

Advances in Nutritional Science To Live Healthfully To 100

Joel Fuhrman, M.D.

Two Types of Nutrients

Macronutrients

protein, carbohydrates and fat

Micronutrients

vitamins, minerals and **phytochemicals**

Dr. Fuhrman's Health Equation

$$H = N / C$$

Health Expectancy = **N**utrients / **C**alories

FIRST PRINCIPLE
of the Nutritarian Diet

Slowing the Aging Process

Low-calorie, high-nutrient intake prolongs lifespan

- Enhances cellular repair mechanisms
- Reduces inflammatory response
- Suppresses genetic alterations
- Decreases free radicals
- Inhibits the production of cross-linking agents
- Slows the metabolic rate
- Enhances DNA repair
- Removes toxins, free radicals and AGEs

Raw Vegetables and Cancer

A review of 206 epidemiological studies showed raw vegetables have the most consistent and powerful association with the reduction of cancers of all types, including stomach, pancreas, colon, breast.

Steinmetz KA et al. J Am Diet Assoc 1996;96(10):1027-39.

Vegetables and Endothelial Function

Meta-analysis and brachial artery vasodilatation tests show as vegetable portions per day increase, intra-vascular inflammation decreases and elasticity and function improves, reducing heart attack and stroke risk.

Lancet 2006;367:320-6.

J Nutr 2006;136:2588-93.

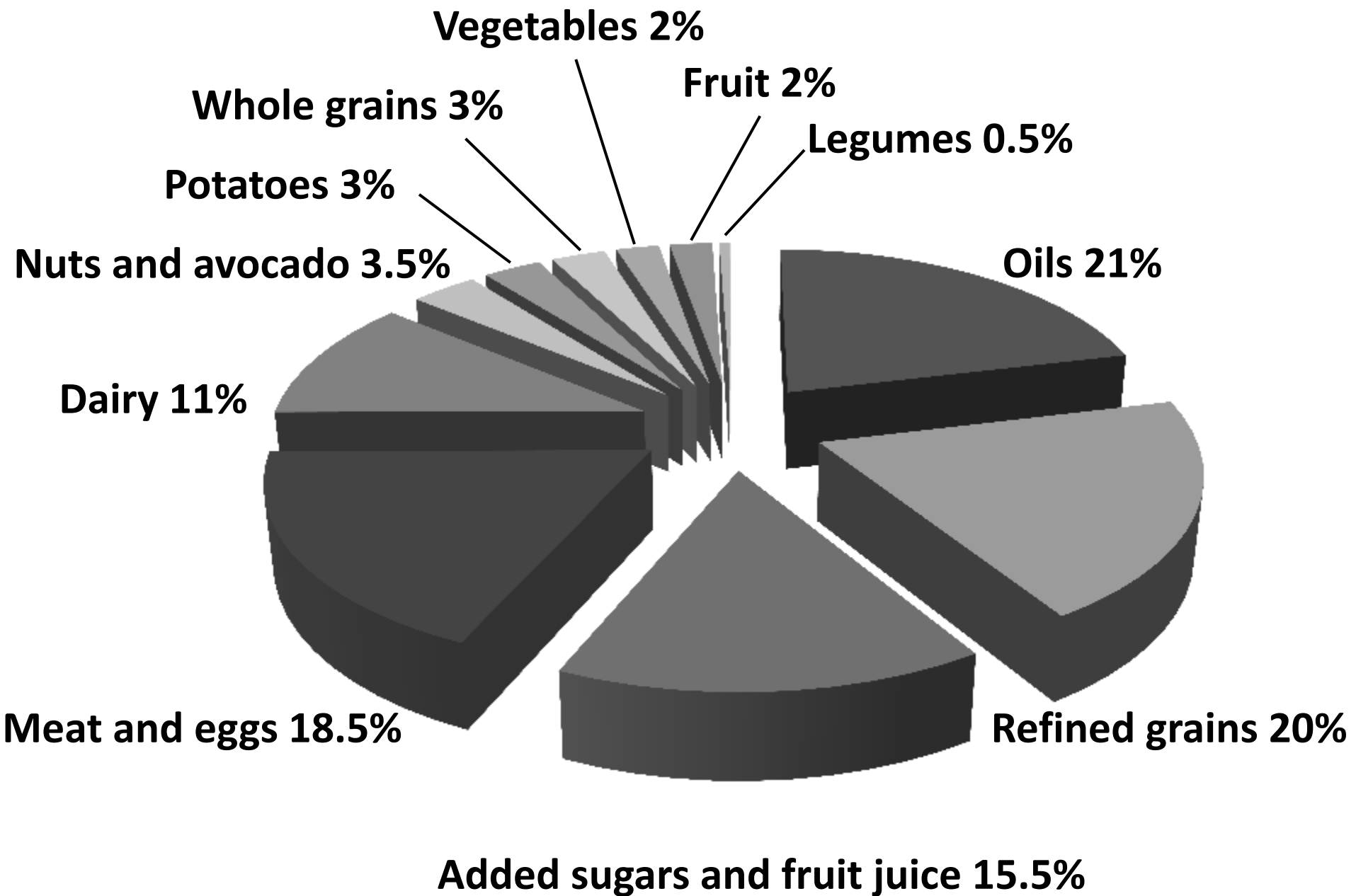
Vegetables Protect DNA

More Green Vegetables → Less DNA Methylation

Lower Risk of Cancer

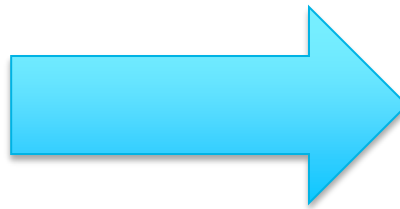
Less Green Vegetables → More DNA Methylation

Higher Risk of Cancer



Anabolic

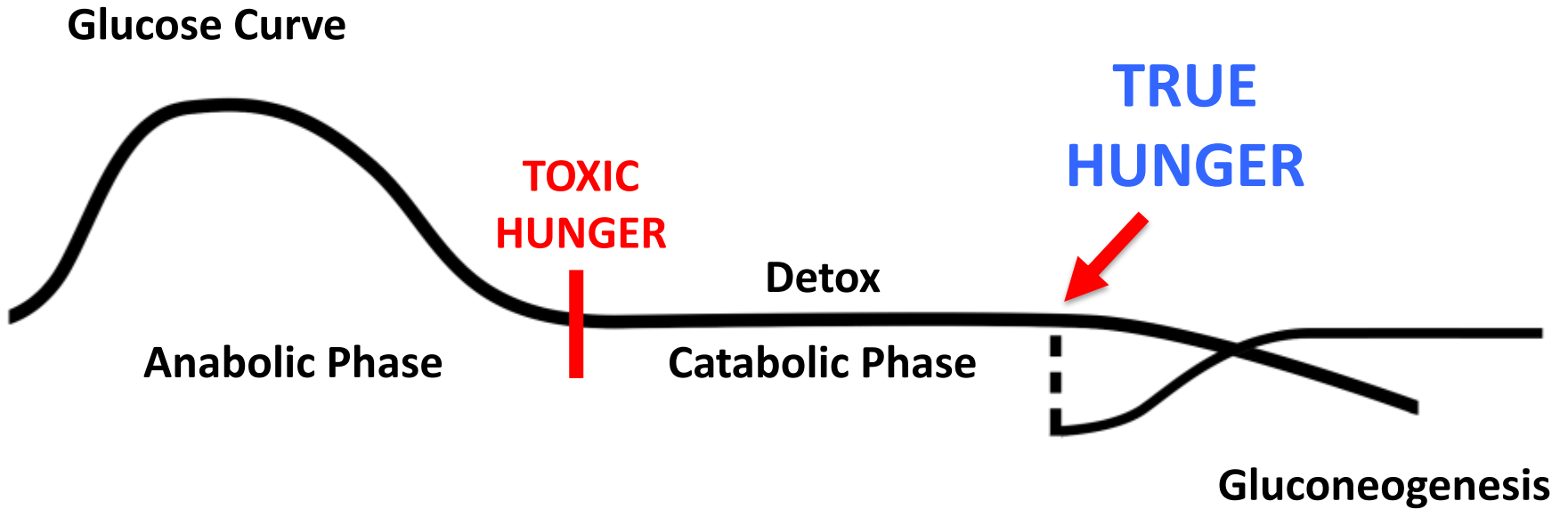
Absorption phase



Catabolic

Burn off phase

The Pleasure of True Hunger



Time Restricted Eating

13 hour window	Breakfast at 8:00	Dinner at 6:00
15 hour window	Breakfast at 8:00	Dinner at 4:00

36 % less breast cancer recurrence

Lower glucose and Hba1c .4

Increased sleep duration (20 minutes)

Marinac DR, et al. Prolonged Nightly Fasting and Breast Cancer Prognosis. JAMA oncol 2016;1;2(8):1049-55.

