

# **CDL 2015** **92<sup>ND</sup> ANNUAL JUNE 17-23\*2015** **SESSION NASHVILLE, TN**

## **CE Course Handout**

### **Better Perio Outcomes through Host Modulation and Nutrition**


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




American  
Dental  
Hygienists'  
Association

# Nutrition, Lifestyle and Perio:


## An Approach That Can Change Lives




Timothy Donley DDS MSD



Archives, CA  
April 30 - May 2, 2015



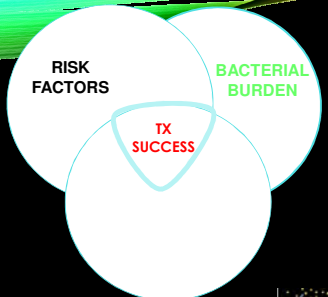
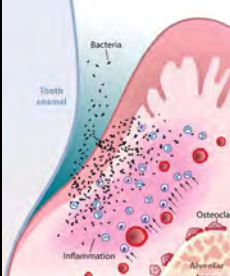




The problem with quotes on the internet is you can never be certain they're authentic.



Arthur Schopenhauer (1788-1860)  
Father of Pessimism

“All truth passes through three stages.”

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

# BACTERIA BYPRODUCTS MEDIATORS





tnf- $\alpha$  IL PG's

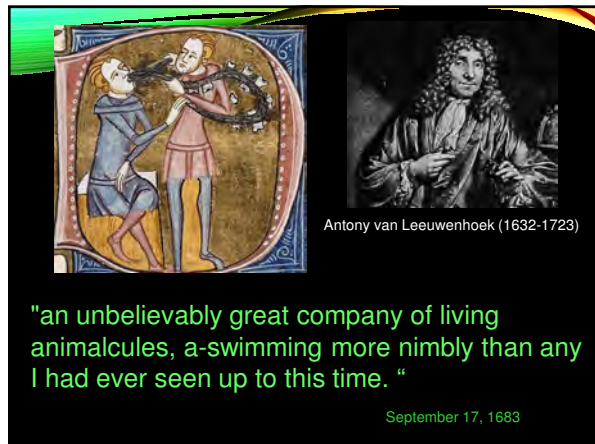
## INFLAM. DEPEND.





1. Gino Perlo 2013/2/18/2015

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. "

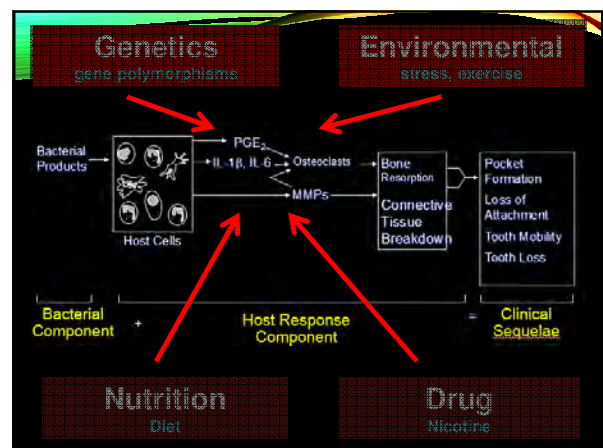
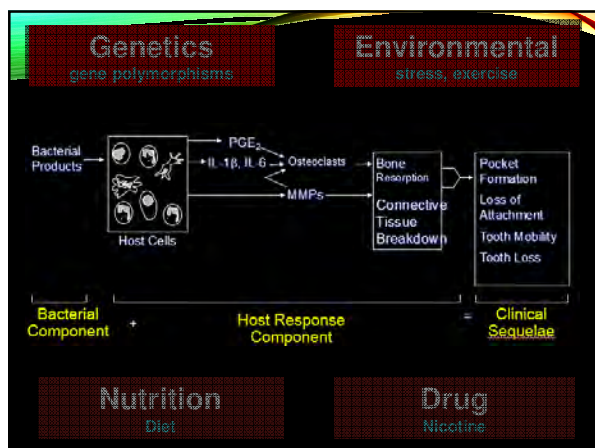
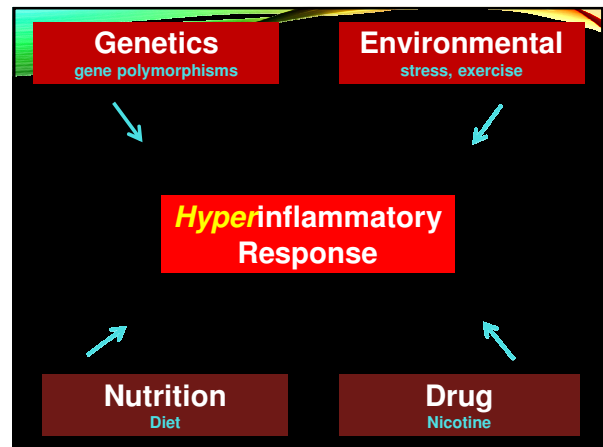
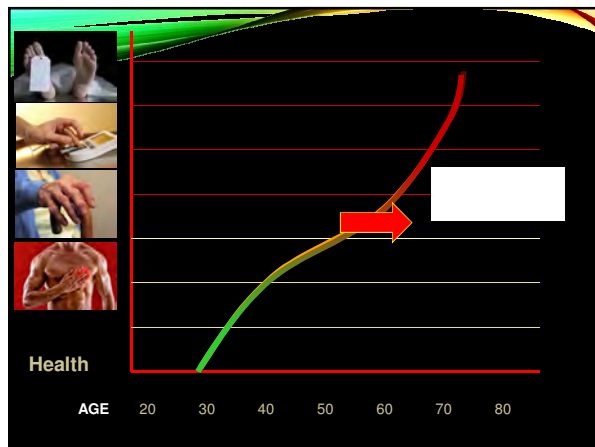
September 17, 1683

