

"Nutrition and Oral Health"



Tieraona Low Dog, MD

Chair: US Pharmacopeia
Dietary Supplements Admissions
Joint Standard Setting Sub-
Committee

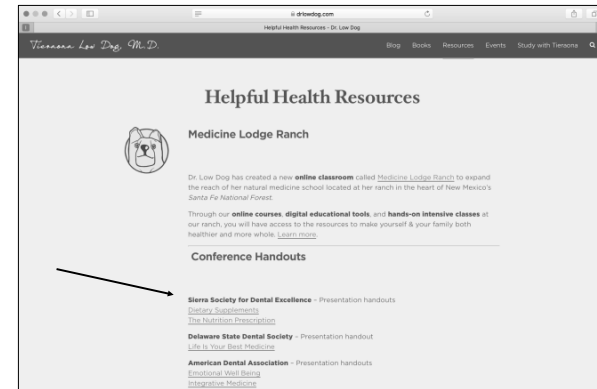
Author of National Geographic's
"Fortify Your Life," "Healthy At Home"
and "Life Is Your Best Medicine"

www.DrLowDog.com

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"THE FOOD YOU EAT
CAN BE EITHER
THE SAFEST
&
MOST POWERFUL
FORM OF MEDICINE
or
THE SLOWEST
FORM OF POISON."

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Nutrition in the 21st Century



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NEW YORK TIMES BESTSELLER

THE BIG FAT SURPRISE

Why Butter, Meat & Cheese Belong in a Healthy Diet

NINA TEICHOLZ

NEW YORK TIMES BESTSELLER

EAT FAT, GET THIN

Why the Fat We Eat is the Key to Sustained Weight Loss and Vibrant Health

Mark Hyman, MD

#1 BESTSELLING AUTHOR OF *The Blood Sugar Solution*

Blue Zones Solution

Eating and Living Like the World's Healthiest People

Dan Buettner

New York Times Bestseller

NEW YORK TIMES BESTSELLER

THE FORKS OVER KNIVES PLAN

A 4-WEEK MEAL-BY-MEAL MAKEOVER

How to Transition to the Life-Saving, Whole-Food, Plant-Based Diet

Alona Pata, MD, and Matthew Lederman, MD

FOREWORD BY DEAN ORSHAN, MD

Is it any wonder that people are confused?

Viviana Low Dog, M.D.

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Portion Distortion

20 YEARS AGO	TODAY	DIFFERENCE
333 Calories Lifting weights for 1 HOUR AND 30 MINUTES burns approximately 257 calories* *Based on 130-pound person	590 Calories	257 MORE CALORIES
45 Calories Walking 1 HOUR AND 20 MINUTES burns approximately 305 calories* *Based on 130-pound person	350 Calories	305 MORE CALORIES
500 Calories Playing golf (while walking and carrying your clubs) for 1 HOUR burns approximately 350 calories* *Based on 160-pound person	850 Calories	350 MORE CALORIES
500 Calories Housecleaning for 2 HOURS AND 35 MINUTES burns approximately 525 calories* *Based on 130-pound person	1,025 Calories	525 MORE CALORIES
55 Calories Washing a car for 1 HOUR AND 15 MINUTES burns approximately 220 calories* *Based on 130-pound person	275 Calories	220 MORE CALORIES

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The Changing Landscape of Adult Weight

1993-1996 Combined Data

2016 Adult Obesity Rates

Territory	Obesity Rate
Guam	28.3
Puerto Rico	30.7

Source: CDC, BRFSS

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Diabetes Period Prevalence, 2015

Diab_Rate

- 19.09% - 23.40%
- 23.44% - 27.27%
- 27.30% - 29.51%
- 29.78% - 33.46%

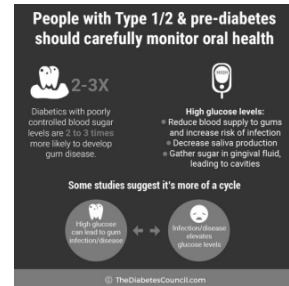
<https://www.cdwdata.org/web/guest/medicare-charts/medicare-chronic-condition-charts>

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Diabetes Matters to Us All

- “There is strong evidence that **people with periodontitis have elevated risk for dysglycemia and insulin resistance.**”
- **Periodontitis** is also associated with an **increased risk** of type 2 diabetes.”
- “The European Federation of Periodontology and the International Diabetes Federation report consensus guidelines for **physicians, oral healthcare professionals and patients to improve early diagnosis, prevention and co-management of diabetes and periodontitis.**”



Sanz M, et al. Scientific evidence on the links between periodontal diseases and diabetes: Consensus report and guidelines of the joint workshop on periodontal diseases and diabetes by the International Diabetes Federation and the European Federation of Periodontology. *J Clin Periodontol* 2017 Aug 24. doi: 10.1111/jcpe.12808.

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SCIENTIFIC
AMERICAN

PUBLIC HEALTH

The Hunger Gains: Extreme Calorie-Restriction Diet Shows Anti-Aging Results

A new study shows five days of hunger a month may reduce risk factors for aging and age-related diseases

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Caloric Restriction?



