CE Course Handout

Better Perio Outcomes through Host Modulation and Nutrition

Thursday, June 18, 2015
2:30pm-5:30pm

Nutrition, Lifestyle and Perio:

An Approach That Can Change Lives

Timothy Donley DDS MSD

cda PRESENTS
The Art and Science of Dentistry
Anaheim, CA
April 30 – May 2, 2015

Arthur Schopenhauer
(1788-1860)

Father of Pessimism
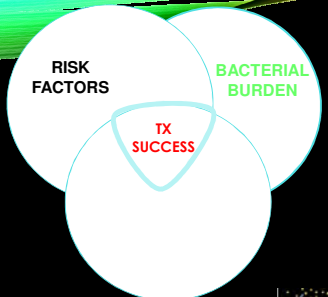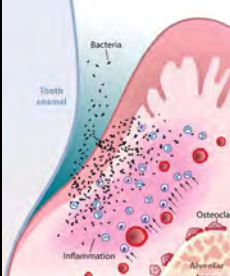
The problem with quotes on the internet is you can never be certain they're authentic.

"All truth passes through three stages."

it is ridiculed.
it is violently opposed.
it is accepted as self-evident.

RISK FACTORS

BACTERIAL BURDEN

TX SUCCESS

Bacteria
Tooth enamel
Inflammation
Osteoclast
Alveolar bone

RISK
RISK

BACTERIA

BYPRODUCTS

MEDIATORS
tnf-α   IL   PG's

INFLAMMATION DEPENDENT

J Clin Perio
2012;213-228

Antony van Leeuwenhoek (1632-1723)

"an unbelievably great company of living animalcules, a-swimming more nimbly than any I had ever seen up to this time. "
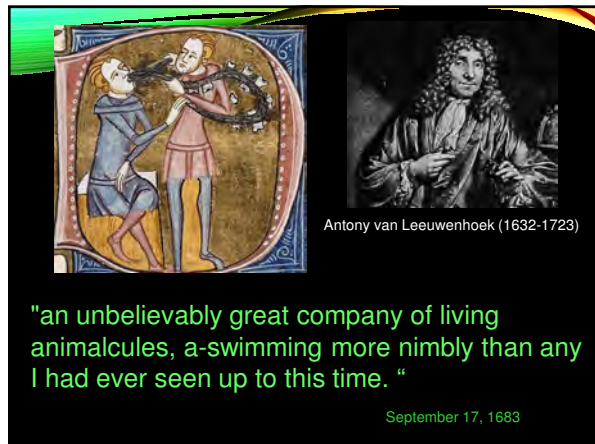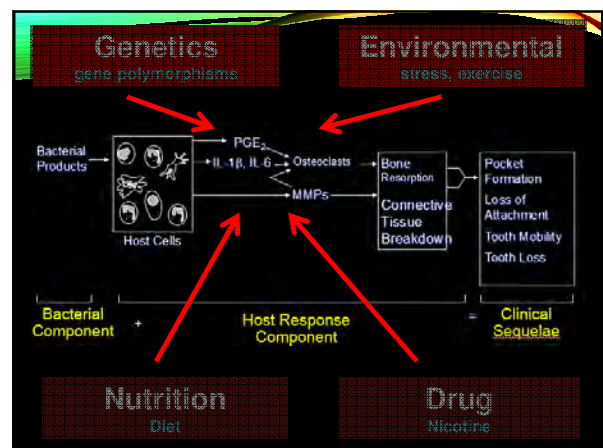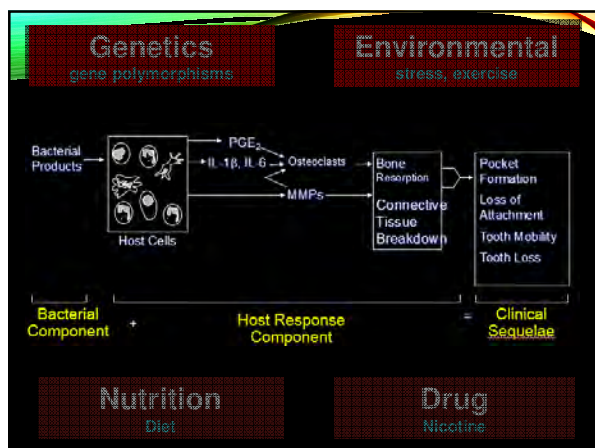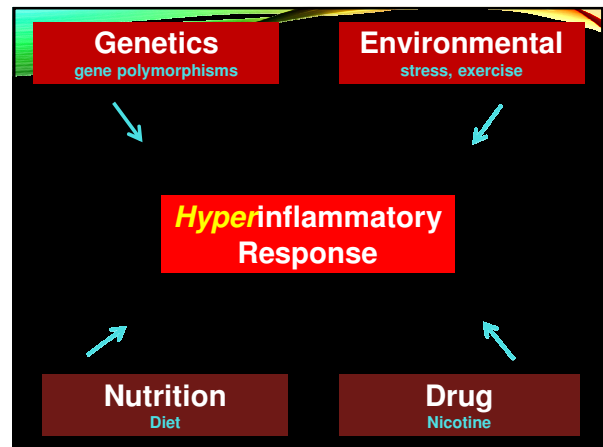
September 17, 1683