Metabolism and Aging

- **Reduced body temperature**
- **Reduced respiratory quotient**
- **Lowered thyroid function**

For each 100 calorie increase in metabolic rate, the risk of death by increased by 25%.

Jumpertz R, Hanson RL, Sievers ML, et al. Higher Energy Expenditure in Humans Predicts Natural Mortality. *J Clin Endocrinol Metab* 2011.

Bano A, Khana K, Chaker L, et al. Association of Thyroid Function With Life Expectancy With and Without Cardiovascular Disease: The Rotterdam Study. *JAMA Intern Med.* 2017;177(11):1650-1657.

Dr.Fuhrman's Nutrient IQ

Kale *1 cup*

112

Broccoli *1 cup*

90

Romaine *2 cups*

64

Tomato *1 medium*

60

Mushrooms *¼ cup*

60

Beans *½ cup*

52

Beets *1 cup*

45

Strawberries *½ cup*

45

Flaxseeds *2 Tbsp*

41

Quinoa *1 cup*

26

Potato *1 medium*

12

Chicken *4 oz*

4



High-Volume Foods

- **Raw vegetables**

- snow peas, beets, cucumbers, fennel, tomatoes, carrots, cabbage

- **Fresh fruits**

- melons, grapefruit, apples, kiwis, berries, papaya

- **Cooked greens**

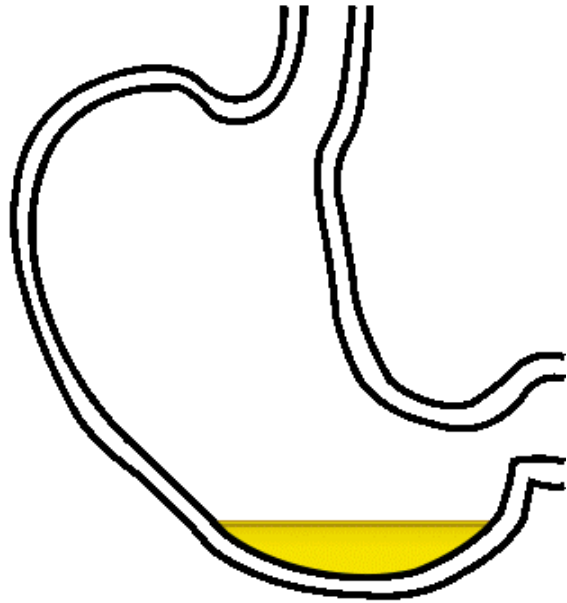
- Brussels sprouts, string beans, artichokes, asparagus, broccoli

- **Non-green vegetables**

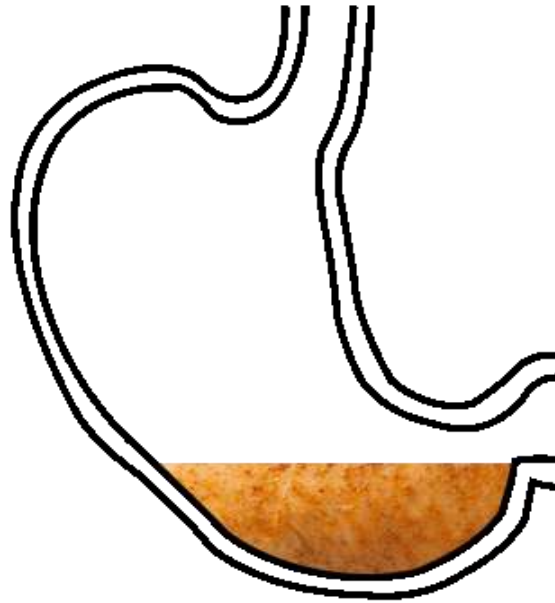
- mushrooms, eggplant, tomatoes, peppers, onions, cauliflower

Fiber and Appetite

- Fiber fermented by bacterial produce SCFA- which acts on hypothalamus to suppress appetite
- More SCFA produced by bacterial fermentation of fiber and resistant starch
- Fiber hold water, space and triggers volume sensors



