n-3 Fatty Acids	350 mg	60 mg
C18:3	250 mg	40 mg
C22:6 DHA	100 mg	20 mg
n-6:n-3 Ratio	2.6	13.0
Monounsaturated Fats	2.8 grams	2.4 grams
Cholesterol	180 mg	210 mg
Vitamin A	660 i.u.	470 i.u.

COMPARED TO STANDARD EGGS

Lutein
 Carotene
 Vitamin E
 Cysteine
 Choline

} ?



Nutrition and Physical Degeneration

6th Edition

Weston A. Price, D.D.S.

With forewords to previous editions by
Earnest A. Hooten, Professor of Anthropology,
Harvard University,
Granville F. Knight, M.D.
and Abram Hoffer, M.D., Ph.D.

Nutrients in Traditional Diets

Compared to 20th Century Western Diets (Numbers Represent Percentage Greater in Traditional Diets)

	Calcium	Phosphorous	Magnesium	Iron	Fat-Soluble Vitamins
Eskimo	540%	500%	790%	150%	1,000+%
Swiss	370	220	250	310	1,000+
Gaelics	210	230	130	100	1,000+
Australian Aborigine	460	620	170	5,060	1,000+
New Zealand Maori	620	690	2,340	5,830	1,000+
Melanesians	570	640	2,640	2,240	1,000+
Polynesians	560	720	2,850	1,860	1,000+
Peruvian Indians	660	550	1,360	510	1,000+
African (cattle raising)	750	820	1,910	1,660	1,000+
Africans (agricultural)	350	410	540	1,660	1,000+

(Source: Price, 1938)

LOS ANGELES TIMES



JANUARY 13, 2004

In some respects, the marine diet has made the Inuit among the world's healthiest people.

Beluga whale meat has 10 times the iron of beef, twice the protein and five times the Vitamin A.

Omega 3 fatty acids in the seafood protect the Inuit from heart disease and diabetes. Seventy-year-old Inuit men have coronary arteries as elastic as those of 20-year-old Danes, said Dr. Gert Mulvad of the Primary Health Care Clinic in Nuuk.

Government officials and doctors fear that Inuit will switch to imported processed foods loaded with carbohydrates and sugar, risking malnourishment, vitamin deficiencies, heart disease, diabetes and obesity. "The level of contamination is very high in Greenland, but there's a lot of Western food that is worse than the poisons,"

Eel	4700 IU
Pilchard	1500 IU
Sardines, fresh	1500 IU
Herring, fresh	1500 IU
Red Salmon	800 IU
Pink Salmon	500 IU
Mackerel	500 IU
Chinook Salmon	300 IU
Herring, canned	225 IU
Chum Salmon	200 IU
Tuna	200 IU
Milk	100 IU

FOODS HIGH IN VITAMIN D

IU/3½ OZ.

Cream & Butter?!

Lard?!

Vitamin D

- Made to be constructed by sunlight
- UVB 290-320 nanometers →
- 7-Dehydrocholesterol → Calcitriol
- Surplus from kidney: potent hormone turns genes on and off
- Calcitriol: potent anti-cancer agent
- Blood Disease
- Down Regulates C-Reactive Protein

Some Beneficial Constituents in Butter

(Source: Fallon, 1995)



Benefit	Description
Wulzen (anti-stiffness) factor	Protects against degenerative arthritis, hardening of the arteries & cataracts
Short & Medium Chain Fatty Acids	About 15% of butterfat. Absorbed directly by the small intestine without emulsification by the bile. Antimicrobial, anti-tumor, immune stimulating, antifungal
Conjugated Linoleic Acid	Anticancer
Glycosphingolipids	Protect against gastrointestinal infections
Trace Minerals	Chromium, iodine, manganese, selenium & zinc

Brain Health

- Brain is 60% Fat
- In 1993 (1) Child in 10,000 with Autism
- In 2005 (1) Child in 166 with Autism
- Rate Increase From 0.01% to 0.60% (60X Increase)

Fisheries & The Ocean

- British Medical Journal (March, 2006)
 - Do Not Have a Sustainable Supply of Omega 3 Fats- **NOT ENOUGH FISH!**
 - “The End of the Line” by Charles Clover
 - Decimation of North Sea Cod, Mediterranean Tuna
 - Fish Fed to Cattle, Pigs, Poultry
 - Fish Farms Consume **2 X Fish as They Produce!**
 - 2003 Study by Ransom Myers, Boris Worm
 - Global Stocks of Predatory Fish **Declined 90%**
 - E.U. Fleets Subsidized to Steal Protein From African Coastline
 - Omega 3/Omega 6 Contribution:
 - Magno cellular Neurons (Visual Perception) Information Connectors (Dyslexia)
 - Depression, Dementia, Chronic Fatigue, ADHD, Dyspraxia More Associated with **Deficiency of EFA's**

EFA Ratio of Tissue Composition

Tissue	% of Total B.W.	Omega 6	Omega 3
Brain/Nervous System	3	1	1
Skin	4	1000	1
Organs & Other Tissues	9	4	1
Adipose Tissue	15-35	22	1
Muscles	50	6.5	1

Note: Heat Destroys Both Omega 6 & Omega 3!

Linoleic Acid

Omega 6 \longrightarrow A.A. \longrightarrow Prostacyclin

Arachadonic acid **Anti-aggregate**

Omega 6 \longrightarrow PGE₁ (Anti-Inflammatory)

Omega 6 \longrightarrow PGE₂ (Inflammatory)

Omega 6 \longrightarrow GLA (Gamma-Linolenic Acid)

Omega 6 \longrightarrow CLA (Conjugated Linoleic Acid)

Omega 3 \longrightarrow PGE₃ (Anti-Inflammatory)

Omega 3 \longrightarrow EPA/DHA

Arachadonic Acid

Another “Good vs. Bad Cholesterol” Kind of Story?