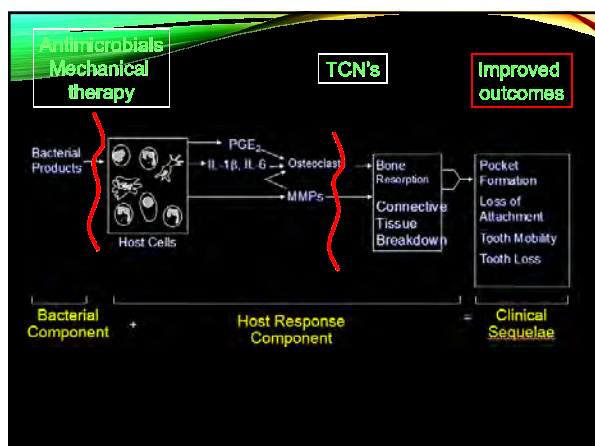


1865

**Cause of disease**

**Modifying factors**





## FACTS:

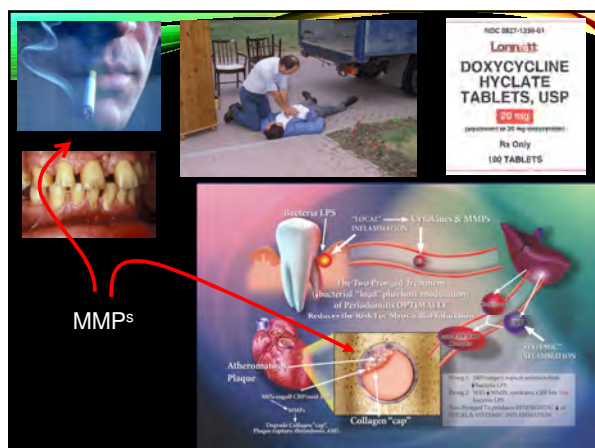
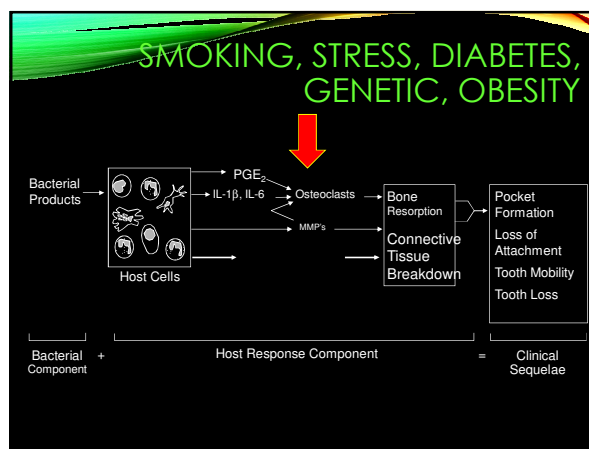
Perio destruction is inflammatory based.

Oral inflammation has serious systemic effects.