Canto is 27 year old monkey on CR diet, Owen is 29 year old on unrestricted diet.

news.wisc.edu/monkey-caloric-restriction-study-shows-big-benefit-contradicts-earlier-study/
Ravussin E, et al. : A 2-Year Randomized Controlled Trial of Human Caloric Restriction: Feasibility and Effects on Predictors of Health Span and Longevity. *J Gerontol A Biol Sci Med Sci*. 2015;70(9):1097–104

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- 25 year study University of Wisconsin: **76 rhesus monkeys ages 7-14 years**, fed a diet reduced in calories by 30%.
- **Disease was 3 fold greater in control group.** No evidence of diabetes in any caloric-restricted animal.
- NIA **2-year** study randomized 218 non-obese people to current diet or 25% caloric restriction (11.7% on average).
 - **Statistically significant reduction in inflammatory markers, weight loss, improved mood, sleep duration, etc.**

Fasting-Mimicking Diets (FMD)



Wei M, et al. Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease. *Sci Transl Med* 2017; 9(377).

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- USC study of 100 healthy participants randomized into 2 study arms and tested the effects of FMD done 5 consecutive days each month for 3 months.
 - 1100 calorie first day, 700 calories for 4 days (plant based, multivitamin). Ate whatever they wanted rest of the month.
- Three FMD cycles reduced body weight and total body fat; lowered blood pressure, cholesterol, triglycerides and IGF-1. Lean muscle mass remained unchanged. Note: 25% drop-out rate
- Effects still noted 3 months AFTER study ended.

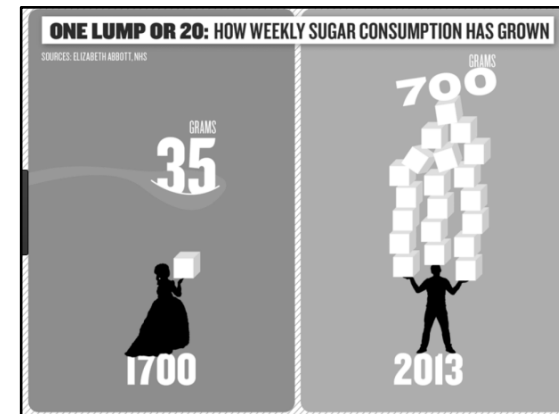
Promising and.....

the BIG QUESTION

- CALERIE study showed that even 11% reduction in calories can improve weight loss and certain biomarkers associated with aging. Most people could not sustain 25% reduction in cal.
- What is unclear: do these diets extend *longevity* in humans? **The data suggest that they have a favorable impact on many metabolic parameters associated with better health.**

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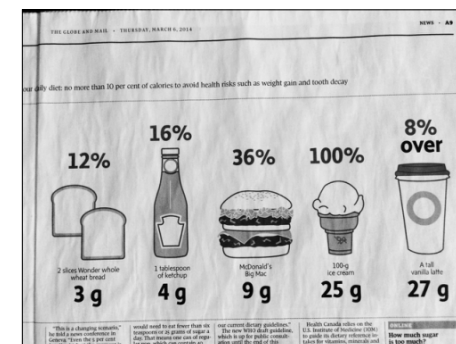
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WHO Recommends Limiting Sugar Consumption To 25g/d



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Sugars added to foods, as well as those found naturally in honey, syrups, fruit juices and fruit concentrates. Not in fresh produce.



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Carbs/Sugars/Starches: Oral Health



Chapple IL, et al. Interaction of lifestyle, behaviour or systemic diseases with dental caries and periodontal diseases: consensus report of group 2 of the joint EFP/ORCA workshop on the boundaries between caries and periodontal diseases. *J Clin Periodontol* 2017 Mar;44 Suppl 18:S39-S51.

- Fermentable carbohydrates/sugars/starches *most relevant common dietary risk factor for periodontal diseases and dental caries.*
- In caries, fermentation process leads to acid production and the generation of biofilm components (e.g., glucans).
- In periodontitis, glycemia drives oxidative stress and advanced glycation end-products trigger hyper inflammatory state.

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November 2016

Sugar Industry and Coronary Heart Disease Research A Historical Analysis of Internal Industry Documents

Cristin E. Kearns, DDS, MBA^{1,2}; Laura A. Schmidt, PhD, MSW, MPH^{1,3,4}; Stanton A. Glantz, PhD^{1,5,6,7,8}

> Author Affiliations

JAMA Intern Med. 2016;176(11):1680-1685. doi:10.1001/jamainternmed.2016.5394

Editorial
Comment

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Abstract

Early warning signals of the coronary heart disease (CHD) risk of sugar (sucrose) emerged in the 1950s. We examined Sugar Research Foundation (SRF) internal documents, historical reports, and statements relevant to early debates about the dietary causes of CHD and assembled findings chronologically into a narrative case study. The SRF sponsored its first CHD research project in 1965, a literature review published in the *New England Journal of Medicine*, which singled out fat and cholesterol as the dietary causes of CHD and downplayed evidence that sucrose consumption was also a risk factor. The SRF set the review's objective, contributed articles for inclusion, and received drafts. The SRF's funding and role was not disclosed. Together with other recent analyses of sugar industry documents, our findings suggest the industry sponsored a research program in the 1960s and 1970s that successfully cast doubt about the hazards of sucrose while promoting fat as the dietary culprit in CHD. Policy-

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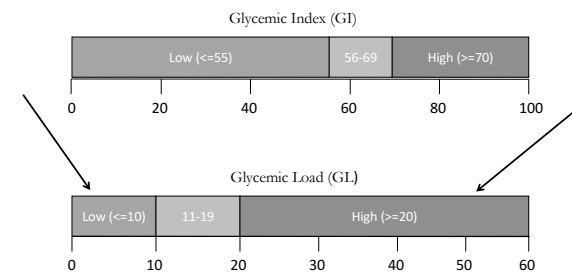
- One of the most popular dietary trends in US is the “low carb” diet.
- Perhaps instead of focusing on LOW CARB, we could emphasize **LOW GLYCEMIC LOAD CARBS.**



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Glycemic Index & Glycemic Load Rating Chart



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Which One Would You Choose?