**400 Calories
of Oil**



**400 Calories
of Chicken**



**400 Calories
of Vegetables**

G-BOMBS



GREENS



BEANS



ONIONS



MUSHROOMS

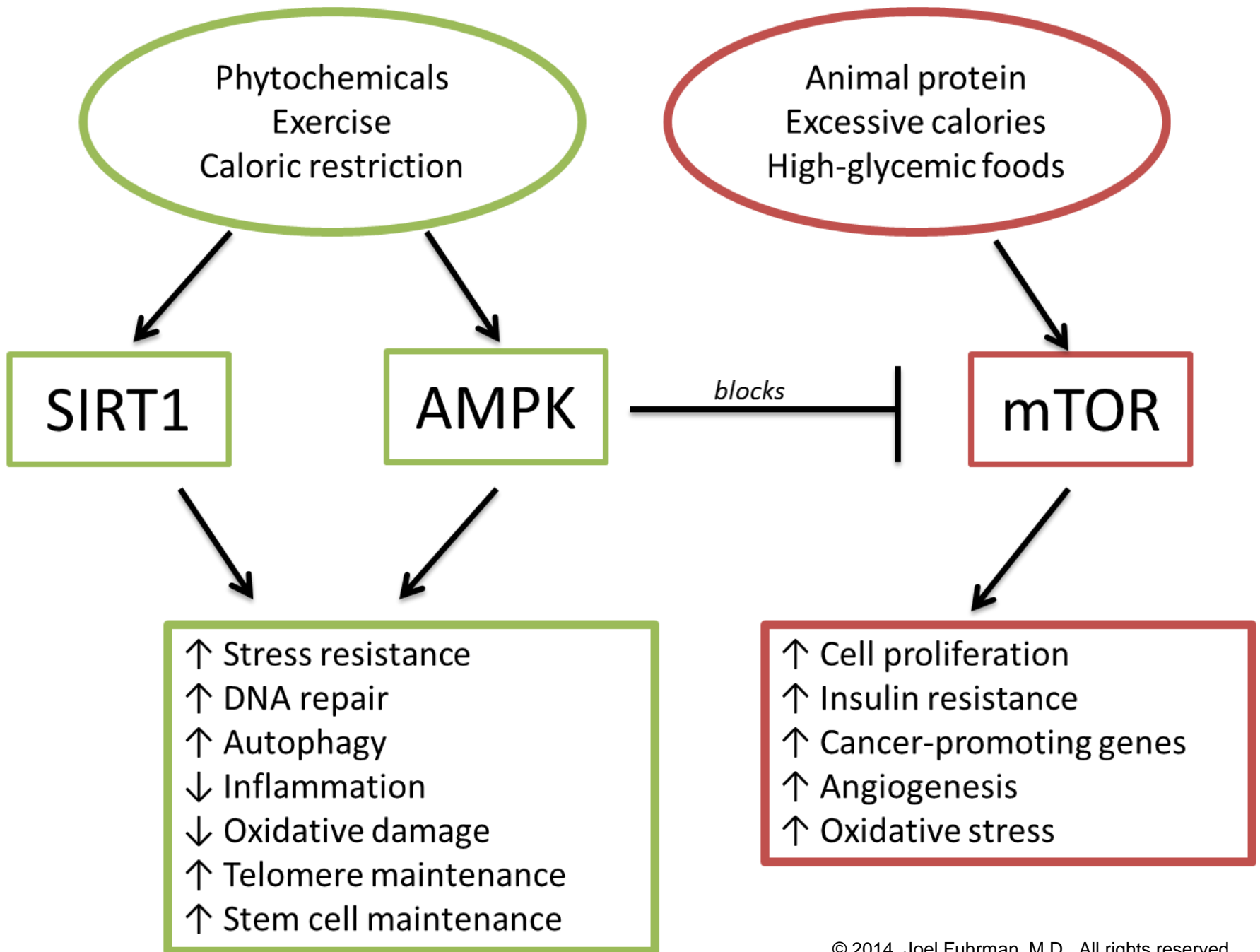


BERRIES



SEEDS

Foods for Optimal Health

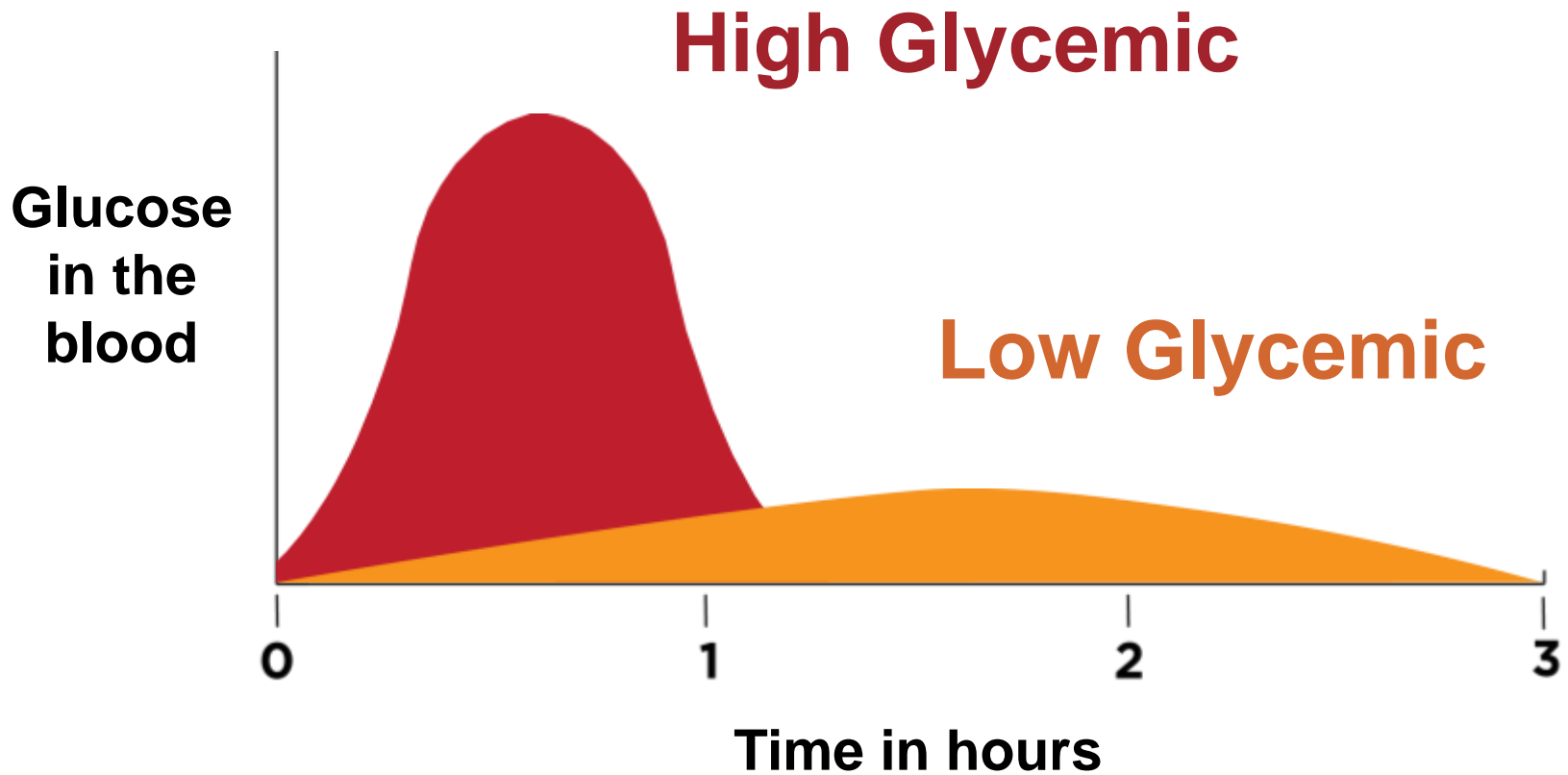


Hormonally Favorable

Insulin and IGF-1

**SECOND PRINCIPLE
of the Nutritarian Diet**

Glycemic Load



Glycemic Load / Insulin and Disease

- Diabetes
- Heart disease
- Multiple cancers
- Macular degeneration
- Gallbladder disease
- Dementia

Insulin Resistance

- Inflammation
- Body fat
- Saturated fat
- Gram negative bacteria

Medium Glycemic Load	Low Glycemic Load	
Corn	Lentils	9
	Apples	9
Brown rice	Kiwi	8
	Green peas	8
Sweet potato	Butternut squash	8
	Kidney beans	7
Grapes	Black beans	6
	Watermelon	6
Rolled oats	Oranges	4
	Cashews	2
Whole wheat	Strawberries	1
Mango		

	Resistant Starch %	Resistant Starch % + Fiber %
Black beans	27	70
Navy beans	26	62
Lentils	25	59
Split peas	25	58
Corn	25	45
Brown rice	15	20
Rolled oats	7	17
Whole wheat flour	2	14
Pasta	3	9
Potato	3	5