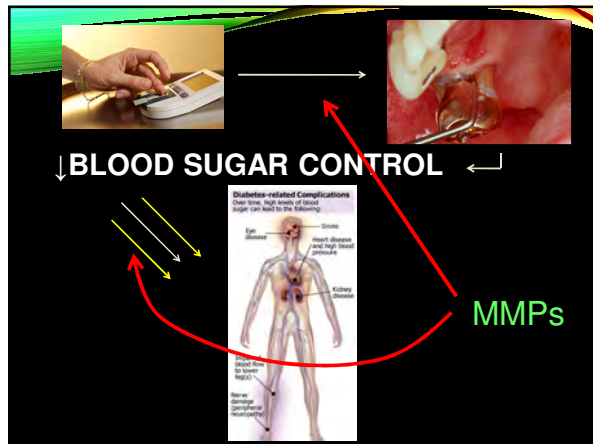
↓ in inflammation by sub-dose  
doxycycline is undeniable.

Improvement in perio beyond SRP is undeniable.

There is virtually no risk







**Every pt w Diabetes**

**REVIEW ARTICLE**  
**Non-antibacterial tetracycline formulations: clinical applications in dentistry and medicine**  
Ying Gu<sup>1</sup>, Clay Walker<sup>2</sup>, Maria E. Ryan<sup>3</sup>, Jeffrey B. Payne<sup>4</sup> and Lorne M. Golub<sup>5</sup>

<sup>1</sup>Department of General Dentistry, School of Dental Medicine, Stony Brook Medicine, Stony Brook University, Stony Brook, NY, USA; <sup>2</sup>Department of Oral Biology, School of Dental Medicine, Stony Brook University, Stony Brook, NY, USA; <sup>3</sup>Department of Oral Biology and Pathology, Stony Brook University, Stony Brook, NY, USA; <sup>4</sup>Department of Oral Biology, Stony Brook University, Stony Brook, NY, USA; <sup>5</sup>Department of Biomedical Sciences, College of Dentistry, Stony Brook University, Stony Brook, NY, USA

In 1961 it was first reported that tetracycline (TTC) can stimulate the bone formation, indicating that it may be used as a bone growth stimulant. In the 1970s, it was found that TTC can stimulate the bone formation in the rat. In the 1980s, it was found that TTC can stimulate the bone formation in the human. In the 1990s, it was found that TTC can stimulate the bone formation in the human. In the 2000s, it was found that TTC can stimulate the bone formation in the human. In the 2010s, it was found that TTC can stimulate the bone formation in the human. In the 2020s, it was found that TTC can stimulate the bone formation in the human.

**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 28 mg doxycycline)  
Rx Only  
100 TABLETS

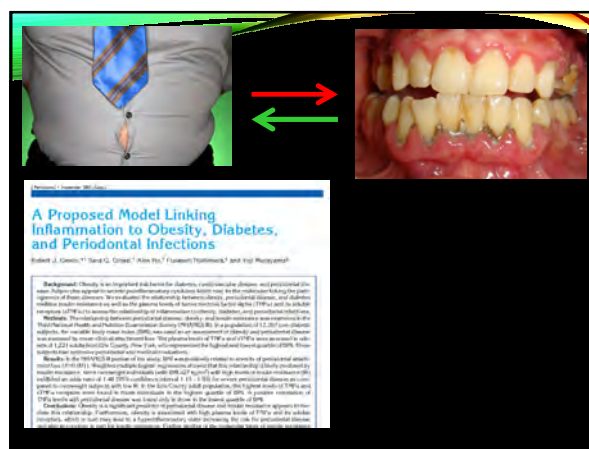
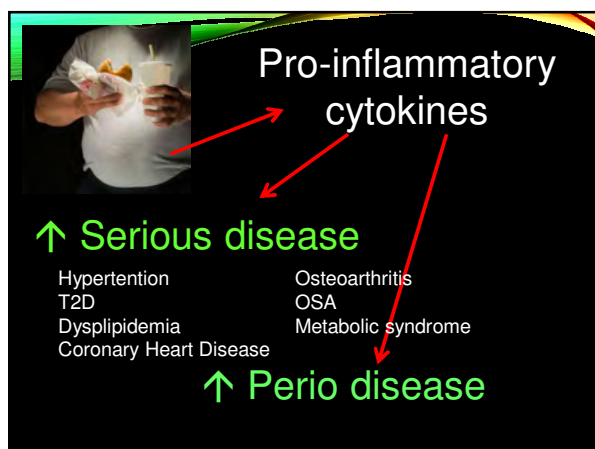
**Oracea.com**

**It's time people saw you—not your rosacea.**  
If you're dealing with the red bumps and blotches of rosacea, there are treatment options now that let you show others how you truly are. It's time people saw you—not your rosacea.