Louis Pasteur and the germ theory of disease

1865

Cause of disease   Modifying factors

Health

AGE   20   30   40   50   60   70   80

Genetics
gene polymorphisms

Environmental
stress, exercise

*Hyper*inflammatory Response

Nutrition
Diet

Drug
Nicotine

Genetics
gene polymorphisms

Environmental
stress, exercise

Bacterial Products

PGE₂

IL-1β, IL-6

Osteoclasts

MMPs

Bone Resorption

Connective Tissue Breakdown

Pocket Formation
Loss of Attachment
Tooth Mobility
Tooth Loss

Host Cells

Bacterial Component   +   Host Response Component   =   Clinical Sequelae

Nutrition
Diet

Drug
Nicotine

Genetics
gene polymorphisms

Environmental
stress, exercise

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Nutrition
Diet

Drug
Nicotine

Bacterial Component + Host Response Component = Clinical Sequelae

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EVIDENCE BASED REVIEW

"SDD is vital component of any effort to keep patients inflammation-free."
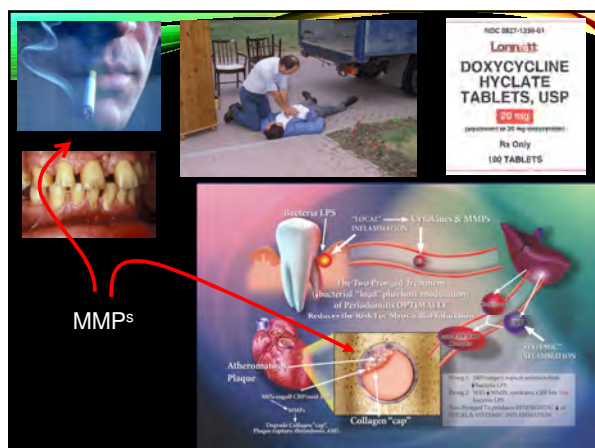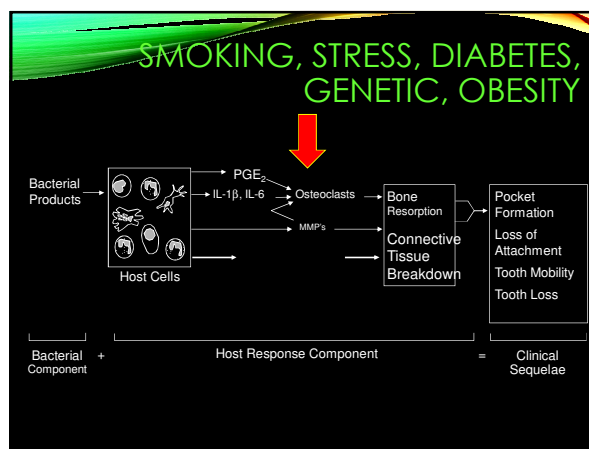

FACTS:

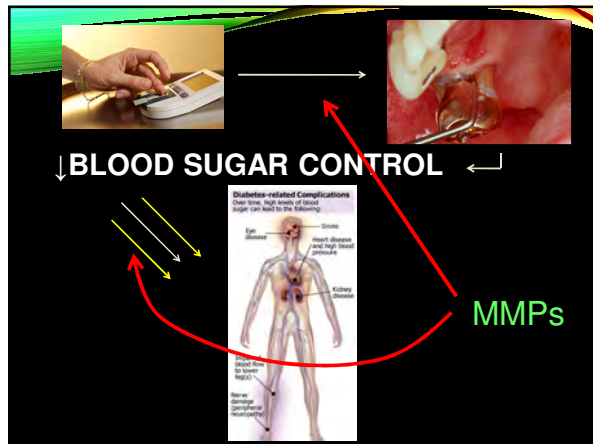Perio destruction is inflammatory based.