Beans and Cancer

inositol pentakisphosphate – (IP-5)
→ will not allow tumors to grow

Induces apoptosis in breast cancer cells

8% reduction in death
for each 20 grams (2 tbsp) beans

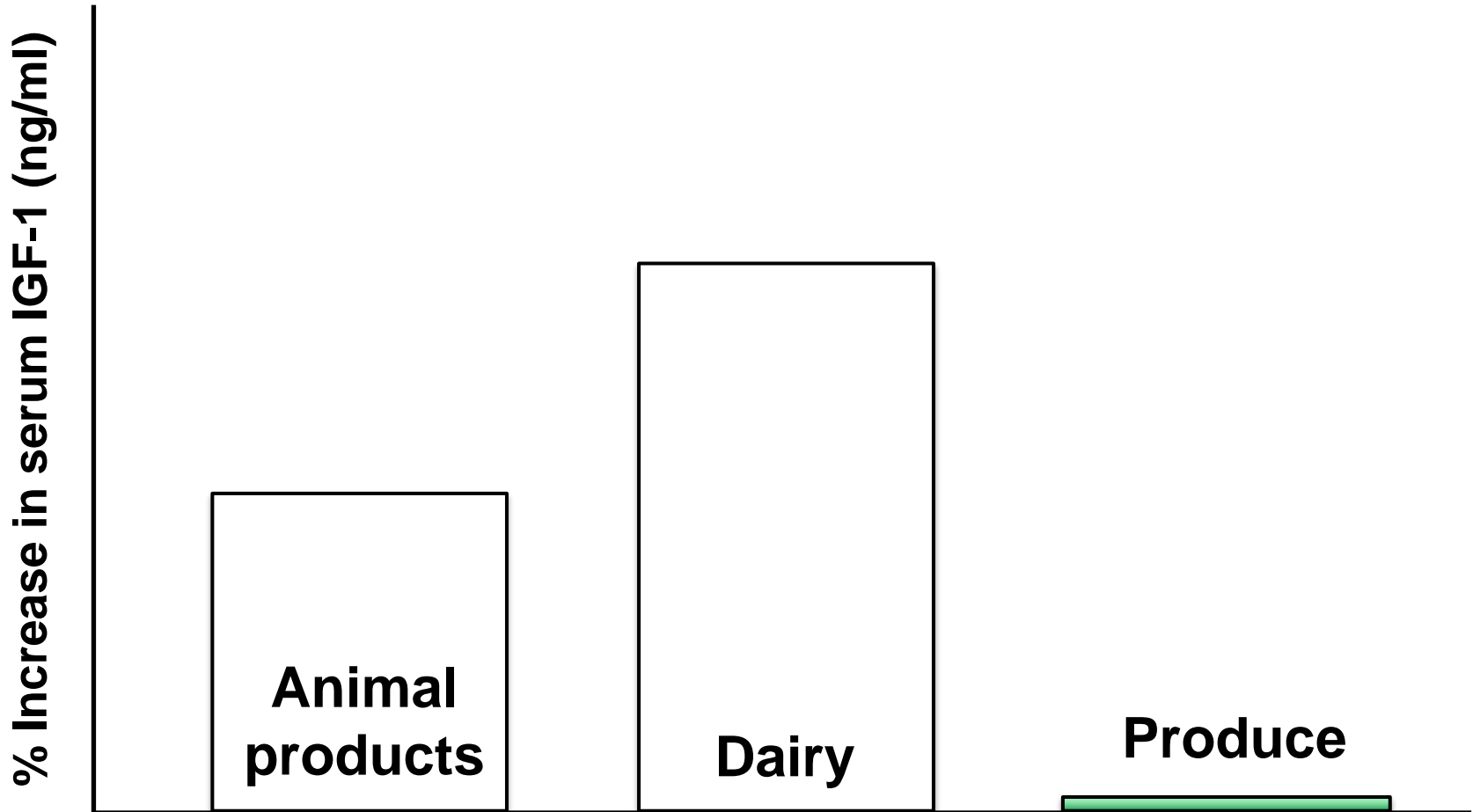
IGF-1

Insulin-like growth factor 1

Insulin-like Growth Factor – 1 (IGF-1) Low Levels Extend Life Span

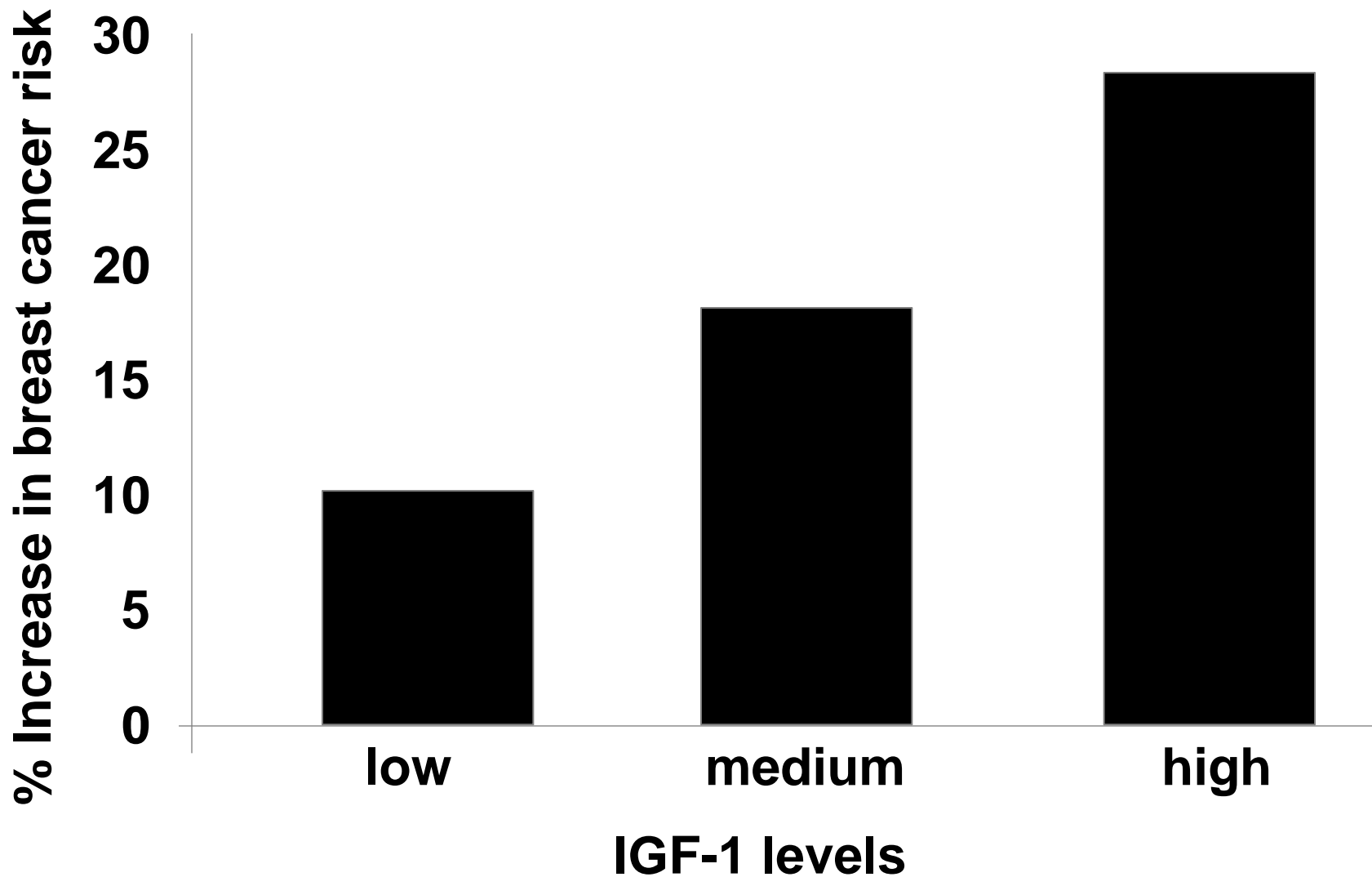
- Decreased inflammation
- Reduced oxidative damage
- Stress resistance
- Insulin sensitivity
- Slows aging of the brain

Food and IGF-1



Increase in serum IGF-1 from a 5% increase in calories from animal/dairy protein

IGF-1 and Breast Cancer: Pooled data from 17 prospective studies

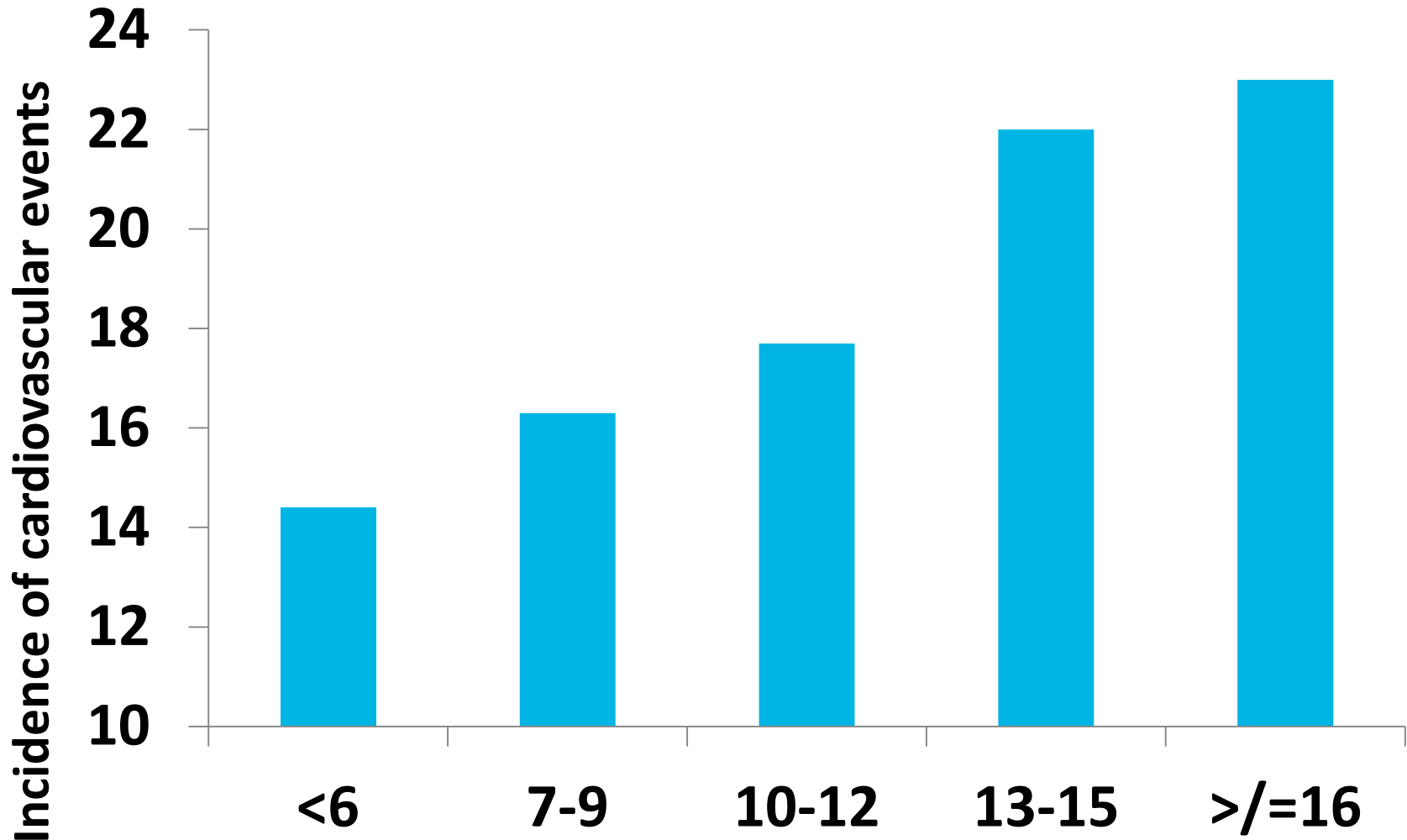


High Protein and Death

- 4-fold increase in cancer death
- 75% increase in overall deaths

Levine ME, et al. Low Protein Intake Is Associated with a Major Reduction in IGF-1, Cancer, and Overall Mortality in the 65 and Younger but Not Older Population. *Cell Metab* 2014; 19(3):407-417.