**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**


The diagram illustrates the concept of 'Complexity' in patient care. It features a central box labeled 'Complexity' with a plus sign. To the left, a 'Things To Do' checklist includes 'Diabetes', 'Stress', 'Genetic', 'Post-menopausal', and 'Rheumatoid arthritis'. Below this are three small images of people. To the right, a close-up of a tooth being drilled is shown. At the bottom right, a box of 'DOXYCYCLINE HYCLATE TABLETS, USP' is displayed, with a plus sign above it. The overall theme is the integration of multiple factors into a single patient care plan.






**BM I= (703 x lbs)/(inches)<sup>2</sup>**

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



**TD DENTONLEY**

**Weighing in on Obesity and gum disease.**

Measuring your height and weight may seem out of place in a dental office. Sincerely, Dentonley has confirmed that obesity is a major risk factor for gum disease. When you are overweight your risk of gum disease is increased. Gum disease is a chronic condition that can lead to tooth loss and even heart disease.

But the story gets even more interesting. Obesity is now thought of as a risk factor for many of the chronic diseases of aging like heart disease, high blood pressure, type 2 diabetes, osteoporosis, breathing problems, and mental concerns. Gum disease has been shown to be related to the risk for these chronic diseases.

Thus, if you are not your ideal weight you really need to do whatever is necessary to achieve your goal weight in your mouth and then keep it at bay. Weighing and keeping on the display in your chair - keep your goal weight in focus. We may have to make your gum disease more aggressively than patients who are not overweight.

We will recommend seeing your dentist regularly that takes a year. We know through all research that it takes about 20 weeks for bacteria to regenerate and cause gum disease. What is better to make sure you are not in a position to cause gum disease you can more frequently to make sure that you achieve any goal before you have the gum problems.

**Body Mass Index (BMI)**

Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems.

**BMI Categories:**

- Underweight < 18.5
- Normal weight 18.5-24.9
- Overweight 25-29.9
- Obesity BMI of 30 or greater

For more info: [www.cdc.gov/overweight](http://www.cdc.gov/overweight)

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 aggressively

Really important for you to  
 Make some changes

**~~STEPS~~ 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**

Pharmaceuticals, Al Zahedi, Elise A. Browne, and Nidal F. El-Zahrani

August 2005



**Background:** Maintaining normal weight, engaging in the recommended level of exercise, and eating healthy food are likely to improve periodontal health. The impact of these behaviors on periodontal health is not well understood. This study was aimed at assessing whether the reciprocal relation of these behaviors is associated with a decrease in the prevalence of periodontitis in a United States population.

**Methods:** This study utilized data on 12,112 individuals who participated in the 1991 National Health and Nutrition Examination Survey. Multivariate logistic regression analysis was used to estimate the association between the number of health-enhancing behaviors and periodontitis prevalence. Health-enhancing behaviors included maintaining normal weight (body mass index [BMI] 18.5 to 24.9 kg/m<sup>2</sup>), engaging in the recommended level of exercise (≥ 150 minutes of moderate or vigorous physical activity per week), and eating a high-quality diet (healthy eating index [HEI]).


**Results:** After controlling for age, gender, race/ethnicity, cigarette smoking, other chronic conditions (diabetes, hypertension, heart disease, asthma, and arthritis), dental care, and the use of dental floss, dental visits, and plaque index, a 1-unit increase in the number of the three health-enhancing behaviors was associated with a 14% reduction in the prevalence of periodontitis (odds ratio [OR] = 0.86, 95% confidence interval [CI] = 0.73 to 1.01). Individuals who consumed normal weight, engaged in the recommended level of exercise, and had a high-quality diet were 40% less likely to have periodontitis compared to individuals who consumed excess weight, did not exercise, and did not eat a high-quality diet.

**Conclusion:** An increased number of health-enhancing behaviors is associated with a lower periodontitis prevalence. Efforts to improve periodontal health should include these behaviors.