Oral inflammation has serious systemic effects.

↓ in inflammation by sub-dose doxycycline is undeniable.

Improvement in perio beyond SRP is undeniable.

There is virtually no risk

SMOKING, STRESS, DIABETES, GENETIC, OBESITY

Bacterial Component + Host Response Component = Clinical Sequelae

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MMPs

Every tobacco user…

↓**BLOOD SUGAR CONTROL**

MMPs

Every pt w Diabetes

Non-antibacterial tetracycline formulations: clinical applications in dentistry and medicine

FEBRUARY 19

FOR HOW LONG?

WHAT I'VE SEEN IN MY PRACTICE

•

• Part of overall program
• No rebound if debrided
• Safe to repeat if relapse

Rx

DOXYCYCLINE 20MG

DOXYCYCLINE HYCLATE TABLETS, USP
20 mg
(equivalent to 20 mg doxycycline)
Rx Only
100 TABLETS

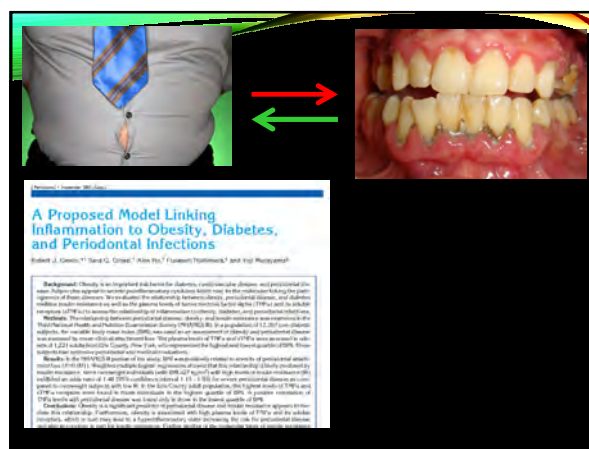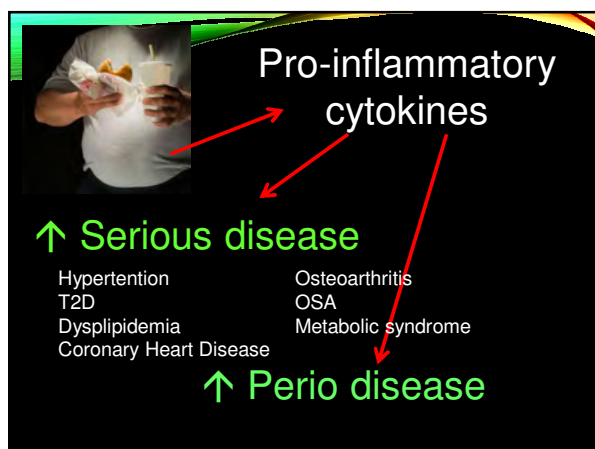**Oracea**.com

The effect of subantimicrobial-dose–doxycycline periodontal therapy on serum biomarkers of systemic inflammation
A randomized, double-masked, placebo-controlled clinical trial

Post-menopausal

Rheumatoid Arthritis

Tobacco   Diabetes
Stress Genetic
Post-menopausal
Rheumatoid arthritis

+

DOXYCYCLINE HYCLATE TABLETS, USP
20 mg
(equivalent to 20 mg doxycycline)
Rx Only
100 TABLETS

AFTER A TWO YEAR LOAN TO THE UNITED STATES, MICHELANGELO'S DAVID IS BEING RETURNED TO ITALY.