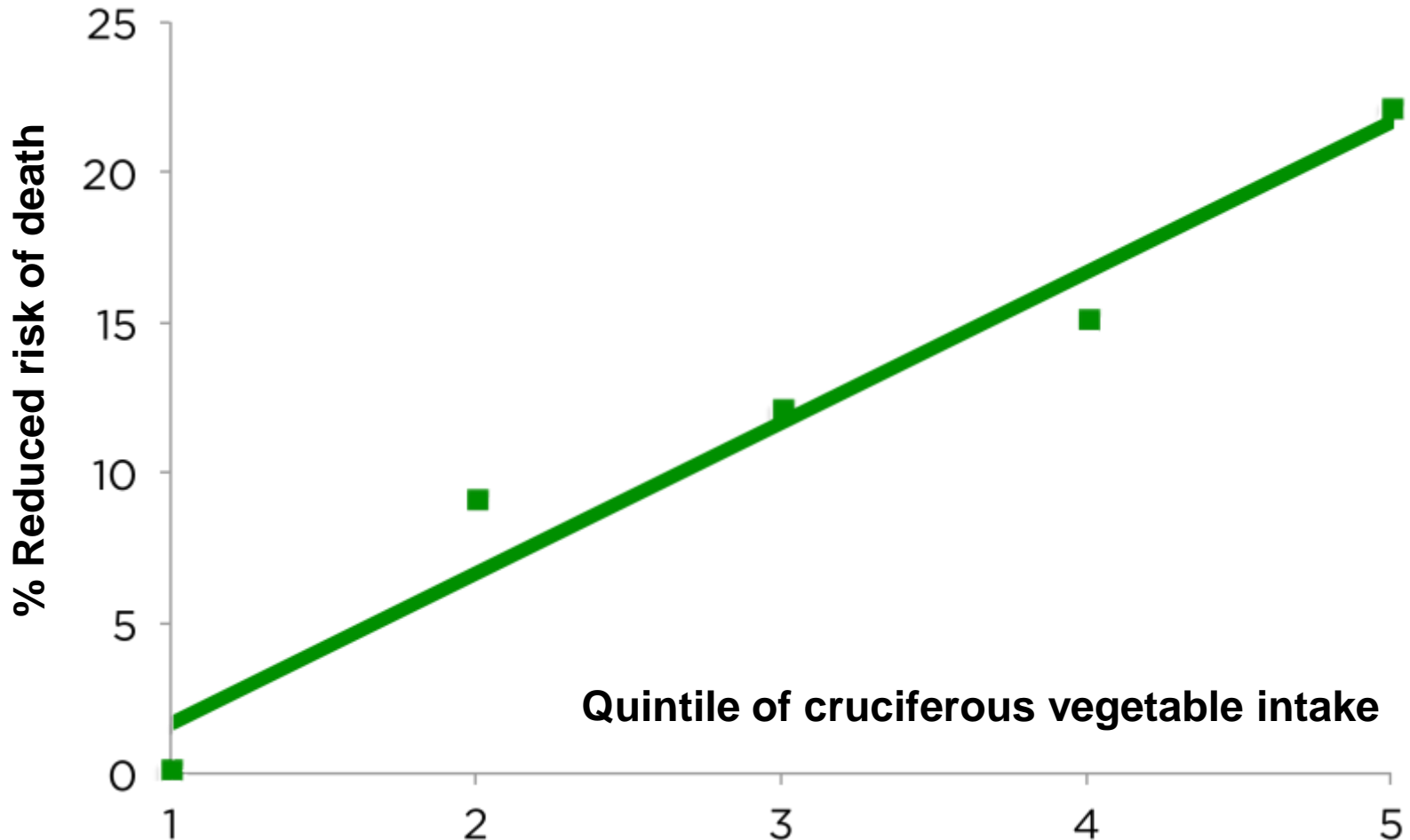
Low-carb, High-protein Diet: Cardiovascular Disease Risk



Low-carbohydrate, high-protein diet score (0-20)

Cruciferous Vegetables and Longevity

Study of 134,796 Chinese adults



Nuts and Heart Disease

- The Adventist Health Study
- The Iowa Women's Health Study
- The Nurses Health Study
- The Physicians Health Study
- The CARE Study

Dramatic reduction in all-cause mortality.
Dramatic effect on increased lifespan.

Nuts and Cholesterol Levels

Pooled analysis of 25, 3-8 week trials:

Nuts consumed/day	Decrease in total cholesterol	Decrease in LDL
1 ounce	2.8%	4.2%
1.5 ounces	3.2%	4.9%
2.4 ounces	5.1%	7.4%

Seventh-Day Adventist Study

This 12-year study, published in 2001 Archives of Int Med

Longest life was in:



Vegan who ate nuts and seeds

Flexitarians who eat nuts and seeds

Low fat vegans (no nuts and seeds)

▪

**Fraser GE, Shavlik DJ. Ten Years of Life, Is It a Matter of Choice?
Arch Intern Med. 2001;161:1645-1652.**

Nuts, one serving a day

Meta-analysis examining issue of cardiovascular mortality and nuts, with 354,933 individuals, 44,636 deaths →

Am J Clin Nutr 2015;101:783–93.

39 percent decrease cardiovascular mortality

27 percent decrease all cause mortality

The group with the highest intake of nuts/seeds had 40 percent lower cardiovascular deaths compared to the group with the lowest intake **81,000 individuals 2276 deaths**

Adventist Health Study-2 cohort. *Int J Epidemiol* 2018

Women's Health Initiative Memory Study

1,100 women followed 8 years

- greater DHA-EPA omega-3 index had larger total brain volumes
- 7.5% index level had larger brain volume compared to 3.4%

Pottala JV, Yaff K, Robinson JG, et al. Higher RBC EPA + DHA corresponds with larger total brain and hippocampal volumes. *Neurology*. January 22, 2014

DHA and Dementia

Adequacy likely important if lifespan is enhanced

Low DHA = brain shrinkage with aging

Insufficiency increases risk of depression

Recent research on vegans showed :

64 % insufficient levels

27 % significantly deficient

Extremely Low Fat Vegans

Taking risks for better health ?

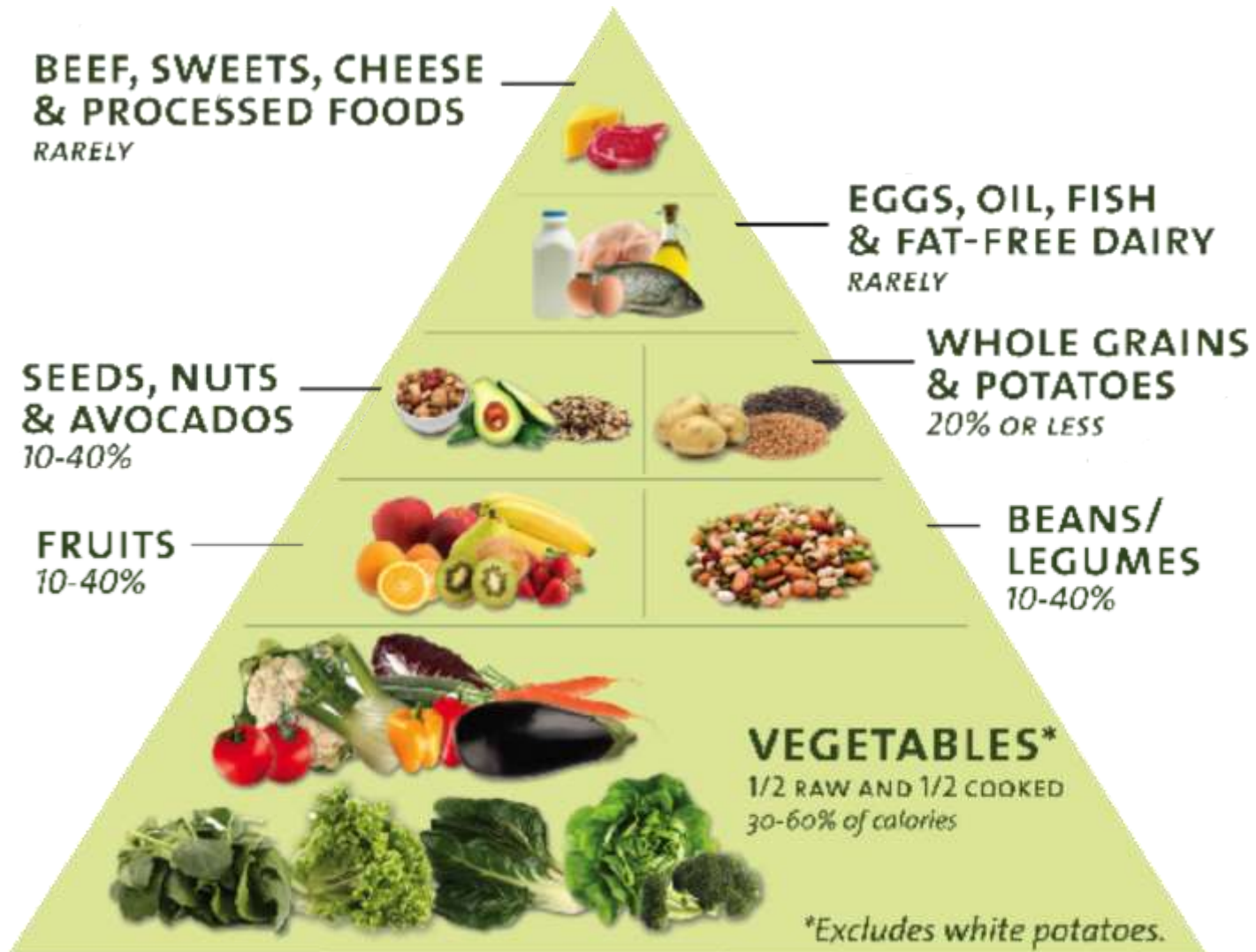
1. Failure to thrive in children
2. Unsafe for pregnancy and nursing
3. Potential risk for depression and dementia
4. Nuts and seeds and higher fat intake proven to enhance longevity and reduce all cause mortality.