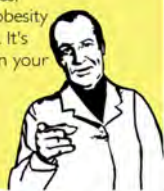





**7-8 hours Non-apnic**



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

**someecards**





## Exercise Mindset

Mindset is not to exercise to burn calories

Exercise benefits:  
Artery/heart health  
Appetite Control

www.CDC.Gov

Centers for Disease Control and Prevention  
CDC 24/7: Keeping lives. Protecting people.

Physical Activity

Physical activity for everyone

How much physical activity do you need?

How much physical activity do adults need?

NO TIME TO WORKOUT

## 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

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

Arnoo Berrin, BSc; Paul I. Oh, MD, MSc; Ouy E. Faulstich, PhD; Ravi R. Bajaj, MD; Michael A. Silver, BSc; Marc S. Mitchell, MSc; and David A. Alter, MD, PhD

See Also:  
Too Much Sitting and Chronic Disease Risk: Steps to  
Ann Intern Med 2015;162(2):123-132. doi:10.7326/A150101

Article Figures Tables References

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

Purpose: To quantify the association between sedentary time and risk for cardiovascular disease, diabetes, and cancer in adults.

Data Sources: English-language studies in MEDLINE, Web of Knowledge, and Google Scholar databases; searching of in-text citations and no publication date restriction.

Study Selection: Studies assessing sedentary time and risk for cardiovascular disease, diabetes, and cancer were included if they reported at least 1 outcome.

Data Extraction: Two independent reviewers performed data extraction and identified inconsistencies.

Data Synthesis: Forty-seven articles met our inclusion criteria. Sedentary time was associated with increased risk for cardiovascular disease and diabetes (14 studies), cancer (10 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, 1.248 [95% CI, 1.059 to 1.458]), cardiovascular disease mortality (HR, 1.179 [95% CI, 1.012 to 1.374]), and cancer mortality (HR, 1.179 [95% CI, 1.012 to 1.374]).

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

NIH Public Access  
Author Manuscript

The Effects of a Calorie Reduced Diet on Periodontal Inflammation and Disease in a Non Human Primate Model

Geetha L. Bhanu-Maya, Stephen K. Dwyer, John C. Hargrett, Mark A. Brennan, Jeffrey A. Shattuck, Karen F. Renard, John A. Mitchell, Robert K. Senger, and M. John Hayes

**Abstract**  
Background—It is well known that an overconsumption of calories leads to obesity, which in turn is associated with an increased risk of periodontal inflammation and disease. The purpose of this study was to evaluate the effect of a long-term calorie restricted diet (CR) on periodontal inflammation and disease in a non-human primate model.

**Methods**  
Non-human primates were divided into 2 groups: feeding, and those receiving CR. Periodontal inflammation was measured in the gingiva, and periodontal disease was measured in the periodontium. The results of the study are presented in the following table.


**Results**  
The results of the study are presented in the following table.

**Conclusion**  
The results of the study are presented in the following table.

“CR dampens the inflammatory response and reduces active periodontal breakdown.”



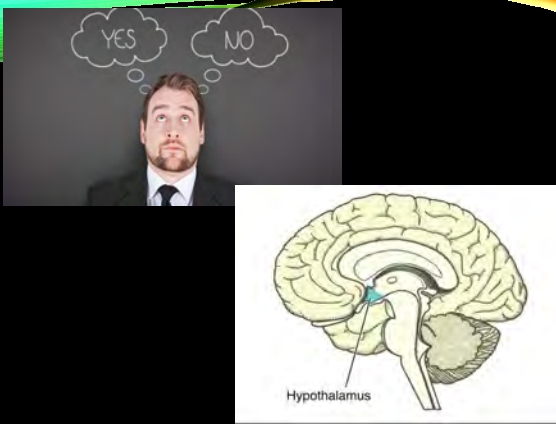
“I’m at my best when I have less on my plate.”