1. AA is a Precursor of Prostacyclin
2. AA is a Compound of Cell Membranes
3. AA is a Component of Endothelial Phospoglycerides

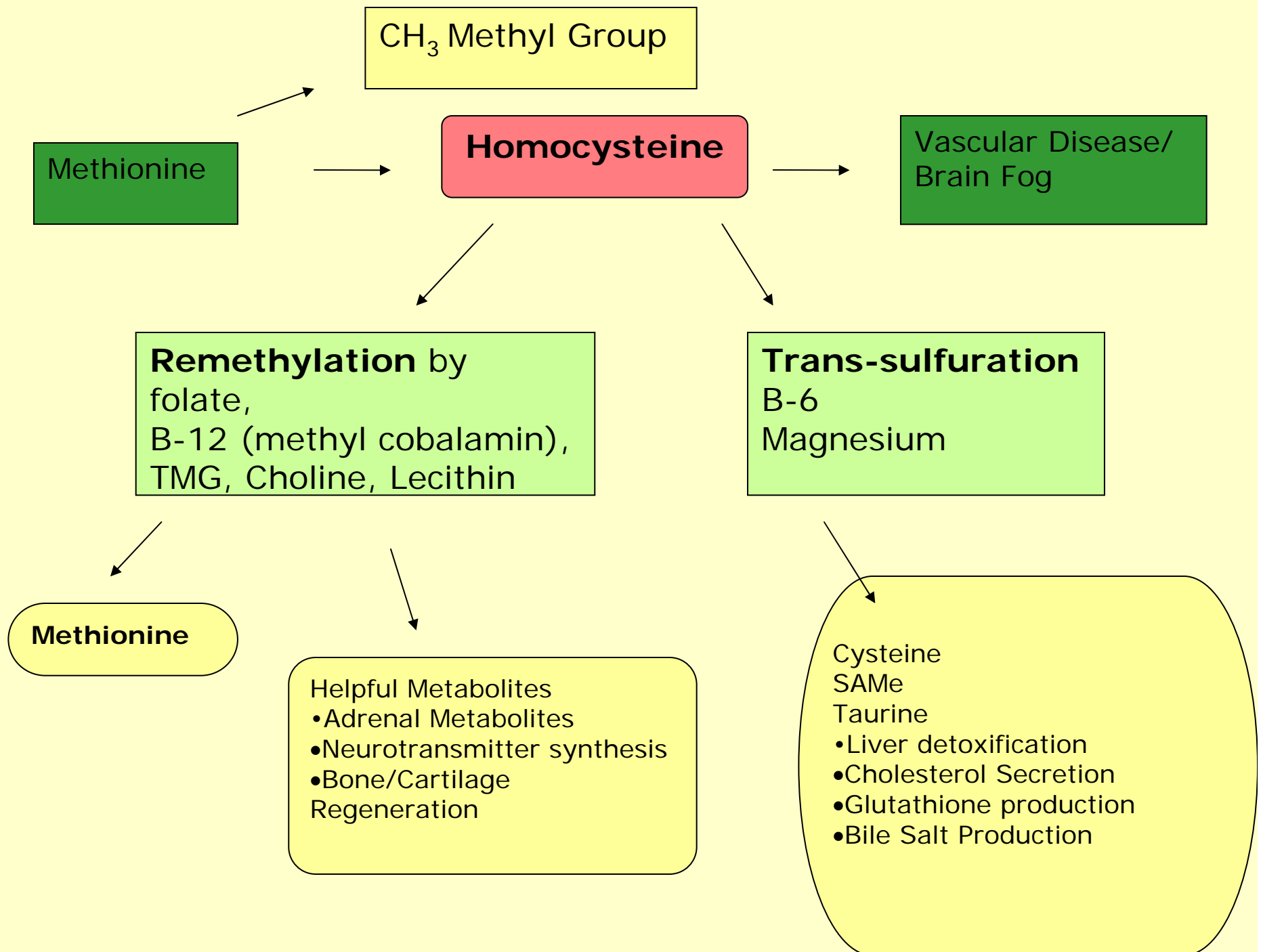
- Bruising, infection, inflammation →

Releases “Free AA” → Oxidation →

PGE₂ → Vasoconstriction and Thrombosis
to Repair Damage

Homocysteine

- Damages endothelium: creates sites for cholesterol and fat deposits
- Tendency for blood clots (stroke)
- Oxidation of cholesterol (oxysterol)
- Collagen damage
- Eye abnormalities
- Pulmonary embolism
- CNS damage (Alzheimer's)



Supplements to Reduce High H.C

Vitamin B-6	100 mg
Vitamin B-12	1000 mcg-2000 mcg (Consider I.M.)
Folic Acid	5000 mcg-15,000 mcg
Zinc (Chelated)	30-40 mg
Tri-Methyl Glycine	5000 mg-10,000 mg
Choline	500 mg
Seanol	100 mg

Douse the Inflammation

- Cardinal Rules
 - Eliminate/Reduce Sugar & Carbs
 - Eliminate all Vegetable Oils (Omega 6)
 - Exercise at least 30 minutes/day, 3-5 times/week, preferably more
 - No processed foods (transfats, dyes, preservatives)
 - Drink adequate water
 - Moderate alcohol
 - Relaxation/yoga/meditation
 - Adequate Rest
 - Leisure activities that please the heart and coax the mind
 - Nourishing (aka “nurturing” relationships)
 - Body Work: acupuncture, massage, chiropractic
 - Diet

Douse the Inflammation (Con't)

- Foods
 - Jerry's Juice
 - Jerry's Smoothie
 - Wild Salmon/Sablefish/Sardines
 - Organic Free Range Eggs
 - Grass-fed Raw Milk
 - Eat the vegetable rainbow
 - Grass-fed butter
 - Coconut Oil
 - Palm Kernel Oil
 - Raw Extra Virgin Olive Oil
 - Grass-fed Poultry and Beef
 - Green Drinks
 - Walnuts
 - Freshly ground flaxseed for lignans, fiber, omega 3
 - Allium vegetables: garlic, onion (quercetin), leeks, scallions
 - Preferably Soaked grains: Brown rice, millet, oats, amaranth, buckwheat

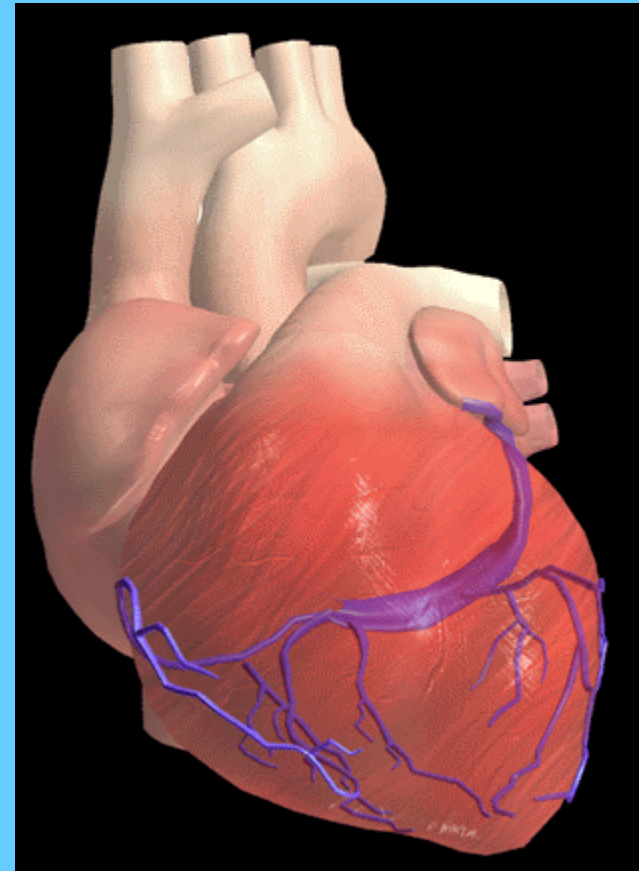
Heart Attacks Per 100,000 People

Country	Rate	Fat in the Diet
Japan	34	Low fat, high fish consumption
France	58.6	High fat, high butter consumption
Italy	94.7	High fat, high olive oil consumption
United States	170	High fat, low fish, butter & olive oil consumption