More Greens, More Beans, More Nuts and Seeds

means

**dramatic lowering of glycemic load and
diabetic and cardiovascular parameters**

Dr. Fuhrman's Nutritarian Food Pyramid

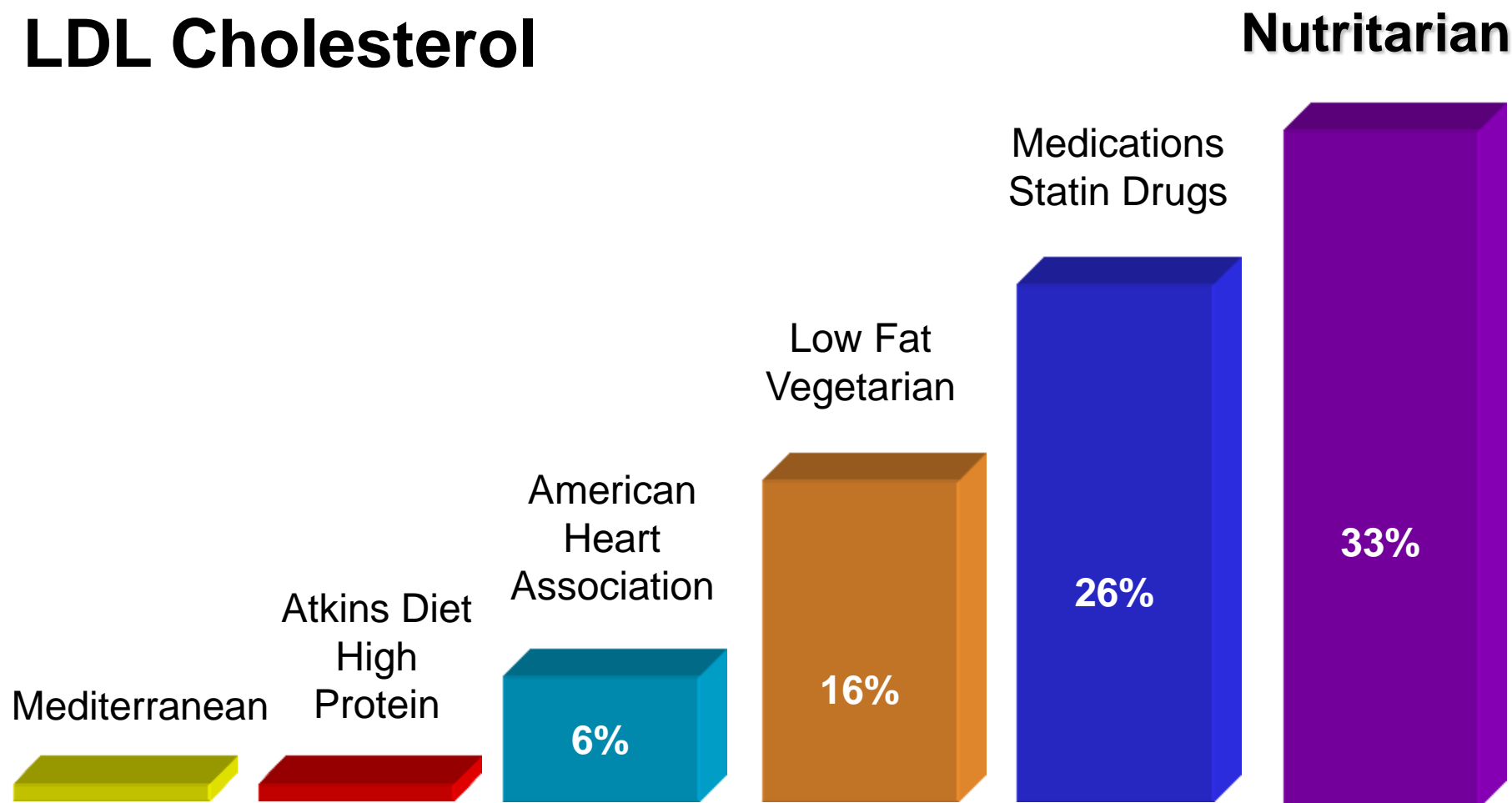


A Nutritarian...

- **Eats a variety of high-nutrient, plants**
- **Eats no empty calorie foods: sugar, sweeteners, white flour, processed foods or fast foods**
- **Uses little or no oil**
- **Uses little or no animal products**

Effectiveness of Cholesterol Lowering Methods

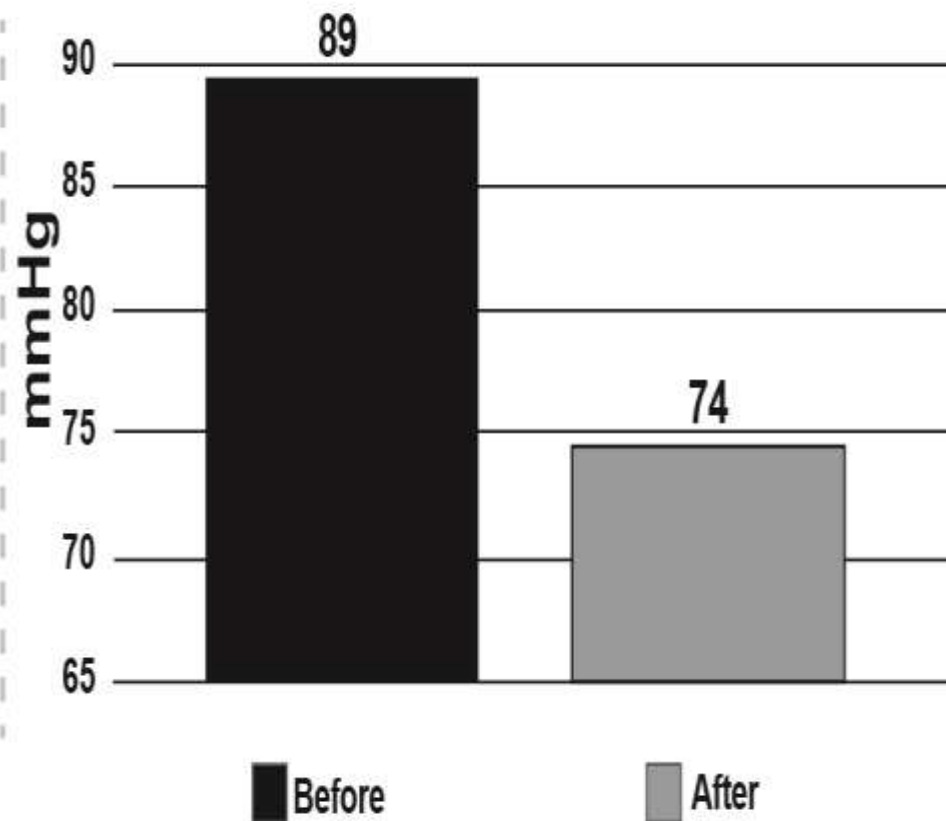
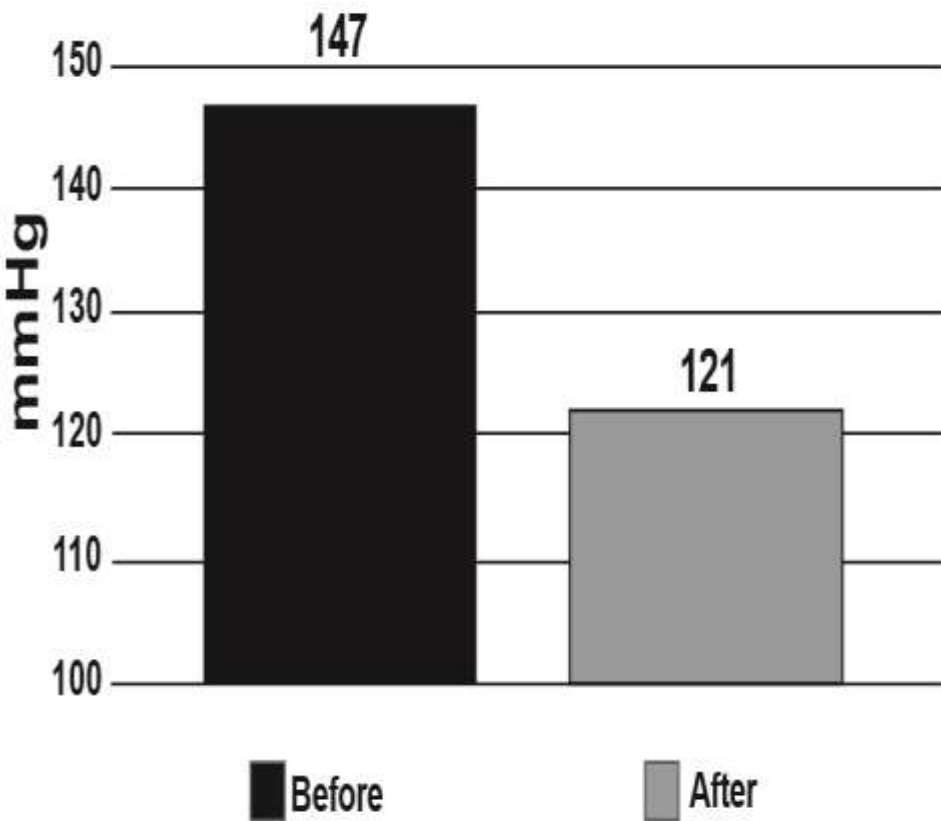
% Decrease of LDL Cholesterol