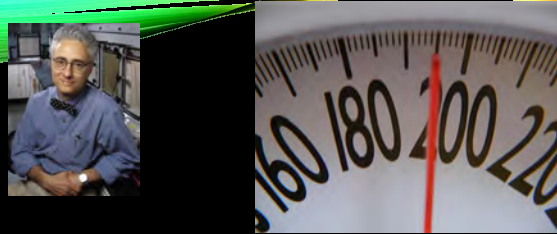
How much you EAT

How much you BURN

How much you weight



Hypothalamus



Dr. Rudolf Leibel  
Professor of Diabetes Research,  
Columbia University


↑ Hunger  
↓ Energy use

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

Least  
Most Important

How much you weigh  
How much you eat  
What you eat

**DIETS DON'T WORK!**




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

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

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**Peter Attia**  
**Sandra Aamodt**

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

As a young surgeon, Peter Attia felt contempt for a patient who thought, and thus responsible for the fact that she had received an unpleasant medical surprise that led her to... Could the precursors to diabetes cause obesity...  
[http://www.ted.com/talks/peter\\_attia\\_what\\_is\\_at\\_the\\_heart\\_of\\_the\\_obesity\\_crisis](http://www.ted.com/talks/peter_attia_what_is_at_the_heart_of_the_obesity_crisis)

**Sandra Aamodt: Why dieting doesn't usually work**

In the US, 80% of girls have been on a diet by the time they turn 18. Sandra Aamodt uses her personal experience and brain science to explore the science of why diets usually do more harm than good. She suggests...  
[http://www.ted.com/talks/sandra\\_aamodt\\_why\\_dieting\\_doesn\\_t\\_usually\\_work](http://www.ted.com/talks/sandra_aamodt_why_dieting_doesn_t_usually_work)

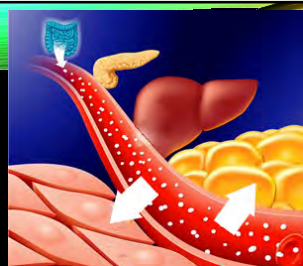



Eat too much  
Make themselves fat


↓

Insulin stops working  
Inflammation rages  
Get diseases

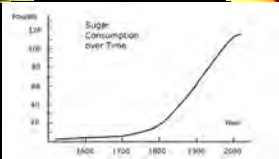
*What if the opposite were true?*




**Insulin Resistance**



**Idea**  
Interpret  
Hypothesis  
Theory  
Doct



**ADDED SUGAR IS THE PROBLEM**



**I'm late - but dinner won't be!**

Discover the new Swanson TV Dinners...  
Swanson TV Dinners...  
Swanson TV Dinners...  
Swanson TV Dinners...




## InflammationReductionStrategy

**Carbohydrates**  
**Fats**  
**Flavanoids**

**ROS**

## Anti-Oxidants

**ROS** → **DAMAGE**  
Cells  
Processes

**Diets:**  
Refined/processed foods  
rich in glucose and lipids

**Excessive sugar**

↓

**Insulin resistance**

↓

**Obesity**

↓

**Inflam mediators**

↓

**Systemic disease**

↓

**Periodontal disease**

**SUGARWAR**


**Oxidative Stress**

## InflammationReductionStrategy

↑ **Antioxidant intake**

“...boosting antioxidant intake has measurable adjunctive therapeutic benefits”




Inflammation Reduction Strategy

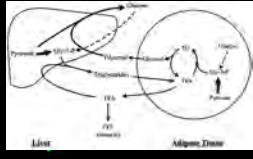
- ↑ Antioxidant intake
- ↓ Intake of ROS generators

Where is the added sugar coming from?