Pro-inflammatory cytokines

↑ Serious disease

Hypertention   Osteoarthritis
T2D   OSA
Dyslipidemia   Metabolic syndrome
Coronary Heart Disease

↑ Perio disease

A Proposed Model Linking Inflammation to Obesity, Diabetes, and Periodontal Infections

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BM I= (703 x lbs)/(inches)^2

18.4 or below	Underweight	40" MEN
18.5 to 24.9	Healthy weight	35" WOMEN
25.0 to 29.9	Overweight	
30.0 and above	Obese	

Risk factors for CIPD
1. Tobacco
2. Obesity

Obesity → CIPD
→ Chronic Disease

"Since obesity is acknowledged as a multiple-risk-factor syndrome for overall and oral health, risk assessment in the dental office should include the evaluation of body mass index on a regular basis." NIH 2012

Since you are overweight:
Already ↑ systemic diseases
We now know ↑ for CIPD
If CIPD is allowed to persist, it further ↑ systemic disease risk.

Really important for us to
• Tx you agressively

Really important for you to
Make some changes

SECRETS TO LONG & HEALTHY LIFE

• Keep cholesterol & BP low

• Avoid tobacco

• Diet / Exercise

• Adequate sleep

• Keep gum inflammation
  at bay

Periodontitis and Three Health-Enhancing Behaviors: Maintaining Normal Weight, Engaging in Recommended Level of Exercise, and Consuming a High-Quality Diet

August 2005

7-8 hours
Non- apnic

It's not that diabetes, heart disease and obesity runs in your family. It's that no one runs in your family.

someecards

Slide 1

How much you weight

How much you EAT

How much you BURN

Slide 2

Exercise Mindset

Mindset is not to exercise to burn calories

Exercise benefits:
Artery/heart health
Appetite Control

obesityreviews

Appetite control and energy balance: impact of exercise

Slide 3

www.CDC.Gov

CDC Centers for Disease Control and Prevention

Physical Activity

How much physical activity do adults need?

NO TIME to WORKOUT

Slide 4

Gibala HIIT

3 min	Warm up to a moderate rate for you
1 min	20 sec full out/ 40 sec recovery
1 min	20 sec full out/ 40 sec recovery
1 min	20 sec full out/ 40 sec recovery
+ 4 min	Cool down

10 minute workout!

Martin Gibala
Chairman, Dept Kinesiology
McMaster U Ontario

Slide 5

Reviews | 20 January 2015

Sedentary Time and Its Association With Risk for Disease Incidence, Mortality, and Hospitalization in Adults: A Systematic Review and Meta-analysis

Aviroop Biswas, BSc; Paul I. Oh, MD, MSc; Guy E. Faulkner, PhD; Ravi R. Bajaj, MD; Michael A. Silver, BSc; Marc S. Mitchell, MSc; and David A. Alter, MD, PhD

[+] Article and Author Information

See Also:
Too Much Sitting and Chronic Disease Risk: Steps to

Ann Intern Med. 2015;162(2):123-132. doi:10.7326/M

Article | Figures | Tables | References |

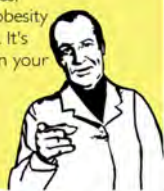Background: The magnitude, consistency, and outcomes independent of physical activity remain

Purpose: To quantify the association between cardiovascular disease, diabetes, and cancer in a

Data Sources: English-language studies in MEDL Web of Knowledge, and Google Scholar database searching of in-text citations and no publication d

Study Selection: Studies assessing sedentary b correlated to at least 1 outcome

Data Extraction: Two independent reviewers perf third reviewer resolved inconsistencies

Data Synthesis: Forty-seven articles met our eligi outcomes for cardiovascular disease and diabetes (14 studies), cancer (14 studies), and all-cause mortality (13 studies). Prospective cohort designs were used in all but 3 studies. sedentary times were quantified using self-report in all but 1 study. Significant hazard ratio (HR) associations were found with all-cause mortality (HR, 1.240 (95% CI, 1.090 to 1.410)), cardiovascular disease mortality (HR, 1.179 (CI,

Slide 6

FITNESS

Take steps to get healthy

One-quarter of what you eat keeps you alive.
The other three-quarters keeps your doctor alive.

Nutrition Perio Recommendations

Dieting can help CR Work
(and we know why)

"CR dampens the inflammatory response and reduces active periodontal breakdown."

D.I.E.T.
Did I eat that?

"I'm at my best when I have less on my plate."