Banana

Glycemic Index = 52

Available Carbs = 24 grams

Glycemic Load = 14

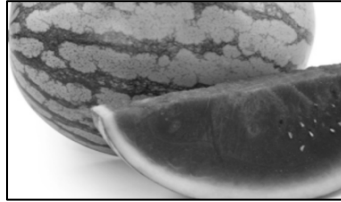


Watermelon

Glycemic Index = 72

Available Carbs = 10 grams

Glycemic Load = 8



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Health Benefits of Low Glycemic Load Diet

- Numerous studies in both adults and teens have found that low glycemic load diets are associated with:
 - Better **weight control**
 - Improvement in blood sugar**
 - Reduction in triglycerides**
 - Improved ovulation in **obese women with infertility**
 - Lower risk of heart disease**, particularly in women

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Glycemic Index/Load

- International consensus conference concluded that diets low in GI and GL were relevant to the **prevention and management of diabetes and coronary heart disease**, and are **particularly important in individuals with insulin resistance**.
- “Given the high prevalence of diabetes and pre-diabetes worldwide and the **consistency of the scientific evidence reviewed**, the expert panel confirmed an **urgent need** to communicate information on GI and GL to the general public and health professionals, through channels such as national dietary guidelines, food composition tables and food labels.”

Augustin LS, et al. Glycemic index, glycemic load and glycemic response: An International Scientific Consensus Summit from the International Carbohydrate Quality Consortium (ICQC). *Nutr Metab Cardiovasc Dis* 2015 Sep;25(9):795-815.

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Glycemic Load and Mood

- 82 healthy weight and healthy overweight or obese, adults enrolled in randomized, crossover controlled feeding study.
- Compared to a low GL diet, consumption of **high GL diet** resulted in:
 - 38% higher score for **depressive symptoms** ($P = 0.002$)
 - 55% higher score for **total mood disorder** ($P = 0.05$)
 - 26% higher score for **fatigue/inertia** ($P = 0.04$), compared to low GL diet.



Breymeyer KL, et al. *Appetite* 2016; Dec 1;107:253-259.

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Food	Serving Size	Glycemic Load	Food	Serving Size	Glycemic Load
Grapefruit	½ large	3	Asparagus	½ cup	2
Apple	1 medium	6	Broccoli	1 cup	4
Banana	1 large	14	Green beans	1 cup	3
Raisins	1 small box	20	Tomato	1 medium	2
Watermelon	1 cup	8	Subway sandwich	6 inch	17
Carrots	1 large	5	Turkey breast		
Orange	1 medium	6	Butter pecan ice cream	5.5 ounces (small)	22
Sweet potato	1 cup	17	Vanilla ice cream cone	4.5 ounces (small)	19
Baked potato	1 medium	28	Potato chips, fat free	1 bag (8 ounces)	49
French fries	1 medium serving	26	Tortilla chips, white corn	3.5 ounces	38
Snickers	1 bar	35	Eggo oat waffles	1 serving	13
Reese's cup	1 miniature	2	Maple syrup	4 Tbsp	39
White table wine	5 ounces	1	Egg, hard boiled	1	2
Red table wine	5 ounces	1	Apple juice	8 ounce	6
Grape juice	6 ounces	12			

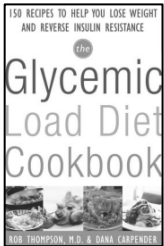
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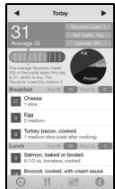
Food	Serving Size	Glycemic Load
Spaghetti	1 cup	38
Brown rice	1 cup	23
White rice	1 cup	33
White bread	1 slice	10
Whole grain bread	1 slice	5
Bagel, cinnamon raisin	1 3.5 inch	24
Pumpernickel bread	1 slice	6
Macaroni and cheese	1 cup prepared	31
Chocolate doughnut	1 doughnut (80 g)	25
Glazed doughnut	1 doughnut (80 g)	12
Kellogg's Frosted Flakes	¾ cup	20
Kellogg's Special K	1 cup	14
Post Bran Flakes	¾ cup	12
Post Raisin Bran	1 cup	25

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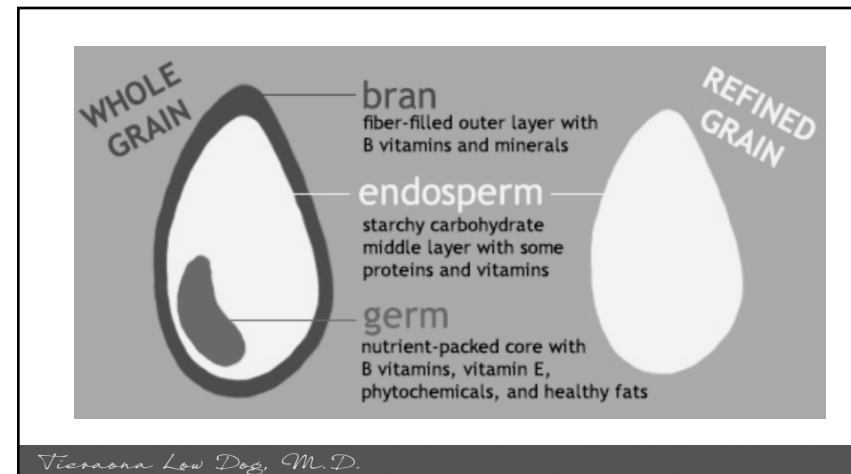
Great Resource: The New Glucose Revolution by Jennie Brand-Miller, PhD