**Whole Fruit**  
No problem

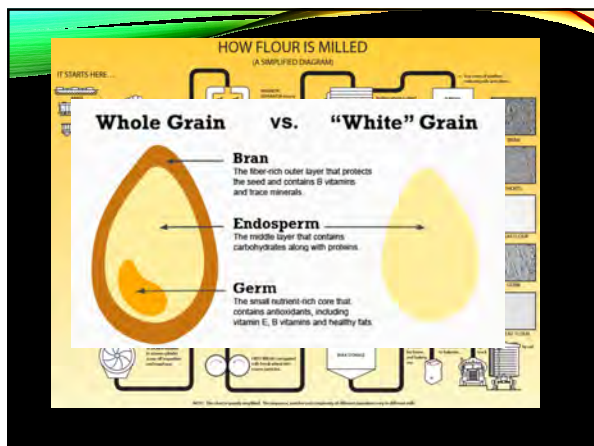
**Added Fructose**  
Huge problem



ROS  
Triglycerides  
Circumvents app  
regulating systems







100% Whole

100%  
Multi  
Whole  
Wheat  
Grain

Healthy alternative is hard to find

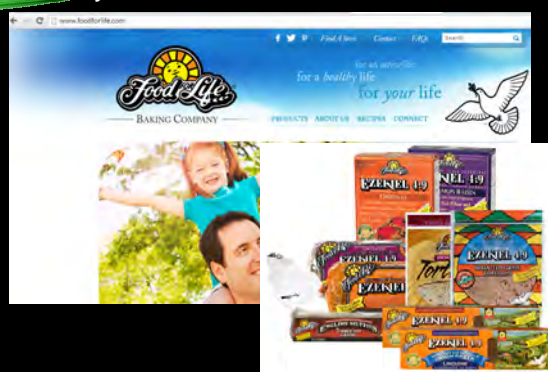
**INGREDIENTS:**  
WHOLE GRAIN WHEAT FLOUR,  
WHITE SUGAR, WHEAT GLUTEN,  
SOYBEAN OIL, NATURAL FLAVOR,  
SEA SALT, YEAST, CULTURED  
WHEAT FLOUR, MOLASSES, SOY  
LECITHIN, RAISIN JUICE, VINEGAR,  
ASCORBIC ACID; TOPPED WITH  
WHEAT BRAN.



Whole Wheat Flour, Water, Wheat Gluten, Yeast, Contains 2%  
Or Less of Each of The Following: Brown Sugar, Honey, Wheat  
Bran, Soybean Oil, Salt, Dough Conditioners (Contains One Or  
More of The Following: Sodium Stearoyl Lactylate, Calcium  
Stearoyl Lactylate, Monoglycerides And/Or Diglycerides,  
Calcium Peroxide, Calcium Hydroxide, Dextrose, Ethoxylated Mono-  
and Diglycerides, Ascorbic Acid, Enzymes), Vinegar,  
Cultured Wheat Flour, Ammonium Sulfate, Monocalcium  
Phosphate, Soy Lecithin.



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**

S. K. GOYAL<sup>1</sup>, SAMSHIR<sup>2</sup> & R. K. GOYAL<sup>2</sup>

<sup>1</sup>Department of Agricultural Engineering and Food Technology, S.V.R.P. University of Agriculture & Technology, Marri, India, and <sup>2</sup>Department of Animal Husbandry & Dairying, RSV College, Gurgaon, India

**Abstract**

Stevia sweetener that Stevia has been used throughout the world since ancient times for various purposes. For example, as a sweetener and a medicine. We conducted a systematic literature review to summarize and quantify the past and current evidence for Stevia. We searched relevant papers up to 2017 in various databases. As we know that the leaves of Stevia plant have biochemical and nutrient properties superior to those of most other high-protein sweeteners. Stevia is likely to become a major source of high-protein sweetener due to the growing interest from market in the future. Although Stevia can be helpful to various, there are certain groups who are more likely to benefit from its associated sweetening potential. These include diabetic patients, those interested in decreasing calorie intake, and children. Stevia is a natural processed plant that has been used for centuries as a bio-sweetener and food preservative. It is a natural sweetener. In this review, we have summarized the evidence for the use of Stevia as a natural sweetener.

Google search results for "stevia recipes".

- Stevia Sweetener: Stevia Recipes - Elena's Pantry
- Stevia Recipes (Desserts) | Sweeten, eat!® Stevia Sweetener
- Stevia Recipes on Pinterest
- How to Replace Stevia for Sugar in Baking Cakes | Healthy ...
- Stevia Desserts Recipes | Yummy
- Cooking With Stevia and Stevia Recipes

XyloSweet Low Carbohydrate Sweetener. All Natural Xylitol Sweetener. Sugarfree with no calories.

**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**

8 WEEK CHALLENGE

COCONUT SHRIMP

EASY STUFFED PORTOBELLO PIZZA IN A CASSEROLE

GRILLED CHICKEN BREASTS WITH AVOCADO LIME SALSA

BAKED SALMON WITH LEMON AND THYME

CHEESEY LASAGNA ROLL

CHILI - VEGETARIAN STYLE

## Dietary Interventions

- Carbohydrates 1 Boost antioxidant intake  
Fats 2 Reduced processed sugar  
Flavonoids 3 Use pure stevia  
4 Cut out processed flour



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

### Good Fats

Monounsaturated	Polysaturated
<b>Foods high in monounsaturated fat</b> Canola oil Olive oil Olives	<b>Foods high in polysaturated fat</b> Most vegetable and seed oils (sunflower, soybean, corn, cottonseed)