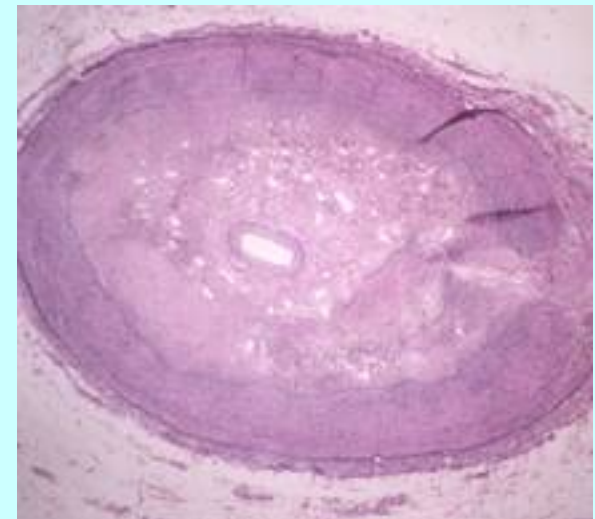


REASONS FOR CARDIO DISEASE

- **Free radical damage (e.g. oxidized vegetable fats)**
- **Deficiency of anti-oxidants**
- **Virus**
- **Homocysteine, (deficiency of vitamins B-6, B-12, folic acid, and choline)**
- **Poor thyroid function (iodine, trace minerals, and fat soluble vitamin deficiencies)**

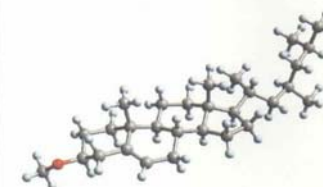


ANALYSIS OF ARTERIAL PLAQUE FAT



- 25% fat is saturated
- 75% fat is polyunsaturated
- Heart attack incidence in 1900 was a fraction of 2002
but blood cholesterol has remained constant

**The
Cholesterol Myths**
EXPOSING THE FALLACY
THAT SATURATED FAT AND CHOLESTEROL
CAUSE HEART DISEASE



Uffe Ravnskov, MD, PhD

CHOLESTEROL & DIET

Comparison of Sexagenarians' Diets

Masai	Meat, animal fat, milk, butter	140 mg/100 gms
Trappist Monk	Vegetarian, eggs, milk	190 mg/100 gms
Thai	Unpolished rice, fish, vegetables	140 mg/100 gms
Japanese	Polished rice, fish, vegetables	165 mg/100 gms
American	60% calories from sugar, saturated fat	270 mg/100 gms
	Reduce to low fat, unsaturated	232 mg/100 gms
Vilhjalmur Stefannson (80% calories=saturated fat)	18 months all meat diet	192 mg/100 gms

CHOLESTEROL'S VITAL IMPORTANCE

- Necessary to synthesize Vitamin D (needed for mineral absorption, insulin production, healthy nerves)
- Synthesis of bile salts
- Production of hormones (anti-stress & sex hormones)
- Cell membrane elasticity & strength
- Anti-oxidant
- Necessary for brain & nerve development
- Serotonin availability to brain

High-ORAC Fruits

FRUIT	ORAC SCORE
Blueberries	2,4000
Blackberries	2,036
Strawberries	1,540
Raspberries	1,220
Plums	949
Oranges	750
Red Grapes	739
Cherries	670
Kiwi Fruit	610

THE GRAPE CURE



Tannins

Caffeic Acid

Resveratrol

Grapes & Japanese Knotweed

- Phytoalexins: Protects Against Plant Diseases, Climatic Stress
 - Blocks Progression of Estrogen Related Cancers
 - Inhibits Metastasis
 - Maintains Normal Estrogen Activity
 - Inhibits, Even Kills Development of Cancer Cells in All Three Phases: Initiation, Promotion, Progression
 - Effective Against Development of Amyloid Beta Protein Deposits in Alzheimers
 - Increases Nitric Oxide to Relax Blood Vessels
 - Reduces Abnormal Blood Clots & Blockages
 - Inhibits COX-2 Inflammatory Response
 - 70% Lower in Grapes Treated with Fungicides

Muscadine Medicine

by Hartle, Greenspan, & Hargrove

- Ellagic Acid
- Quercetin
- Resveratrol
- Anthocyanadins
- Cyanadin
- OPC's (Oligomeric Procyanoadins)
- Tartaric Acid
- Caffeic Acid
- Chlorogenic Acid
- Peonidin
- Coumaric Acid
- Cinnimic Acid
- Delphinidin
- Epicatechin
- Petunidin
- Gallic Acid
- Geraniol
- Vitamin C
- Myricetin
- Kaempferol
- Malvidin

Polyphenols Block Telomerase Enzymes

Telomeres = Communicate Chromosomal Longevity



Blueberries

USDA Human Nutrition Center: #1 Rank in Anti-Oxidant Activity vs 40 Fruits & Vegetables

- Anthocyanin (Blue Pigment)
- Protection From Urinary Tract Infection
- Prevents Brain Damage From Strokes
 - Reduce LDL
- Prevents/Reverses Macular Degeneration
- Vitamins A, C, Zinc, Potassium, Iron, Calcium & Magnesium
 - High in Fiber
- Anti-Bacterial/Viral (Especially G.I. Tract)

Strawberries



- **USDA Human Nutrition Center: Rank #2 in Anti-Oxidant Activity vs. 40 Fruits & Vegetables**
- **Richest Berry in Vitamin C**
- **High in Anthocyananins & Ellagic Acid**
 - **Inhibit Oxidation of LDL**
- **High in Folic Acid, Potassium**



Raspberries

- **High in Ellagic Acid- Anti Cancer**
- **High in Coumaric & Ferulic Acid**
- **Rich in Pectins (Lowers Cholesterol)**
- **Protective Against Esophageal Cancer**