Systolic

Diastolic

n = 443

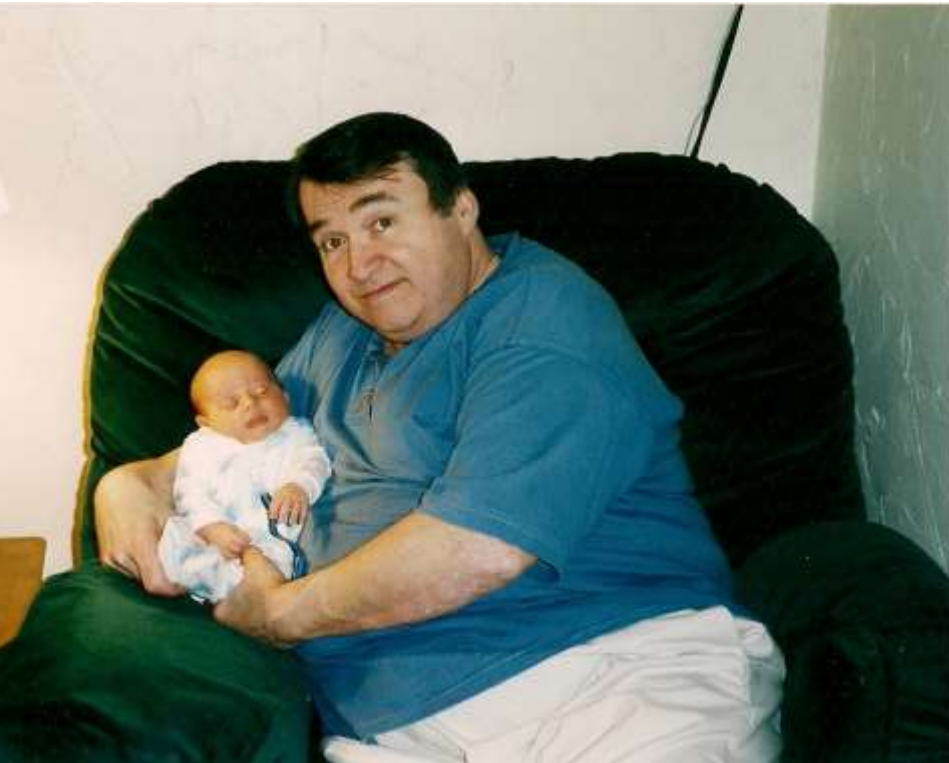


The Daily Nutritarian Prescription

- Eat at least **½ cup of beans/legumes** in soup, salad or a dish
- Eat at least **3 fresh fruits**
- Eat at least **1.5 ounce of raw nuts and seeds**
- Eat at least **one large salad**
- Eat **steamed or wokked greens**
- Eat some **mushrooms and onions**



Tom Deck from Rochester, New York



Jodi O'Neil Before and After



Scott

“Eat For Health is not a ‘diet’ and it’s not about a goal weight. I’m just doing what’s healthy for my body, and the results follow.”



Before

501 lbs



After

182 lbs

John, 23 years later

At age 72 had significant chest pain with minimal activity

1994
Age 72

- Triple-vessel disease
- Hypertension
- On 3 medications
- BP 138/88



2018
Age 97

- No heart disease
- Normal blood pressure
- No medications
- Blood pressure 120/75