App \$3.99
↓
Low GI Diet Tracker



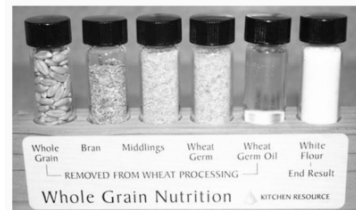


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What Impacts Glycemic Load of Foods

- Amount of **processing** (increases surface area, increases GL)
- **Fiber** content (decreases GL)
- **Fat** content and **protein** slow stomach emptying (decreases GL)
- Many “**fat-free**” foods are **high GL** and contribute to obesity



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Tips on Whole Grains

- **100% Whole Wheat** (first ingredient!)
- **Oats** (skip the instant)
- **Brown Rice** (white has bran/germ removed, LOW in nutrients)
- **Whole Rye** (four times the fiber of whole wheat, most nutritious)
- **Whole Grain Barley** (not pearled: bran and germ have been removed)
- **Buckwheat** (loaded in magnesium, gluten-free)
- **Quinoa** (not a grain, it's a seed loaded in protein and omega 3)
- **Whole Wheat Couscous** (delicious and high in fiber)
- **Corn** (organic, non-GMO – increases healthy gut flora)

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Gluten

- Autoimmune condition **celiac disease**, where immune system interacts negatively with **gluten**, a storage protein in cereal grains. **ONLY** treatment is complete avoidance of gluten. Note: *In children, celiac disease is associated with both enamel defects and aphthous stomatitis.**
- Other individuals may be **allergic to wheat**, not all grains. Symptoms include GI (indigestion, cramps, diarrhea, nausea), respiratory (stuffy/runny nose) and/or skin (hives or rash). **AVOID** wheat.

*Nieri M, et al. Enamel defects and aphthous stomatitis in celiac and healthy subjects: Systematic review and meta-analysis of controlled studies. *J Dent* 2017; Oct;65:1-10.

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Foods to Avoid with Celiac

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • Atta (chapatti flour) • Barley (flakes, flour, pearl) • Beer, ale, lager • Breading and bread stuffing • Brewers yeast • Bulgur • Communion wafers • Couscous • Croutons • Dinkel (also known as spelt) * • Durum * • Einkorn * • Emmer * • Farina • Farro (also known as spelt) * • Fu ** | <ul style="list-style-type: none"> • Graham flour • Hydrolyzed wheat protein • Kamut * • Malt, malt extract, malt syrup and malt flavoring, malt vinegar • Malted milk • Matzoh, matzoh meal • Modified wheat starch • Oatmeal, oat bran, oat flour and whole oats *** • Pastas • Rye bread and flour • Seitan **** • Semolina | <ul style="list-style-type: none"> • Spelt (also known as farro or faro, dinkel) * • Triticale • Wheat bran • Wheat flour • Wheat germ • Wheat starch • *All types of wheat • **Dried gluten product • ***Often contaminated with wheat and barley • ****Meat like dish made with gluten |
|---|--|--|

From www.celiac.ca

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www.celiac.org

Lots of info. Recipes provided for 7 day meal plan.

Get an app!

The Gluten-Free Scanner (free, more than 500,000 products)



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What is the Low FODMAP Diet?

- FODMAP are highly fermentable but poorly absorbed short-chain carbohydrates and polyols. Studies have shown that in some people, they can be a big cause of irritable bowel syndrome (IBS).
 - Gas, cramping, diarrhea
- Studies show that by eliminating wheat derivatives, lactose-containing dairy products, many vegetables and beans, and several types of fruits can improve IBS.

Barrett JS. *Journal of Gastroenterology Hepatology* 2017; Mar;32 Suppl 1:8-10.

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F	Fermentable: Fermentable carbohydrates are sugars that are broken down and digested by bacteria in our intestines, producing gas and other by-products.
O	Oligosaccharides: Oligosaccharides are short chains of carbohydrate molecules linked together. <ul style="list-style-type: none"> • Fructans (a chain of fructose molecules) and galacto-oligosaccharides (a chain of galactose molecules) are oligosaccharides that humans cannot break down and properly absorb in the small intestine.
D	Disaccharides: Disaccharides are two carbohydrate molecules linked together. <ul style="list-style-type: none"> • Lactose, the sugar found in milk and dairy products, is a disaccharide composed of glucose and galactose. Lactose must be broken down by the digestive enzyme lactase before it can be absorbed in the small intestine. In people with lactose intolerance, the level of lactase enzyme is insufficient to properly digest lactose and lactose travels to the colon where fermentation occurs.
M	Monosaccharides: Monosaccharides are single carbohydrate molecules. <ul style="list-style-type: none"> • Fructose, the sugar found in many fruits and some vegetables, is a monosaccharide and does not require any digestion before it is absorbed. When foods containing equal amounts of fructose and glucose are eaten, glucose helps fructose to be completely absorbed. However, when fructose is present in greater quantities than glucose, fructose absorption depends upon the activity of sugar transporters located in the intestinal wall. The ability to absorb excess fructose varies from person to person. In people with fructose malabsorption, the capacity of sugar transporters is limited and excess fructose travels to the colon where fermentation occurs.
A	And
P	Polyols: Polyols, or sugar alcohols, are a type of carbohydrate that humans can only partially digest and absorb in the small intestine. <ul style="list-style-type: none"> • Polyols, such as sorbitol, mannitol, xylitol, maltitol and isomalt, mimic the sweetness of sucrose (table sugar), however, because their absorption is much slower, only a small amount of what is eaten is actually absorbed. Polyols are often used as low-calorie sweeteners in sugar-free and diet products.

www.CDHF.ca

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LOW FODMAP GROCERY LIST

Always check ingredients on packaged foods to ensure they comply with the strict low FODMAP diet guidelines.