Cranberries

- Bacterial Anti-Adhesion (Mannose)
 - Urinary Tract Infections
 - Tooth Decay & Gum Disease
 - Stomach Ulcer
- Inhibits the Growth of Cancers:
Prostrate Colon Cervix Breast Lung Leukemia
- Lowers Total Cholesterol/Raises HDL
- Richest Berry in Phenols



Apples

- 30% Reduced Risk of Asthma (U.K.)
- Very High Levels of Quercetin
- Anti-Oxidant/Bioflavonoid
- Rich in Trace Elements (Including Selenium)



The Healing Power of a Wholesome Diet for Tumor Patients

By

Jeanne M. Wallace, Phd, CNC

www.tbts.org

Anti-Oxidant Capacity of Selected Fruits, Vegetables and Spices in ORAC (oxygen radical absorbing capacity) UNITS

- | | |
|--------|---|
| >3000 | Blueberries |
| > 2000 | Oregano, pomegranate juice, figs, cinnamon |
| > 1000 | Prunes, pomegranates, turmeric, raspberries, blackberries, Brussels sprouts, green tea, strawberries, spinach, kale |
| > 500 | Oat bran, oranges, plum, red cabbage, cranberries, broccoli, parsley beets, basil |

Sambuca (Elderberries)



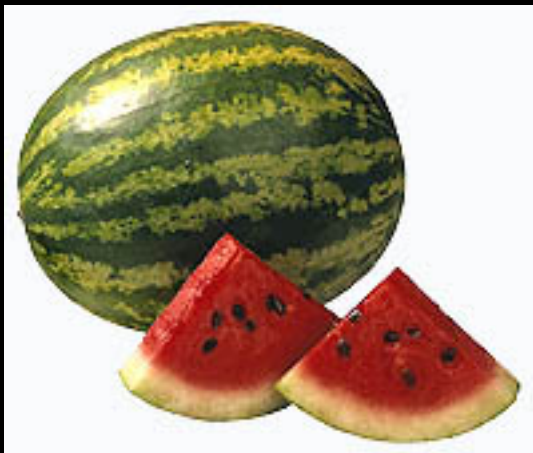
Norwegian Study

Types A & B Flu
Recovery

3.1 days (treated)

vs.

7.1 days (placebo)



Lycopene du Jour

High-ORAC Vegetables

VEGETABLE	ORAC SCORE
Kale	1,770
Spinach	1,260
Bean sprouts	980
Brussels sprouts	980
Alfalfa sprouts	930
Broccoli flowerets	890
Beets	840
Red bell pepper	710

Good Sources of Antioxidants

Beta-Carotene

Food	Serving Size	Amount (mg)	% of RDA
Squash	½ cup	16.1	54
Carrots	½ cup	12.2	41
Kale	½ cup	8.2	27
Mustard greens	½ cup	7.3	24
Spinach	½ cup	4.4	15
Brussels sprouts	½ cup	3.4	11
Sweet potato	1 medium	2.9	10

No Established RDA: between 10 and 30 mg/day recommended

Good Sources of Carotenoids (New York Times 2/21/95)

FOOD	mcg
Tomato juice	23,564
Kale, cooked	22,610
Collard greens, cooked	18,445
Spinach, cooked, drained	15,385
Sweet potato, cooked	12,848
Swiss chard, cooked	12,488
Watermelon	12,166
Spinach	12,156
Carrots, cooked	11,696
Pumpkin, canned	10,710

Good Sources of Antioxidants Vitamin C

Food	Serving Size	Amount (mg)	% of RDA
Papaya	1 medium	188	313
Cantaloupe	½ medium	113	188
Chili pepper	½ cup	109	182
Green bell pepper	1 medium	95	158
Strawberries	1 cup	85	142
Oranges	1 medium	70	117
Kale	½ cup	51	85
Broccoli	½ cup	49	82
Grapefruit	½ medium	41	68
Cauliflower	½ cup	34	57
Potato (baked)	1 medium	26	43
Cabbage	½ cup	17	28

RDA: 60 mg

Good Sources of Antioxidants Vitamin E

Food	Serving Size	Amount (mg)	% of RDA
Wheat germ	1 cup	20.5	205
Sunflower seeds	1 ounce	14.8	148
Almonds	1 ounce	7.0	70
Kidney beans	½ cup	5.5	55
Pinto beans	½ cup	4.4	44
Peanuts	1 ounce	3.1	31
Mango	1 medium	2.7	27
Asparagus	½ cup	1.8	18
Wild rice	½ cup	1.8	18
Salmon	3 ounces	1.6-1.8	16-18
Mackerel	3 ounces	1.5	15
Brown rice	½ cup	1.2	12
Cod	3 ounces	0.8	8
Shrimp	3 ounces	0.6-3.5	6-35
Pear	1 medium	.83	8.3
Apple	1 medium	0.4	4
Seven grain bread	1 slice	0.3	3
Wheat	1 cup	0.3	3

RDA: 10 mg/day

Salicylic Acid

- Found in Most Fruits & Vegetables
- Needed for Senescence, Insect & Disease Protection in Plants
- Anti-Clotting, Anti-Inflammatory without Side Effects of Stroke, G.I. Bleeding
 - Organic Vegetables 6X More S.A. than Non-Organic
 - Contributes to Lower CRP From Mediterranean Diet

Salicylic Acid-Rich Fruits

- Raisins
- Prunes
- Raspberries
- Apricots
- Blackberries
- Boysenberries
- Cantaloupe
- Cherries
- Cranberries
- Currants
- Dates
- Guava
- Grapes
- Loganberries
- Oranges
- Pineapples
- Plums
- Strawberries

Salicylic Acid-Rich Vegetables

- Broccoli
- Chili Peppers
- Cucumbers
- Okra
- Spinach
- Squash
- Sweet Potatoes
- Canned Tomatoes
- Tomato Paste/Sauce
- Green Peppers
- Radishes
- Zucchini

Supplements for Inflammation

- Omega-3 Oils
- GLA
- Flax Seed Oil with Cottage Cheese
- Curcumin with Bioperine
- Resveratrol
- Cod Liver Oil
- Juice Plus; Orchard Blend; Garden Blend; Vineyard Blend
- Gamma Tocopherol
- Tocotrienol Complex
- Selenium (Selenoexcell or Se MSC)
- Ester C
- Zinc
- Magnesium
- Seanol

Thyroid

- T-4 (thyroxine): 93% of thyroid secretion
- T-3 (iodothyronine): 7.0% of thyroid secretion
- Conversion of T-4 to T-3: 100% in healthy individuals
- Calcitonin: blood calcium levels
(parathyroid = PTH + Calcitonin)

Barnes Basal Temperature Test

- **Upon wakening, before leaving bed**
- **T-3 deficiency: $< 97.8^{\circ}\text{F}$**
- **Record time, date & temperature, daily for 2 weeks**

Iodine Deficiency Test

- Paint 2" square of tincture of iodine on skin.
Check the length of time stain remains.
(Ideal = 24 hours)

Supplemental Regimen

- Iodine
- Selenium
- Tyrosine
- Melatonin
- DHEA
- Vitamin A (as retinol)
- Magnesium, zinc, manganese, copper, molybdenum, B-complex
- Thyroid Formula
- Rx: Amour

Anti-Nutrients for Thyroid

- Fluoride- water
- Chlorine- water
- Bromine- fire retardants, dough, conditioner, water treatment
- Heavy Metals- cadmium, lead, mercury, aluminum
- Medication- Prozac, SSRI, Lithium, etc
- Nitrates
- Goitrogenic Foods: Soy, peanuts, millet, brassicas (cook or ferment)



RAW MILK

*Health
Benefits & Safety*

THE MILK CURE -1866

Phillip Karel M.D.