Steve and Tara Brzdek

226/447 → 80/220/32

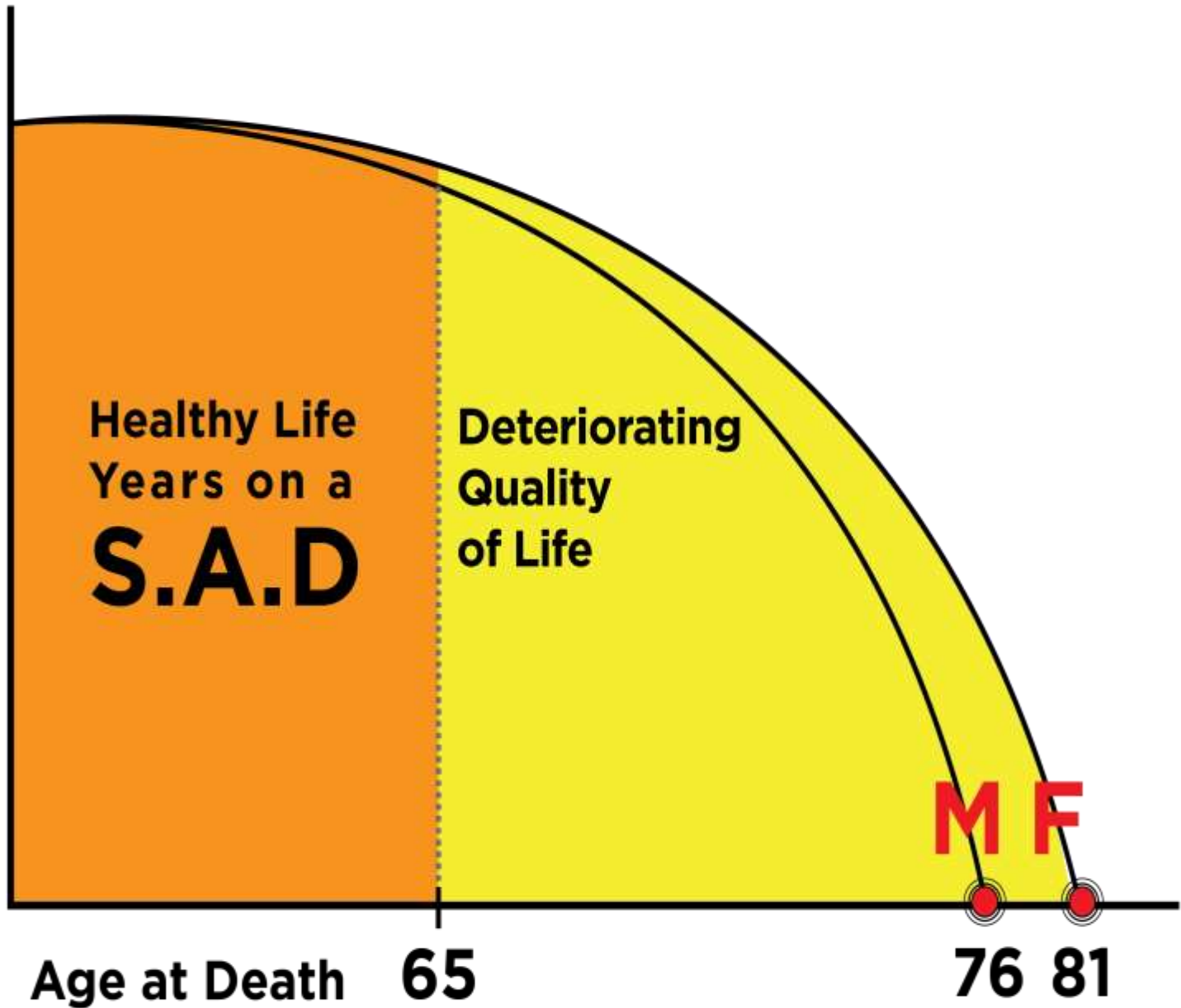


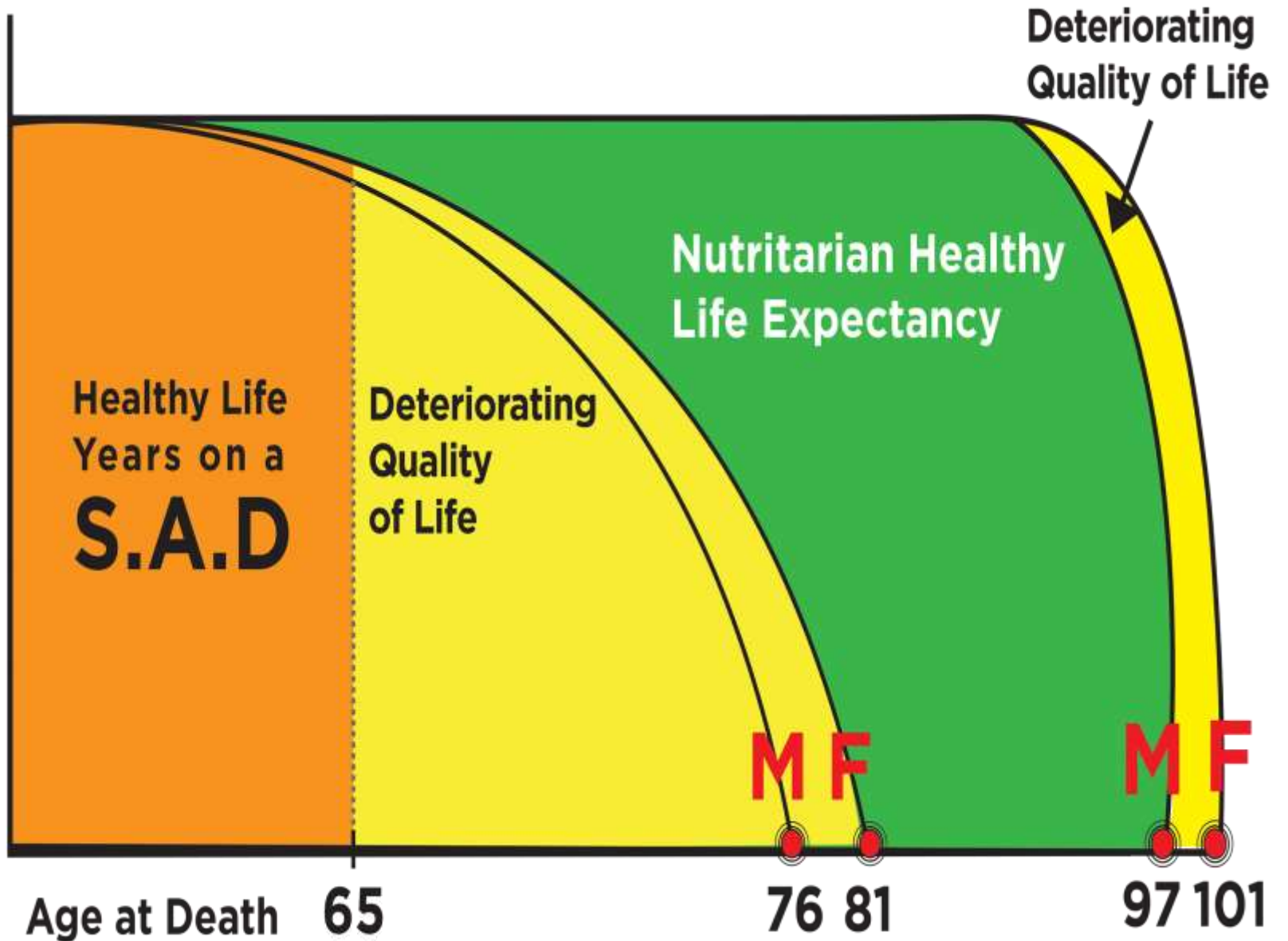
One year later

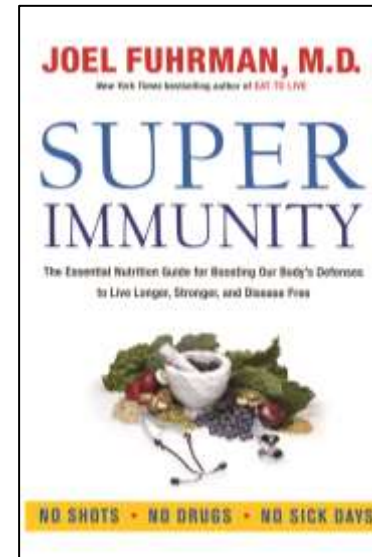
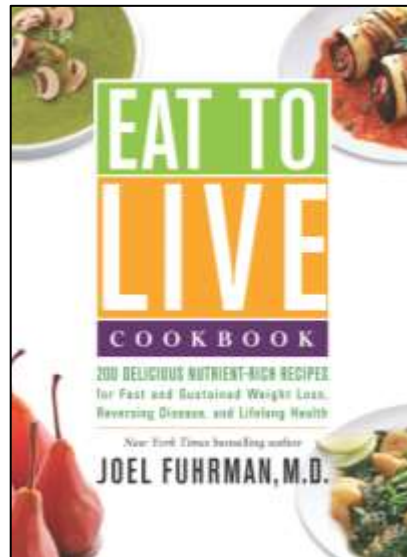
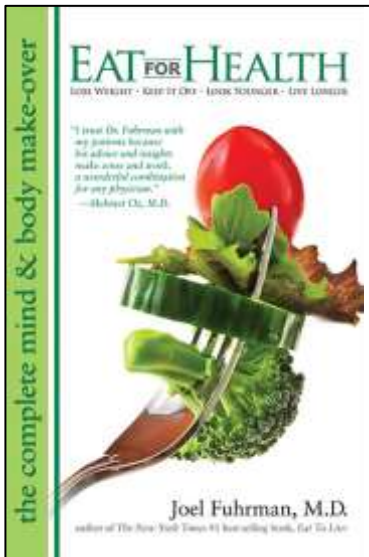
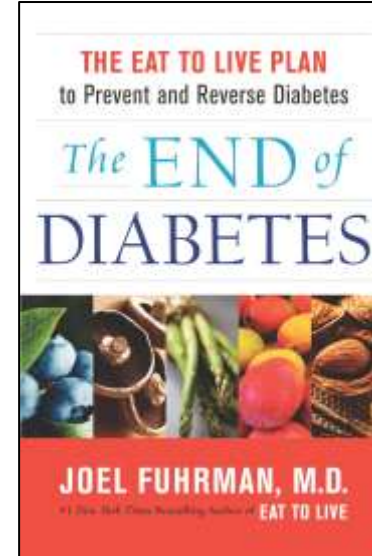
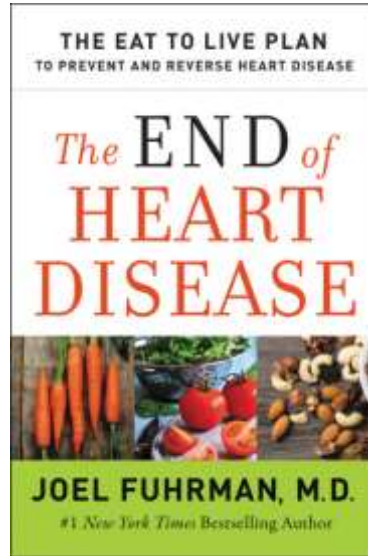
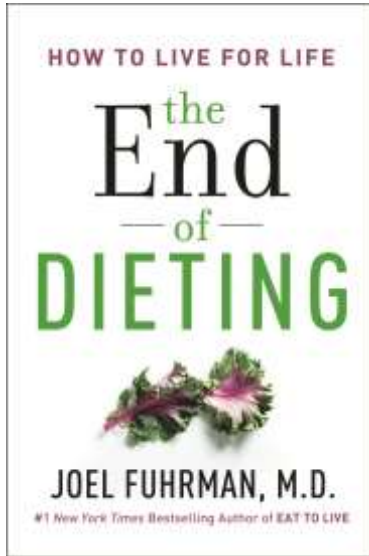


Emily, lost 100 pounds in one year, no longer depressed and sick













DrFuhrman.com

NEI (under library tab)

DrFuhrman.com/ETLRetreat

NutritionalResearch.org