GRAINS
 Rice (white, brown, wild, cauliflower)
 Quinoa
 Buckwheat (black, red, white)
 Rice (brown, white, cauliflower)
 Wild rice
 Barley (hulled, pearled)
 Rye (hulled, pearled)
 Sorghum (hulled, pearled)
 Millet (hulled, pearled)
 Amaranth (hulled, pearled)
 Buckwheat (hulled, pearled)
 Rye (hulled, pearled)
 Sorghum (hulled, pearled)
 Millet (hulled, pearled)
 Amaranth (hulled, pearled)

BRAND NAME CEREALS
 Quaker (hulled, pearled)
 Rye (hulled, pearled)
 Sorghum (hulled, pearled)
 Millet (hulled, pearled)
 Amaranth (hulled, pearled)

BREADS
 Bread (hulled, pearled)
 Rye (hulled, pearled)
 Sorghum (hulled, pearled)
 Millet (hulled, pearled)
 Amaranth (hulled, pearled)

PRODUCE
 Apples
 Bananas
 Carrots
 Cauliflower
 Cucumber
 Eggplant
 Garlic
 Green beans
 Kale
 Lemon
 Lettuce
 Onions
 Peas
 Peppers
 Potatoes
 Pumpkin
 Spinach
 Squash
 Tomatoes
 Zucchini

DAIRY
 Cheese (hard, aged)
 Yogurt (plain, unsweetened)
 Butter (unsalted)

PROTEIN
 Chicken
 Fish
 Eggs
 Tofu
 Beans (hulled, pearled)

SPICES
 Basil
 Cinnamon
 Cloves
 Coriander
 Fennel
 Ginger
 Nutmeg
 Paprika
 Saffron
 Turmeric

HERBS
 Basil
 Cinnamon
 Cloves
 Coriander
 Fennel
 Ginger
 Nutmeg
 Paprika
 Saffron
 Turmeric

BEVERAGES
 Coffee
 Tea
 Water

SNACKS/SWEETS
 Chocolate (dark, unsweetened)
 Peanut butter (unsalted)
 Almonds (unsalted)
 Walnuts (unsalted)
 Cashews (unsalted)
 Pistachios (unsalted)
 Macadamia nuts (unsalted)
 Pecans (unsalted)
 Brazil nuts (unsalted)
 Pine nuts (unsalted)
 Sunflower seeds (unsalted)
 Pumpkin seeds (unsalted)
 Flax seeds (unsalted)
 Chia seeds (unsalted)
 Hemp seeds (unsalted)
 Sesame seeds (unsalted)
 Popcorn (unsalted)

CONDIMENTS
 Soy sauce (unsalted)
 Vinegar (apple cider, balsamic)
 Mustard (yellow, Dijon)
 Ketchup (unsweetened)
 Hot sauce (unsweetened)
 Mayonnaise (unsweetened)
 Dressing (unsweetened)
 Butter (unsalted)
 Oil (olive, coconut, avocado)

JAMS/SPREADS
 Jam (unsweetened)
 Spread (unsweetened)

LOW FODMAP GROCERY LIST

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Great Resources

Use an App →

LOW-FODMAP 28-DAY PLAN
 FOREWORD BY KATE SCARLETT, RD, LBN
 105 pages

THE COMPLETE Low-FODMAP Diet
 A REVOLUTIONARY PLAN FOR Managing IBS AND Other Digestive Disorders
 SUE SHEPHERD, PhD, and PETER GIBSON, MD
 University of Michigan and Co-Director of the American Journal of Gastroenterology
 Copyright 2014

LowFODMAP
 From Food to FODMAPs
 Carbohydrates
 Proteins
 Fats
 Vitamins
 Minerals
 Water

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Dietary Inflammatory Index (DII)

- Inflammation often driven by dietary patterns. An anti-inflammatory diet may reduce **sub-chronic inflammation** and improve **cardiovascular, metabolic, and neurologic parameters**.
- The **Dietary Inflammatory Index** is based on measuring inflammation in the body in response to specific foods (many clinical trials).
- You can take the test by **downloading the app for Dietary Inflammatory Index** (iTunes: DII Screener)

Question #1

What was your average intake of bananas over the last year?