Treated Hundreds of Cases of Asthma,
Neuralgia, Liver Disease, Edema.

- Treatment Consisted Of Only Milk
- “On the Milk Cure” - Published in
“Edinburgh Medical Journal”
- 2-6 oz. of Milk Consumed Every ½-1
Hour

CHARLES SANFORD PORTER M.D.- 1905

“Milk Diet as a Remedy for Chronic Disease”

11 Editions up to 1923

“At least 18,000 patients have taken the treatment under my direction in the last 37 years”

- Treatment was minimum of four weeks
- Average of 2-4 Quarts/Day of Exclusively 4% B.F. Milk
- Success With: Diabetes, High Blood Pressure, Fatigue, Skin Disorders, Poor Digestion, Pleurisy, Ringing in Ears, Constipation, Asthma, Allergies, Hemorrhoids, Insomnia, Ulcers, Colitis. Goiter, Malaria, Arteriosclerosis, Gout, Gallstones, Liver Disorders, Kidney Disease, Early T.B.

THE MAYO FOUNDATION



J.E. CREWE, M.D – FOUNDER

“RAW MILK CURES MANY
DISEASES”

Published in 1929

“For 15 years,...(I) have employed the certified milk treatment in various diseases...The results obtained in various types of disease have been so uniformly excellent, that one’s conception of disease and its alleviation is necessarily changed. The method is so simple that it does not greatly interest most doctors...”

J.E. Crewe, M.D.

MAYO MILK PROTOCOL

- Milk Consumption Increased to 5-10 Quarts/Day
- Detoxification: (Sweats and Enemas)
- Bed Rest
- Especially Targeted for Tuberculosis, Cardiovascular and Renal Conditions, Hypertension and Edema

“The treatment of various diseases over a period of eighteen years with a practically exclusive milk diet has convinced me personally that the most important single factor in the cause of disease and the resistance to disease is food. I have seen so many instances of the rapid and marked response to this form of treatment that nothing could make me believe this is not so.”



*Yours for Health
Bernarr Macfadden*

BERNARR MACFADDEN

“The Miracle of Milk” – 1923

“Milk is the greatest of all diet cures. I have personally come in contact with thousands of people who have been amazingly benefited by adhering to the exclusive milk diet...I am convinced that the milk diet properly adjusted to the individual case is of tremendous value in practically any functional or organic disturbance that may affect the human body. The best milk...is good clean milk, unaltered in any way since coming from the cow.”

FRESH & FERMENTED GRASS BASED DAIRY PURE UNADULTERATED MILK (WHICH IS ALSO “RAW”)

- Fat Soluble Vitamin A “Retinol” for Immune Function and Mucosal Membrane Health
- Vitamin D: Fat Soluble Premier of Calcium Ionization; The Ultimate Alkalizer and Bone Builder
- Lactic Acid Producing Organisms
- Proteins: 22 Amino Acids Including 8 Essential
- Fats: 500 Saturated and Unsaturated Fatty Acids (Needed to Metabolize Protein & Calcium)
- Minerals: 100% Metabolically Available (Calcium, Chlorine, Magnesium, Potassium, Phosphorous, Sodium and Sulfur; 24 Trace Minerals)
- Enzymes: (35 Identified) Including Phosphatase, Lipase, Lactose, Galactose, Catalase, Diastase, and Peroxidase
- CLA: Powerful Anti-Carcinogen, Immune Augmentor 500% Higher in Pastured Cows
- Lactoferrin: Naturally Occurring Anti-Microbial Approved by FDA for Carcass Rinse to Control Salmonella

Lactoferrin

- Effective Anti-Biotic Against *H. pylori*, *Salmonella*, *E. coli*
- Increases Natural Killer Cells & Cytotoxicity of White Blood Cells
- Inhibits Angiogenesis
- Scavenges “Free Iron” Necessary for Growth of Neoplastic Cells & Microbes
- Reduced Incidence of Colon Cancer to 27% vs. Controls in Lab Rats

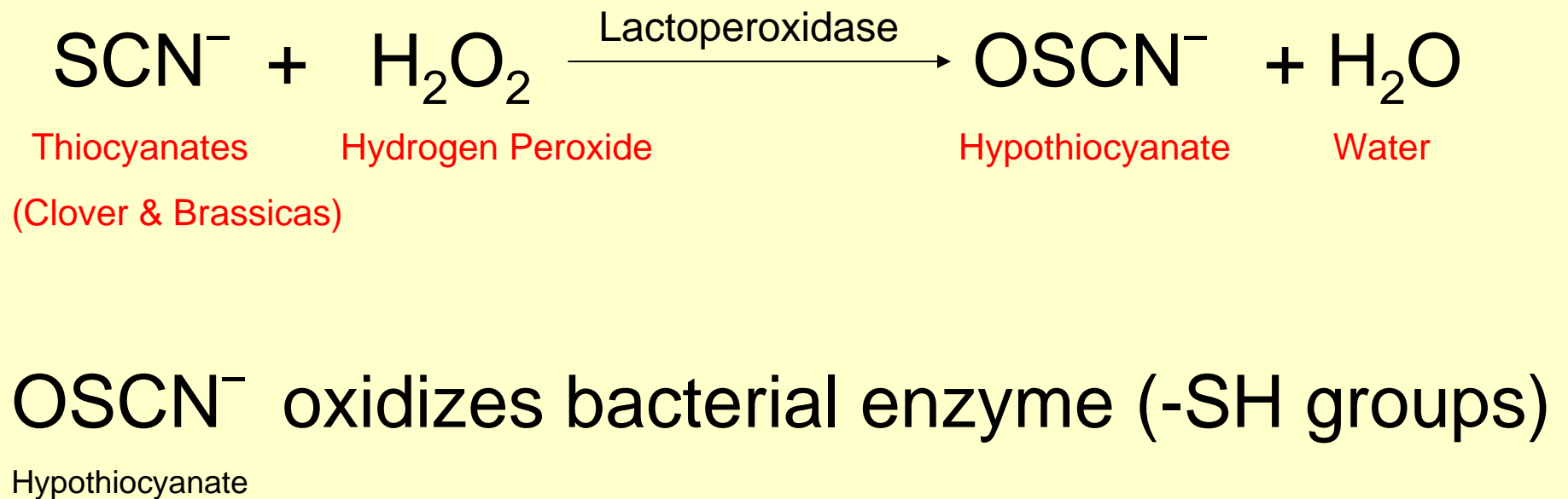
Lactoferrin

- Toxin Binding
- Platelet Binding
- Wound Healing
- Anti-Inflammatory
 - Anti-HHSV-1
- Second Most Abundant Protein in Colostrum