How much you EAT

How much you weight

How much you BURN

YES   NO

Hypothalamus

Dr. Rudolph Leibel
Professor of Diabetes Research, Columbia University

↑ Hunger
↓ Energy use

Lose 10% of your body weight - your body burns 250-400 less calories/day

Slide 1

Least

How much you weigh
How much you eat
What you eat

Most
Important

DIETS DON'T WORK!

insulin
which regulates glucose
in the blood

We have always known that insulin was the ink between obesity and inflammation. But it turns out we may have it backwards!

Slide 2

www.ted.com/search?q=insulin+diet

TED   Watch   Read   Attend   Participate   About   insulin diet

All

Talks

People

Playlists

Quotes

Conversations

Blog posts

Pages

TEDx events

Peter Attia
Sandra Aamodt

Peter Attia: Is the obesity crisis hiding a bigger problem?

As a young surgeon, Peter Attia felt contempt for a p... thought, and thus responsible for the fact that she ne... received an unpleasant medical surprise that led him... Could the precursors to diabetes cause obesi...

Sandra Aamodt: Why dieting doesn't usually work

In the US, 80% of girls have been on a diet by the tim... neuroscientist Sandra Aamodt uses her personal sto... brains manage our bodies, as she explores the scien... likely to do more harm than good. She sugges...
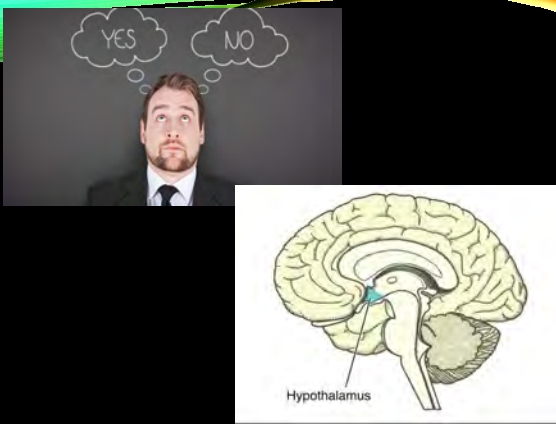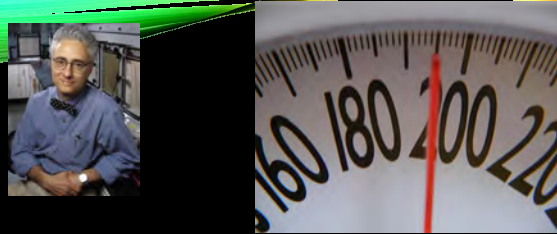
Slide 3
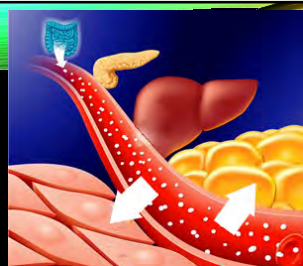
Eat too much
Make themselves fat

Insulin stops working
Inflammation rages
Get diseases
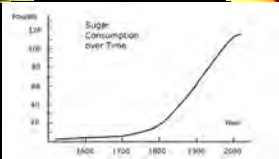
what if the opposite were true?

Slide 4

Insulin
Resistence

Slide 5

Idea

Hypothesis

Theory

Sugar Consumption over Time.

ADDED SUGAR IS THE PROBLEM

Slide 6

I'm late—but dinner won't be!

InflammationReductionStrategy

Potential mechanisms underpinning the nutritional modulation of periodontal inflammation

Carbohydrates
Fats
Flavanoids

Micronutritional approaches to periodontal therapy

ROS

Anti-Oxidants

ROS → DAMAGE
Cells
Processes

Diets:
Refined/processed foods
rich in glucose and lipids

Excessive sugar

Insulin resistence

Obesity

Inflam mediators

Systemic disease

Periodontal disease

SUGARWAR

Oxidative Stress

InflammationReductionStrategy

↑ Antioxidant intake

The role of reactive oxygen and antioxidant species in periodontal tissue destruction

"…boosting antioxidant intake has measurable adjunctive therapeutic benefits"

Slide 1:

Cranberries
Blueberries
Blackberries

Beans
Artichokes
Russet potatoes

Pecans
Walnuts
Hazelnuts

Ground cloves
Ground cinnamon
Oregano

Google

Slide 2:

dentalANTIOXIDANTS

A healthy mouth means more than just a bright smile and fresh breath. Science has shown a link between the health of oral tissues and overall systemic health.

dentalANTIOXIDANTS.com

Slide 3:

InflammationReductionStrategy
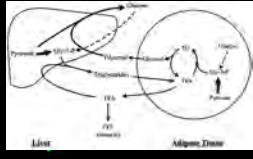
↑ Antioxidant intake
↓ Intake of ROS generators

Where is the added sugar coming from?