Never

1 Per Month

2-3 Per Month

1 Per Week

2 Per Week

3-4 Per Week

5-6 Per Week

1 Per Day

2+ Per Day

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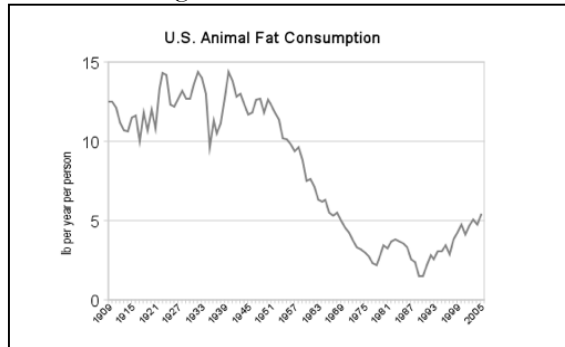
Inflammatory Food Ratings

200 or higher	Strongly anti-inflammatory
101 to 200	Moderately anti-inflammatory
0 to 100	Mildly anti-inflammatory
-1 to -100	Mildly inflammatory
-101 to 200	Moderately inflammatory
-201 or lower	Strongly inflammatory

FOOD	SERVING SIZE	SERVING SIZE (GRAMS)	IF RATING
AGAVE NECTAR	1 TBSP	21	-74
ALMOND BUTTER	¼ CUP	64	100
CHEESE, CHEDDAR	1 OUNCE	28.35	-20
CHICKEN BREAST, RSTD	3 OUNCES	85	-19
MILK, WHOLE	1 CUP	246	-46
OLIVE OIL	1 TBSP	14	74
ONIONS, COOKED	½ CUP	105	240
RICE, WHITE	1 CUP	158	-153
SPINACH	1 CUP	30	75
SALMON, SOHO BAKED	3 OUNCES	85	450
TURMERIC	½ TSP	1.5	338

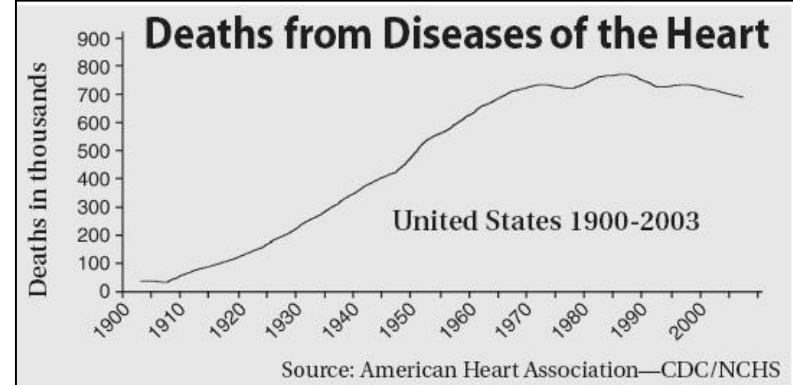
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Does Eating Fat Give You Heart Disease?



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SATURATED FAT

- Meat, dairy products, eggs
- Coconut and palm oil
- Solid at room temperature
- Increases LDL and HDL

UNSATURATED FAT

- Vegetable oils
- Liquid at room temperature
- Increases HDL, lowers LDL
- Includes monounsaturated
 - Olive oil, avocados, peanuts, almonds
- Polyunsaturated
 - Omega 3
 - EPA/DHA: fish/shellfish
 - ALA: flax, walnut, soy, canola
 - Omega 6
 - Corn oil, safflower oil, sunflower oil

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Saturated Fat Debate

- Three large meta analyses (21 studies, 12 studies, and 76 studies) have all failed to show any significant evidence that saturated fat increases the risk for heart disease.
- They also failed to find any significant evidence that increasing polyunsaturated fats and decreasing saturated fats lowers risk of heart disease.



Siri-Tarino, *Am J Clin Nutr* 2010; 91 (3): 535-46.
Schwingshackl L, et al. *BMJ Open* 2014; 4(6):e004487.
Chowdhury R, et al. *Am Intern Med* 2014; 160(6):398-406.

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Red Meat and Cancer

- **Poultry/turkey and fish** neutral or beneficial effects regarding cancer/health.
- American Institute for **Cancer** Research recommendations regarding red meats (**beef, lamb, pork**) based upon data that links them to an increased risk of colon cancer:
 - **Limit red meats to < 18 ounces** per week.
 - **Avoid processed** red meats (e.g., bologna, salami, hot dogs)

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- Ethical and humane treatment of animals is an important consideration. Many reasons to support organic and grass fed/finished animals.
- Grass fed higher in conjugated linoleic acid, stearic acid, vitamins A and E.
- *Organic* pastured dairy and meats are up to ~50% higher in omega 3 fatty acids and were only given organic feed and no growth hormones or antibiotics.

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Seafood

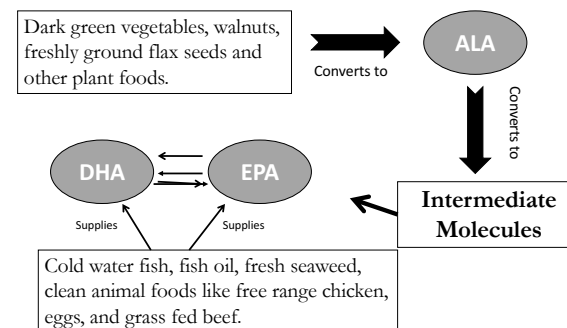
- Fish and seafood are excellent sources of omega 3's
 - Beneficial for prevention of atherosclerosis and maintaining healthy blood pressure.
 - Promote brain health and may help reduce the risk of depression.
 - Necessary for the health of the eyes. Can help reduce dry eye syndrome.
 - Crucial for health pregnancy and childhood development.
 - Help quell inflammation, which has been linked to many chronic disorders.



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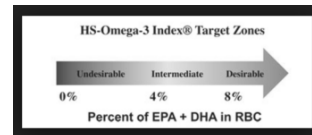
Omega 3 Fatty Acids from Plants and Animals



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No Fish Story: The Omega 3 Index

- EPA and DHA produce “pro-resolving” compounds that “turn down” inflammation in the body.
- Omega-3 Index test is gold standard for omega-3 biostatus testing.
- Canadian study found that fewer than 3% of adults had levels associated with low CHD risk; 43% had levels associated with high risk.