Lactoperoxidase

- Works synergistically with Lactoferrin
- Dental Wound Treatment
- Inhibits Human Herpes Simplex Virus-1
- Most abundant enzyme in milk (50 mg/l)
- Heat stable up to 60°C/30 minutes, or 72°C/15 seconds

Lactoperoxidase Pathway from Soil to Milk



Vitamin A Levels in Butter & Incidence of Goitre (1948)

Village in Bavarian Alps	% of Children w/ goitre (Winter 1948)	AVG. Vitamin A Butter Content From Local Farms (mcg/100 gms)
Sockering	85%	486
Wessobrunn	79%	489
Riegsee	32%	618
Aidling	13%	1015

By Haubold, "Der Kropf, eine Mangelkrankung" (1955)

Influence of Soil Fertility on Vegetable Carotenes & Blood Serum Vitamin A Of Infants

Fertilizer Applied	mg Carotene per 100 gms fresh vegetables		mg Vitamin A per 100cm ³ blood serum of infants consuming vegetables		Weight Gain (in grams) per infant per day
	Tomatoes	Carrots	Commence-ment of feeding trials	Conclusion of feeding trials	
Composted Manure	0.42	5.40	0.111	0.114	11.90
Composted Manure + NPK	0.66 (+58%)	6.64 (+23%)	0.101	0.405 (+355%)	15.27 (+28%)

Schupan (W.) Gesundes Land, Gesundes Leben 88-115 (Munich, 1953)

Biological Value of Milk

Fertilized vs. Unfertilized Pastures

South African Journal of Science, March 1962

Sole Fertility: Phosphate & Nitrogen

Sole Supplement: Salt, Bonemeal

Experiment I: Table 1: Average Composition of Whole Milk

	% Total Solids	% S.N.F	% B.F	% Total N
Fertilized pasture	13.89	8.85	5.04	0.52
Unfertilized Pasture	12.56	7.83	4.73	0.51

Biological Value of Milk

Experiment 1: Table 2: Mice Weight Gains Over 28 Days

Mouse #	Milk From Fertilized Pasture	Mouse #	Milk From Unfertilized Pasture
1	10.4 grams	6	8.3 grams
2	9.5 grams	7	5.3 grams
3	7.7 grams	8	4.0 grams
4	7.1 grams	9	0.9 grams
5	5.1 grams	10	0.2 grams
Average Total Gain	7.96 grams	Average Total Gain	3.74 grams

Biological Value of Milk

Experiment 2: Mice Weight Loss Over 28 Days			
Mouse #	Skim Milk From Fertilized Pasture	Mouse #	Skim Milk From Unfertilized Pasture
11	6.5 grams	16	11.0 grams
12	6.0 grams	17	10.5 grams
13	5.2 grams	18	9.9 grams
14	5.1 grams	19	8.4 grams
15	4.6 grams	20	8.4 grams
Average Total Loss	5.48 grams	Average Total Loss	9.64 grams

Biological Value of Milk

Experiment 3: Chickens: Food Conversion Ratio							
Chick Strain	Milk Source	WK 1	Wk 2	Wk 3	Wk 4	Wk 5	Mean
Light Sussex X White Leghorn	Fertilized Pasture	3.4	2.3	3.6	3.5	3.2	3.20
	Unfertilized Pasture	3.4	2.5	4.9	4.5	4.9	4.04
Light Sussex X New Hampshire	Fertilized Pasture	3.0	4.4	3.6	3.3	3.9	3.64
	Unfertilized Pasture	2.8	5.2	3.7	3.9	4.2	3.96
Black Australorps	Fertilized Pasture	2.9	2.9	2.9	2.6	2.8	2.82
	Unfertilized Pasture	3.3	2.7	3.0	3.1	3.0	3.02
White Leghorns X Black Australorps	Fertilized Pasture	3.4	2.5	2.5	2.7	3.6	2.94
	Unfertilized Pasture	3.6	2.3	2.7	2.9	3.9	3.16

Chickens on Fertilized Pasture Milk Required 0.5 grams less Feed per Gram of Gain

Organic Milk's Grass Pigments

(Danish Institute of Agricultural Research)

- 50% More Vitamin E
- 75% More Beta Carotene
- 200-300% More Lutein & Zeaxanthine

FOOD ENZYME DEFICIENCY LEADS TO

- Over Enlargement Of Pituitary Gland
- Brain Size Decreases
- Thyroid Enlargement
- Premature Aging
- Food Enzymes Destroyed Starting At 118°F (48°C)

SOME PRINCIPLE ENZYMES IN MILK

- Galactase: Breaks Down Galactose (from Lactose) into Glucose
- Peroxidase: Derived From Cow's Blood Hemoglobin & Works With Hydrogen Peroxide to Catalyze Oxidation of Organic Substances in Milk
- Catalase: Converts Hydrogen Peroxide (Produced by Cells Against Infection) into Water & Oxygen
- Amylase: Starch Splitting Enzyme (Also Produced by Salivary & Pancreas)

MORE PRINCIPLE ENZYMES IN MILK

- Lipase: Fat Splitting Enzyme That Produces Fatty Acids. In Order to Homogenize Milk, Lipase Must Be Destroyed to Prevent Rancidity
- Lactase: Found in Raw Milk & Also Produced by Lactic-Acid Bacteria. Breaks Down Lactose (Milk Sugar) into Glucose & Galactose.
- Phosphatase: Essential to Release Phosphorous & Calcium for Absorption (Note: Test for the Destruction of This Enzyme Determines Adequacy of Pasteurization)

THE POTTENGER CAT STUDIES

Dr. Francis M. Pottenger M.D.