Slide 4:

Glucose   Fructose

Sucrose

Slide 5:

FRUCTOSE IN FRUITS

Whole Fruit
No problem

Added Fructose
Huge problem

ROS
Triglycerides
Circumvents app regulating systems

Slide 6:

INGREDIENTS: High Fructose Corn Syrup, Modified Corn Starch, Palm Oil, Gelatin...

HIGH FRUCTOSE CORN SYRUP

White flour bad
Whole grain good
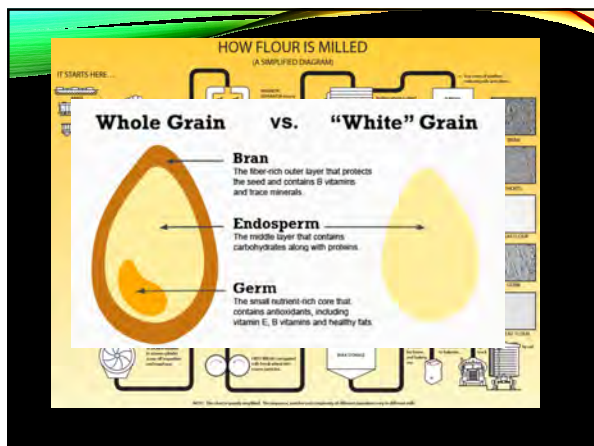
100% Whole

100%
Multi
Whole
Wheat
Grain

Healthy alternative is hard to find

Healthy alternative is hard to find

Healthy alternative?

Coconut sugar

Coconut palm "No Fructose" (70% Sucr)

Iron, Zinc, Calcium and Potassium
Polyphenols, Antioxidants, Inulin

"Slightly less bad than table sugar"

- decreased vision
- headaches, migraine
- epileptic seizures
- severe depression
- irritability
- phobias
- severe PMS
- hyperactivity in children
- Multiple Sclerosis (MS)
- Chronic Fatigue Syndrome
- Fibromyalgia
- birth defects, including mental retardation

GRAS

Stevia is virtually calorie-free & hundreds of times sweeter than table sugar.

Stevia (*Stevia rebaudiana*) a bio-sweetener: a review

Pure Stevia Extract

XyloSweet
All Natural Xylitol Sweetener

100% No Added Sugar is healthy
Is it possible?

These aren't Weight Watchers diet pills. You've been reading them upside down.

8weekchallenge.com

Dietary Interventions

Carbohydrates
Fats
Flavonoids

1. Boost antioxidant intake
2. Reduced processed sugar
3. Use pure stevia
4. Cut out processed flour

i'm luggin' it

McDonald's
BILLIONS & BILLIONS SERVED

FAT

HyVee Conventional wisdom is often neither.

Good Fats		Bad Fats	
Monounsaturated	Polyunsaturated	Saturated	Trans
Foods high in monounsaturated fat	Foods high in polyunsaturated fat	Foods high in saturated fat	Foods high in trans fat
Canola oil	Most vegetable and seed oils (sunflower, soybean, corn, cottonseed)	Fatty meats	Biscuits
Olive oil		Chicken skin	Cakes
Olives		Butter	Pastries
Monounsaturated margarine spreads	Polyunsaturated margarine spreads	Cream	Doughnuts
Avocado	Linseeds	Full cream milk	
Most nuts (almonds, peanuts, cashews, hazelnuts, macadamias, pistachios)	Some nuts (walnuts, brazil nuts, pecans, pine nuts)	Cheese	
	Wheatgerm	Ice cream	
	Oily fish and fish oils	Lard	
Egg yolk		Coconut oil (copha)	
		Palm oil	
		chocolate	
		Deep fried foods	
		Takeaway and fast foods	