Langlois K, et al. *Health Rep* 2015; Nov 18;26(11):3-11

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American Heart Association

- “Omega-3 fish oil supplements prescribed by a healthcare provider may help **prevent death** from heart disease in patients who recently had a **heart attack** and may **prevent death and hospitalizations** in patients with **heart failure**.”



Siscovick DS, et al. *Circulation* 2017; Mar 13.

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Omega 3 and Asthma: Impressive

- Reduced intake of omega-3 fatty acids may be a contributing factor to the increasing prevalence of wheezing disorders.
- Study found supplementation with omega-3 fatty acids in third trimester of pregnancy **reduced the absolute risk of persistent wheeze or asthma and infections of the lower respiratory tract in offspring by approximately 33%.**



Bigaud H, et al. *N Engl J Med* 2016; Dec 29;375(26):2530-9

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Choose Your Seafood Wisely

The Seafood Watch App

Available for iOS and Android

It's easier than ever to get the latest recommendations for seafood and sushi, learn more about the seafood you eat, and locate or share businesses that serve sustainable seafood.

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Features

- Get free, up-to-date seafood recommendations
- Search for seafood quickly and easily by common market name
- Search for sushi by Japanese name as well as common market name
- Find restaurants and stores near you that serve ocean-friendly seafood
- Access in-depth conservation notes and reports

<https://www.seafoodwatch.org/seafood-recommendations/our-app>

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Coconut Oil (*Cocos nucifera*)

- Extensively used in tropics/subtropics. Rich in medium chain saturated fatty acids (e.g., lauric acid), MAY be less likely stored as adipose tissue and less likely to promote insulin resistance and inflammation.



- **If using refined coconut oil use ORGANIC only:** no chemical solvents. Smoke point: 450 F.
- **"Virgin" coconut oil** obtained from fresh mature kernel of coconut by mechanical or natural means with or without the application of heat.

McCarthy MF, et al. *Open Heart* 2016; 3(2):e000467.
Eyyres L, et al. *Nut Rev* 2016; 74(4):267-80
Kaushik M, et al. *J Contemp Dent Pract* 2016;17(1):38-41.

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Olive Oil

- Rich in **monounsaturated fat oleic acid (73%)**, antioxidants, and modest levels of vitamin E and K.
- **Oleocanthal mimics ibuprofen** in reducing inflammation.
- Protects against **heart disease and stroke**; lowers total cholesterol, LDL-C, triglycerides; improves HDL, has a mild blood pressure lowering effect.
- May offer protection against **Alzheimer's disease, diabetes and cancer** as part of a healthy diet.
- Keep **refrigerated** for optimal shelf life.
- To find top olive oils that meet rigorous quality and taste standards: www.bestoliveoils.com



Hernandez A, et al. *Arterioscler Thromb Vasc Biol* 2014; 34(9):2115-9.
Grous-Bou M, et al. *BMJ* 2014;349:g6674

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Name of Oil	Smoke Point	Other
Avocado	520/420 F	Refined/unrefined. Good for deep frying, mild flavor
Rice bran oil	490 F	Good for stir-fries, light taste
Ghee	480 F	Nutty flavor,
Canola oil, high oleic	475 F	Light taste, high in omega 3 fatty acids
Olive oil	468/375 F	Regular/Extra Virgin
Coconut oil	450/350 F	Refined/Virgin
Sunflower oil	440/225 F	Refined/unrefined: Sauté, baking, light flavor, versatile
Peanut oil	440/320 F	Refined/unrefined. Neutral taste.
Grapeseed oil	420 F	Light, good for frying and baking
Almond oil	420 F	Clean flavor, stir fries/sauteing.
Hazelnut/Macadamia oil	430/413 F	Baking, nutty flavor
Sesame oil	410/350 F	Refined /unrefined. Stir frying, salads
Butter	350 F	Highly versatile, watch smoke point.

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Full or Low Fat Dairy?

- Full fat dairy may help protect against **type 2 diabetes**. Fat slows absorption of milk sugar, causing slower rise in blood sugar, and lower/slower release of insulin. **No evidence full fat dairy increases risk of heart disease.**
- Full fat dairy **recommended** for women trying to get **pregnant** as it reduces anovulatory infertility.
- Full fat dairy improves **acne**, low fat dairy aggravates it.
- Full fat dairy **lower in lactose**, better tolerated by lactose intolerant individuals.



Chavarro JE, et al. *Hum Reprod* 2007; 22(5):1340-7.
Alexander DD, et al. *Br J Nutr* 2016; 115(4):737-50

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What About Eggs?