- Published 50+ Peer-Reviewed Articles on Nutritional Medicine
- President of Los Angeles Medical Association
- President of American Therapeutic Society
- President of American Academy of Applied Nutrition

TEN YEAR CAT STUDY (1932-1942) INVOLVING 900 CATS EVALUATING

General Vitality

Mortality

Morbidity

Behavior

Microbial/Parasitical Susceptibility

Reproduction

Neo-Natal Survivability

Mothering Instincts

Generation Decline

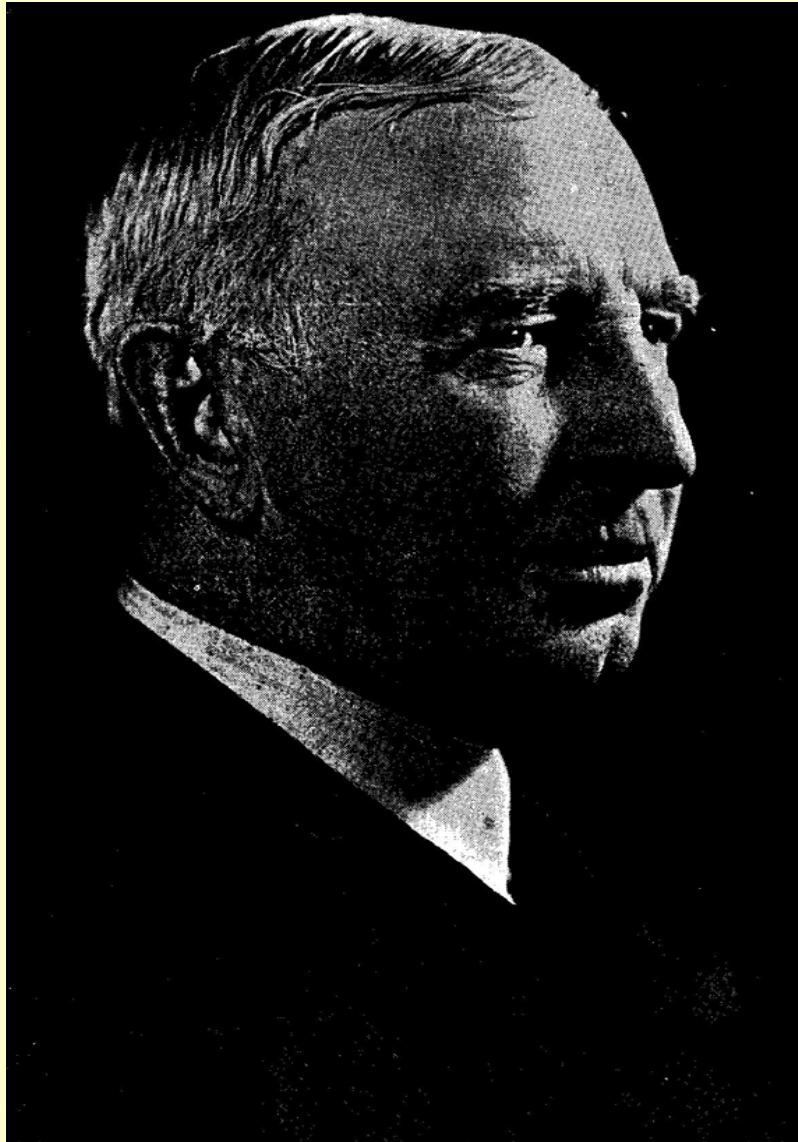
Manure Quality



**POTTENGER'S
CATS**

A Study In Nutrition

By Francis M. Pottenger, Jr., M.D.



Wm. R. Kenan, JR

HISTORY of RANDLEIGH FARM

NINTH EDITION
LOCKPORT, NEW YORK

JUNE, 1959

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By Wm. R. Kenan, JR.

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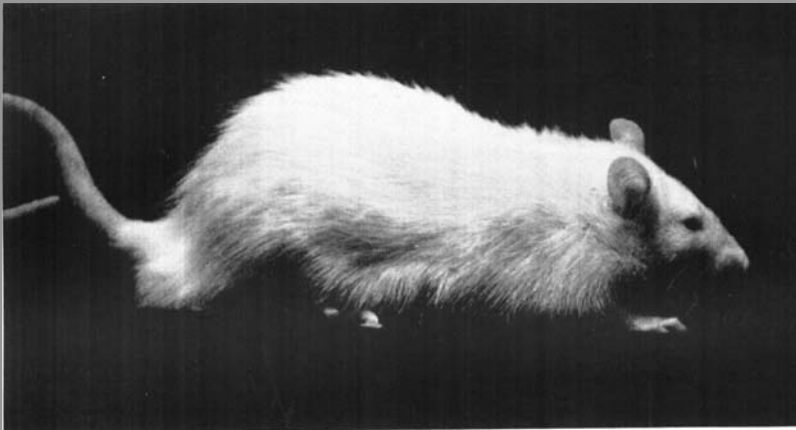
“Knowledge is cumulative. Each new discovery added to all before increases the breadth of attack upon the unknown and therefore, each year yields a multiple of the past year’s production, and so will this continue until man loses all incentive for further progress. There is no limit to the additions yet to be discovered. All men make mistakes. If there were no mistakes there would be no progress. If your average is good, that is all you should ask for.”