### Bad Fats

Saturated	Trans
<b>Foods high in saturated fat</b> Fatty meats Chicken skin Butter Cream Full cream milk Cheese Ice cream Lard Coconut oil (copha) Palm oil chocolate Deep fried foods Takeaway and fast foods	<b>Foods high in trans fat</b> Biscuits Cakes Pastries Doughnuts

**The American Journal of CLINICAL NUTRITION**

Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease<sup>1,2,3,4,5</sup>

Patry M Siri-Tarino, Qi Sun, Frank B Hu, and Ronald M Krauss

**Abstract**

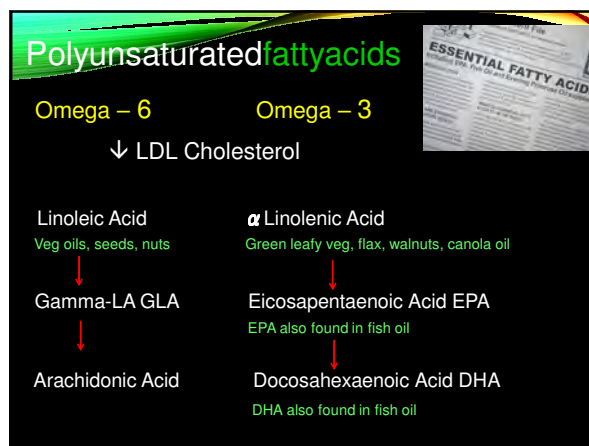
**Background:** A reduction in dietary saturated fat has generally been thought to improve cardiovascular health.

**Objective:** The objective of this meta-analysis was to summarize the evidence related to the association of dietary saturated fat with risk of coronary heart disease (CHD), stroke, and cardiovascular disease (CVD) and to provide estimates for CHD, stroke, and CVD.

**Design:** Twenty-one studies identified by searching MEDLINE and EMBASE databases and secondary referencing qualified for inclusion in this study. A random-effects model was used to derive composite relative risk estimates for CHD, stroke, and CVD.

**Results:** During 5–23 y of follow-up of 347,747 subjects, 11,205 developed CHD or stroke. Intake of saturated fat was not associated with an increased risk of CHD, stroke, or CVD. The pooled relative risk estimates that compared extreme quartiles of saturated fat intake were 1.07 (95% CI 0.96, 1.19) for CHD, 0.81 (95% CI 0.62, 1.05) for stroke, and 1.00 (95% CI 0.88, 1.13) for CVD. Consideration of age, sex, and study quality did not change the results.

**Conclusions:** A meta-analysis of prospective epidemiologic studies showed that there is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of CHD or CVD. More research is needed to address whether CVD risk can be lowered by








## 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

## Polyunsaturated fatty acids

Omega - 6                      Omega - 3




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



## World's Healthiest Foods rich in omega-3 fats

Food	Cals	%Daily Value
Flax Seeds	100	132.9%
Walnuts	185	94.5%
Salmon	145	61.2%
Sardines	100	59.8%
Soybeans	170	42.9%
Halibut	150	25.8%
Scallops	120	17%
Shrimp	110	15.4%
Tofu	80	15%
Tuna	150	13.7%



## High Omega 3 Seafood

for a 100 gram serving (about 3.5 oz.)

www.FreshFishesDaily.com

Food	grams of Omega 3 per 100 grams
Salmon	2.6
Mackerel	2.2
Anchovy	2.1
Sablefish	1.2
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



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%

## Dietary Interventions

Carbohydrates

Fats

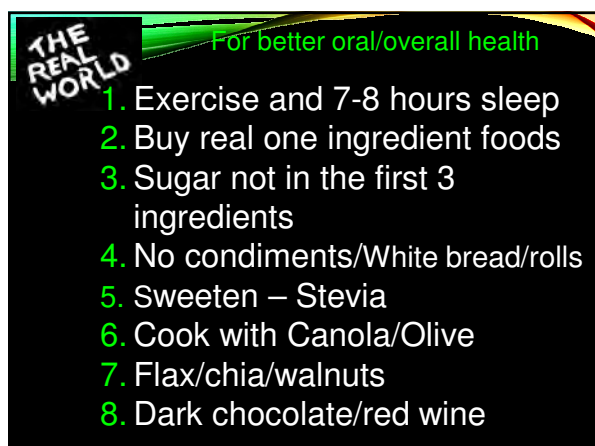
Flavonoids

## GREEN TEA

Green tea, berries, apples, grapes, dark chocolate

Resveratrol





**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