- Provide essential fatty acids, proteins, *choline*, vitamins A and B12; selenium, and other critical nutrients.
- Egg consumption (dietary cholesterol) not associated with an increased risk of heart disease in the general population.
- Look for organic eggs and omega 3 enriched whenever possible.
- One egg provides ~ 6grams protein

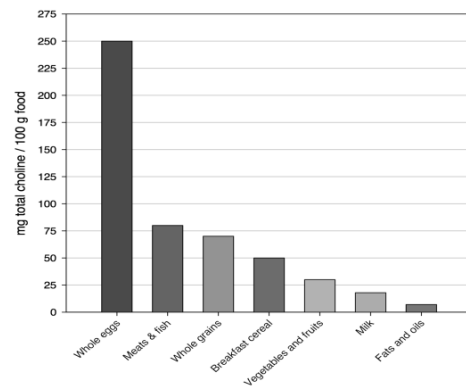


Shin JY, et al. *Am J Clin Nutr* 2013;
98(1):146-59

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Choline in Foods: <http://naldc.nal.usda.gov/download/47335/PDF>



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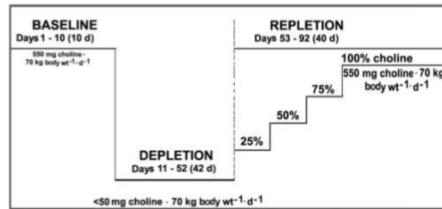
Choline: Related to B-Vitamins

- **Choline deficiency causes abnormal deposition of fat in the liver, which results in a condition called nonalcoholic fatty liver disease.**
- **Necessary for healthy cell membranes and cognition as we age.**
- Particularly **crucial during pregnancy and the first three years of a child's life**, where animal models show it improves cognitive function in adulthood, prevents age-related memory decline, and protects the brain from the neuropathological changes associated with Alzheimer's disease (AD), and neurological damage associated with epilepsy, fetal alcohol syndrome, and Down's syndrome.
- New daily value set in 2016: **550 mg per day**

Jiang X, et al. *Trends Endocrinol Metab* 2014; 25(5):263-73.
Wozniak JR, et al. *Nutr Res* 2013; 33(11):897-904

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- 57 healthy adults fed choline-deficient diets under controlled conditions.
- Results showed that 77% of men, 80% of postmenopausal women, and 44% of premenopausal women developed fatty liver, liver damage, and/or muscle damage.
- Dysfunction corrected when choline was reintroduced into diet.

Fischer LM, et al. *Am J Clin Nutr*. 2007;85(5):1275-1285.

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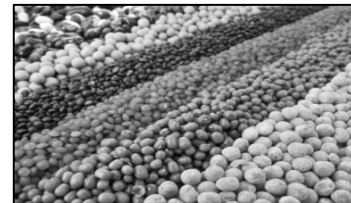
Protein Rich Foods

Food	Portion Size	Protein (g) (approximate)
Meat, fish, or poultry	75g (2 ½ oz) / 125 mL (½ cup)	21
Firm tofu	150g / 175 mL (¾ cup)	21
Egg, chicken	2 large	13
Cheese	50 g (1 ½ oz)	12
Fortified soy beverage	250 mL (1 cup)	6-8.5
Cooked dried beans, peas, or lentils	175 mL (¾ cup)	12
Cow's milk	250 mL (1 cup)	9
Yogurt	175 mL (¾ cup)	8
Peanut butter or other nut spread	30 mL (2 Tbsp)	8
Nuts or seeds	60 mL (¼ cup)	7
Bread	1 slice (35g)	3
Cereals, cold	30 g	3
Cereals, hot	175 mL (¾ cup)	3
Pasta or rice	125 mL (½ cup)	3
Vegetables	125 mL (½ cup) or 250 mL (1 cup)	2
Fruit	1 fruit or 125 mL (½ cup)	1

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Legumes: The “Pulse of Health”



- Soak larger dried legumes (kidney, chickpeas, black & red beans) for 4-24 hours in cold water before cooking. Change water 1-2 times to reduce gas.
- Use 3 cups water per cup of legumes in cooking.
- Use ladle to remove foam on top when cooking legumes
- Rinse canned beans before use to remove sodium
- Lentils are quick and easy to prepare - rinse till clear and remove any small stones/grit.
- Add vinegar, salt, etc. at end of cooking time.

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Soy Milk

- Highest in protein of dairy alternatives (almond milk has 1 gram protein per cup)
- Good source of B-vitamins and is least processed of most commercially available dairy alternatives.
- High in phytic acid, however, which can impair absorption of nutrients such as calcium, iron and zinc. (Fermented soy: no phytic acid)
- Unsweetened products to avoid high sugar.
- 1 cup soy milk ~ 8 grams protein



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Protein and Fracture Risk

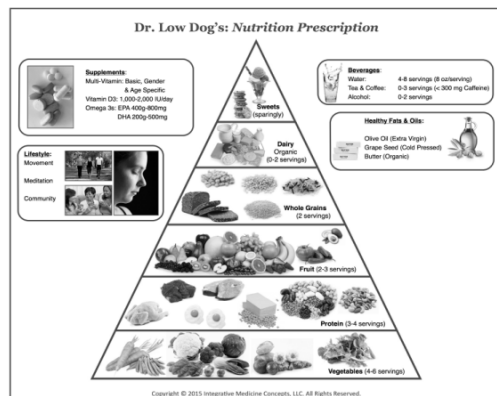
- Framingham Osteoporosis Study found **higher protein intakes** (60-83g/d versus 46g/d) in men and women (mean 75 years) associated with **37% decreased risk of hip fracture**.
- Systematic review **29 studies found protein intakes above current RDA have a beneficial role in preventing hip fractures and BMD loss**.
- No differences between animal or plant proteins, although data in this area were scarce.



Misra D, et al. *Osteoporosis Int* 2011; 22(1):345-349.
Beresley JM, et al. *Am J Clin Nutr* 2014; 99(4):934-940.
Calvez J, et al. *Eur J Clin Nutr* 2012;66(3):281-295.
Wallace TC, et al. *J Am Coll Nutr* 2017; 26(6):481-496

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