Litter Mates: Nine Week Test

Randleigh Farm Raw Milk

Initial Weight: 46 grams

Final Weight: 175 grams



Eagle Brand Condensed Milk

Initial Weight: 46 grams

Final Weight: 124 grams





Peritoneal Cavity

Six Month Study

PASTEURIZED

146 grams



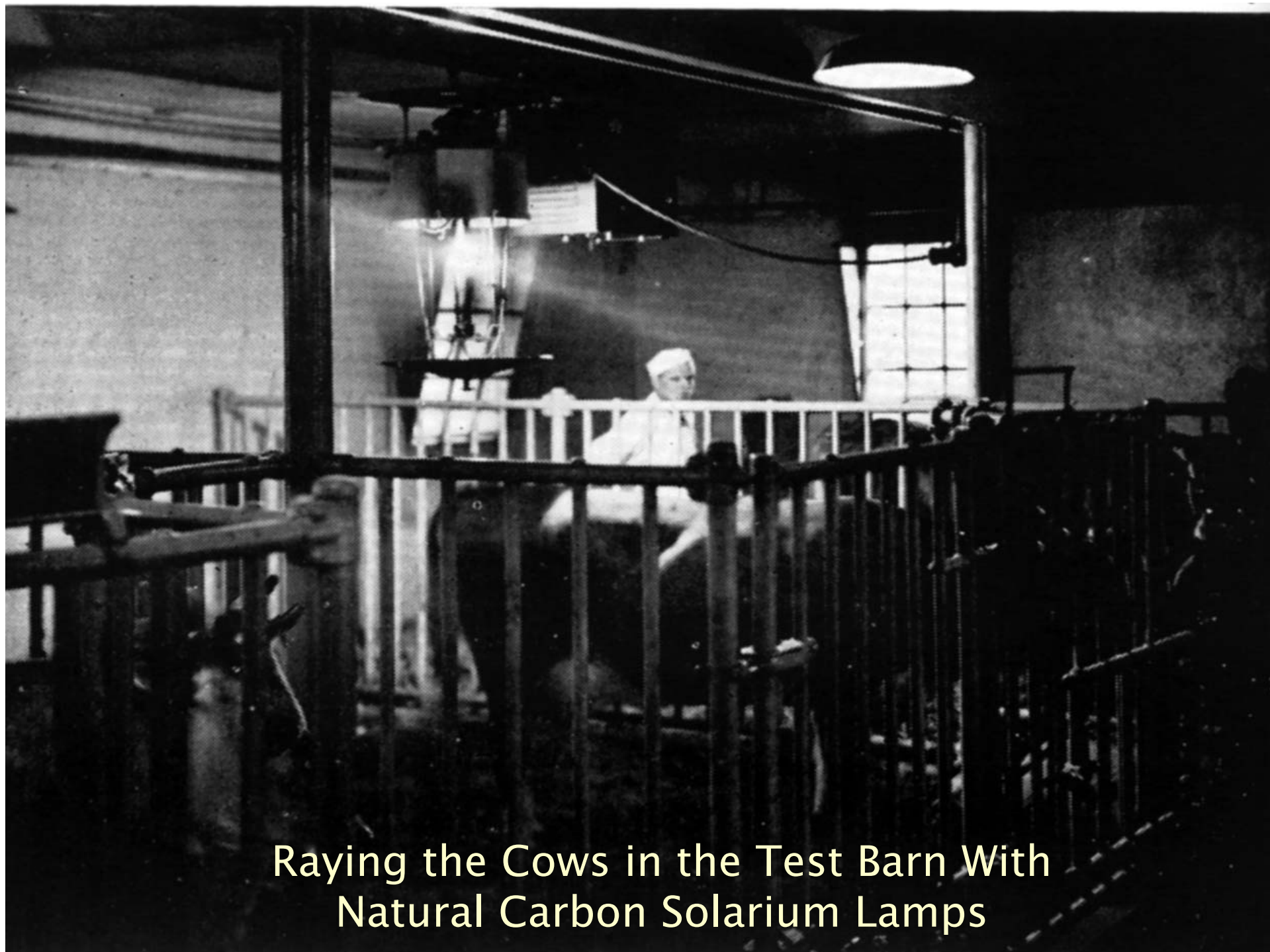
RAW

206 grams

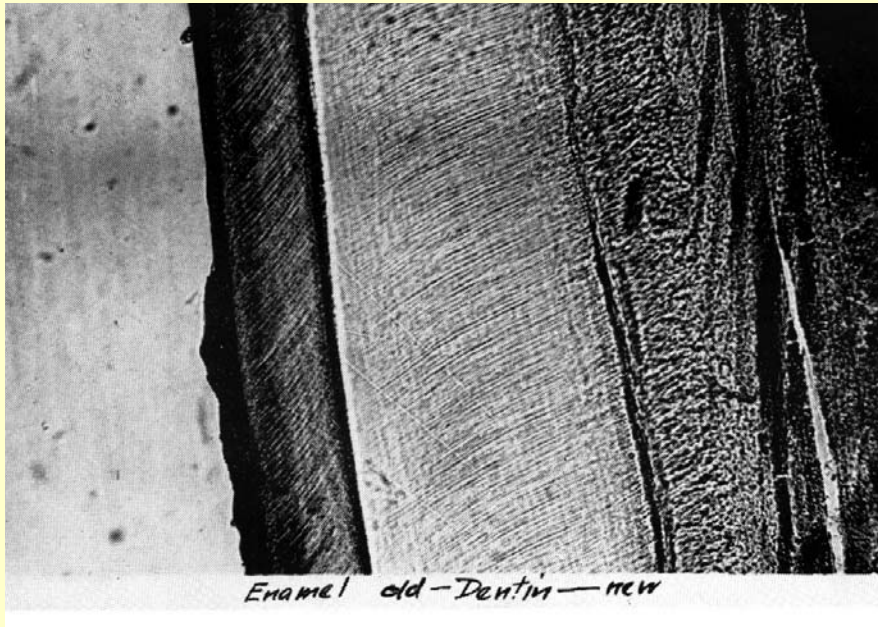
One to One Exposure of Femur, Tibia and Fibia



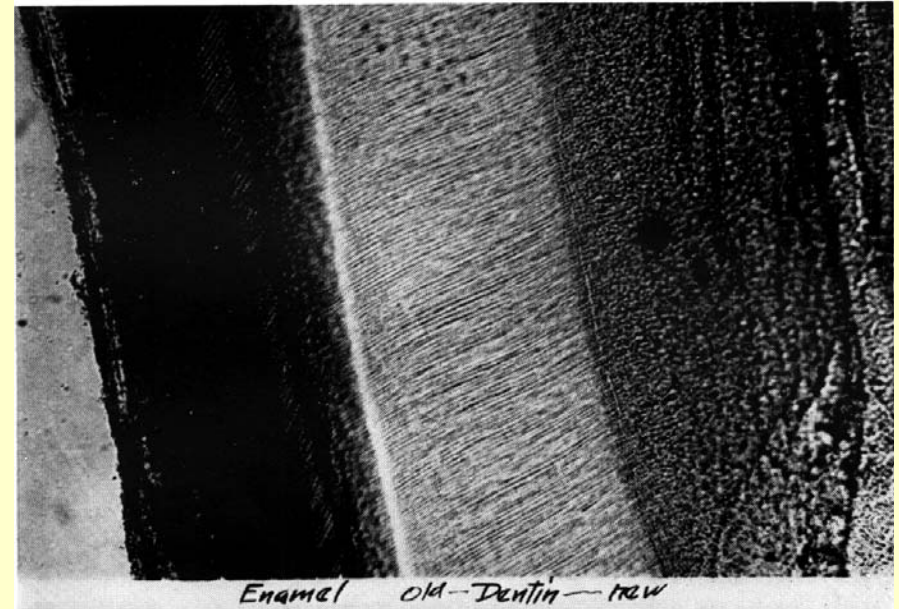
National Carbon Company's Solarium Lamps



Raying the Cows in the Test Barn With
Natural Carbon Solarium Lamps



Dentin Well Calcified
Rat Supplemented with
0.43 Gram Cream/Day



Dentin Well Calcified
Rat Supplemented With
(1) I.U. of Vitamin D /Day



The end.....Any questions??