Polyunsaturated fatty acids

ESSENTIAL FATTY ACID

Omega – 6   Omega – 3

↓ LDL Cholesterol

Linoleic Acid α Linolenic Acid
Veg oils, seeds, nuts   Green leafy veg, flax, walnuts, canola oil

Gamma-LA GLA   Eicosapentaenoic Acid EPA
                                    EPA also found in fish oil

Arachidonic Acid   Docosahexaenoic Acid DHA
                                    DHA also found in fish oil

Slide 1

Omega - 6

Cardio disease   Type 2 diabetes
Obesity   Metabolic syndrome
Irritable bowel syndrome
Inflammatory bowel disease
Macular degeneration
Rheumatoid arthritis
Asthma   Cancer
Psychiatric disorders
Autoimmune diseases
Periodontal disease

Slide 2

Polyunsaturated fattyacids

Omega – 6   Omega – 3

ESSENTIAL FATTY ACID

Desirable under 5:1   Intermediate   Undesirable over 10:1

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Slide 3

eat right.

Spectrum
Ground Flaxseed

CHIA SEEDS
Brimming With Omega-3
SUPER-FOOD
Premium Seeds

World's Healthiest Foods rich in omega-3 fats

Food	Cals	%Daily Value
Flax Seeds	95	132.9%
Walnuts	164	94.5%
Salmon	245	61.2%
Sardines	189	55.8%
Soybeans	298	42.9%
Halibut	159	25.8%
Scallops	127	17%
Shrimp	112	15.4%
Tofu	86	15%
Tuna	118	13.7%

Slide 4

eat right.

Omega 3 Fish Oil

High Omega 3 Seafood
for a 100 gram serving (about 3.5 oz.)
www.FreshBitesDaily.com

grams of Omega 3 per 100 grams

	0	.5	1	1.5	2	2.5	3
Salmon						2.6	
Herring				2.2			
Anchovy				2.1			
Sablefish			2				
Whitefish			1.8				
Tuna			1.7				
Caviar (2 tbsp)			1.7				
Cisco			1.5				
Sardine			1.5				
Oyster			1.4				

salmon   tuna   anchovies
walnuts   broccoli   edamame

Slide 5

Oil	Omega-6 Content	Omega-3 Content
Safflower	75%	0%
Sunflower	65%	0%
Corn	54%	0%
Cottonseed	50%	0%
Sesame	42%	0%
Peanut	32%	0%
Soybean	51%	7%
Canola	20%	9%
Walnut	52%	10%
Flaxseed	14%	57%
Fish*	0%	100%

BERTOLLI EXTRA VIRGIN
Flaxseed Oil
CANOLA OIL
STOP & SHOP

Slide 6

Dietary Interventions
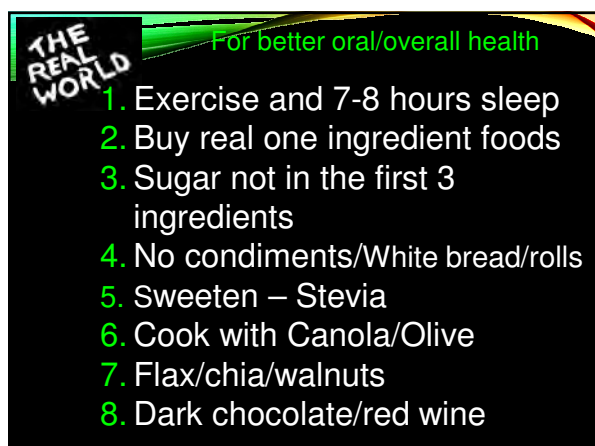
Carbohydrates
Fats
Flavonoids

GREEN TEA

Green tea, berries, apples, grapes, dark chocolate

Resverotrol

Dietary Interventions
Carbohydrates
Fats
Flavonoids

Flavonoids

↑ Cacao = ↑ Flavanoids = ↑ Bitter

1. At least 70% cacao
2. Sugar not first ingredient
3. Not "alkali" processed

THE REAL WORLD

For better oral/overall health

1. Exercise and 7-8 hours sleep
2. Buy real one ingredient foods
3. Sugar not in the first 3 ingredients
4. No condiments/White bread/rolls
5. Sweeten – Stevia
6. Cook with Canola/Olive
7. Flax/chia/walnuts
8. Dark chocolate/red wine