

VEGAN DIETS & HEALTH

Getting into the “meat” of it

VeganHealth.org
VeganOutreach.org
JackNorrisRD.com

Vegan Diets and Disease

- Practiced since the mid-1940s in the Western World.
- Rates of disease of vegetarians started to be studied in the 1960s.
- Clinical trials
 - Short-term
 - Unhealthy populations
- Observational
 - Cross-sectional
 - Prospective cohorts

Six Vegetarian Cohorts

Study	Location	Years	Vegans
Adventist Mortality	CA	1960-1965	
Health Food Shoppers	UK	1974-1997	
Adventist Health	CA	1976-1988	
Oxford Vegetarian	UK	1981-2000	
EPIC-Oxford	Eur	1993-	2,600
Adventist Health-2	US	2002-	5,500

Body Mass Index

Epic-Oxford (2003)

	Men		Women	
Diet	Number	BMI	Number	BMI
Vegan	570	22.5	983	22.0
Lacto-Ovo	2,888	23.4	9,419	22.7
Pescatarian	1,095	23.4	5,096	22.7
Meat Eater	4,318	24.4	13,506	23.5

Body Mass Index

Adventist Health Study-2 (2009)

Diet	Number	BMI
Vegan	2,731	23.6
Lacto-Ovo	20,408	25.7
Pescatarian	5,617	26.3
Semi-Veg	3,386	27.3
Meat Eater	28,761	28.8

Cholesterol in Western Vegans

1980 – 2003

Diet	Number	Total Cholesterol
Vegan	749	160
Lacto-Ovo	2,135	185
Pescatarian	467	196
Meat Eater	1,857	202

LDL & HDL in Western Vegans

1980 – 2003

Diet	LDL	HDL	TC:HDL
Meat Eaters	121	55	3.7
Pescatarians	114	61	3.2
Lacto-Ovo	106	57	3.3
Vegan	90	52	3.1

Triglycerides in Western Vegans

1980 – 2003

Diet	Number	Triglycerides
Meat Eaters	281	108
Lacto-Ovo	253	108
Vegan	310	87

Blood Pressure

EPIC-Oxford Study (2002)

	Women		Men	
Diet	Number	High BP	Number	High BP
Vegan	467	8%	272	6%
Lacto-Ovo	3,014	9%	786	10%
Pescatarians	1,431	10%	297	10%
Meat Eaters	3,741	12%	996	15%

Blood Pressure

Adventist Health Study-2 (2009)

	Risk	Confidence
Meat Eater	1.00	
Semi-Veg	0.77	.72-.82
Pescatarian	0.62	.59-.66
Lacto-Ovo	0.45	.44-.47
Vegan	0.25	.22-.28

Adjusted for age, sex, and race

Diabetes

Adventist Health Study-2 (2011)

2 year follow-up

	Number	Risk
Meat Eater	17,695	1.00
Semi-Veg	2,404	0.49
Pescatarian	3,644	0.79
Lacto-Ovo	14,099	0.62
Vegan	3,545	0.38

Adjusted: age, BMI, race, gender, education, income, TV watching, sleep, alcohol, physical activity, smoking

Cancer

EPIC-Oxford (1993-2010)

	Risk	Confidence
Meat Eater	1.00	
Semi-Veg	0.88	.80-.97
Lacto-Ovo	0.89	.83-.96
Vegan	0.81	.66-.98

Cancer

Adventist Health Study-2 (2002-2006)

	Risk	Confidence
Meat Eater	1.00	
Semi-Veg	0.98	.82-1.17
Pescatarian	0.88	.77-1.01
Lacto-Ovo	0.93	.85-1.02
Vegan	0.84	.72-.99

Heart Disease

EPIC-Oxford (1993-2009)

	Risk	Confidence
Non-Vegetarian	1.00	
Vegetarian	0.69	.58-.82

Mortality

Adventist Health Study

- Vegetarian women lived 2.52 years longer
- Vegetarian men lived 3.21 years longer

Mortality

Meta-Analysis (1999)

	Number	Risk	Confidence
Meat Eater	3,017	1.00	
Semi-Veg	900	0.84	.77-.90
Pescatarian	177	0.82	.77-.96
Lacto-Ovo	2,041	0.84	.74-.96
Vegan	68	1.00	.70-1.44

Protein in Plant Foods

- Burger King Burger – 380 calories • 19 g protein
- Whole Foods Bean Burrito – 320 calories • 10 g protein
- Spaghetti (1-1/2 cups) – 330 calories • 12 g protein
- Tofurky Italian Sausage – 280 calories • 30 g protein

High in Protein and Lysine

Lysine – limiting amino acid in vegan diets.

- Legumes
 - Soy – Tofu • Tempeh • Edamame • Soymilk • Soymeats
 - Beans
 - Peas
 - Lentils
 - Peanuts
- Quinoa
- Seitan
- Pistachios
- Pumpkin Seeds
- Amaranth

Protein Recommendations

- 2-3 Servings High Lysine Foods per Day
- Athletes should eat more
- Older people err on the side of high-protein foods
- Getting colds? Eat more.

Ed Bauer

Many others at
VeganBodybuilding.com



Calcium & Vegan Diets

Average Intakes

Diet	Calcium (mg/day)
Vegan	500-600
Lacto-Ovo	800-900
Meat Eaters	1,000

Are these low intakes a problem?

Vegan Bone Fractures

Epic-Oxford (2007)

57,000 people • ~1,000 vegans • ~10,000 lacto-ovo

5 years of follow-up

Vegans – 30% higher rate than meat-eaters

Adjusted: age, smoking, alcohol, body mass index, physical activity, marital status, births, hormone replacement therapy

Vegans getting 525+ mg of calcium – same rate as meat-eaters

- 55% of vegans
- ~95% of the other groups

Vegetarian Bone Fractures

Adventist Health Study-2 (2013)

Hip Fracture Risk

	< 1x per week	≥ 1x per day	Confidence
Legumes	1.00	0.34	.12-.95
Veg Meats	1.00	0.45	.22-.94

Adjusted: fully

Calcium Absorption

Food	Absorption
Cow's milk	22-32%
Kale	40-60%
Soymilk	18-22%
Supplements	30%
Mustard greens	high
Turnip greens	high
Collard greens	high
Bok choy	high
Broccoli	61%
Spinach	5%
Swiss chard	low
Beet greens	low

Calcium Recommendations

US DRI for 19–50 year olds is 1000 mg

Vegans should try to get ≥ 700 mg

3 options per day:

- 3 servings of greens (1/2 C cooked)
- One 8 oz glass of fortified soymilk or o.j.
- 300-500 mg supplement

Get plenty of protein.

Vitamin B12 in Plant Foods

- Plants don't naturally contain B12
 - No requirements.
 - Don't produce.
- Produced by some bacteria in mammalian feces
 - Contamination of fermented foods
 - Contamination of water possibly contributes to B12 in algae or seaweeds

B12 Analogues

Many inactive analogues

- Can block B12 absorption from digestive tract
 - Can block B12's function in the cells
 - Make determining a plant food's B12 activity difficult
-
- Gold standard – lower methylmalonic acid (MMA) in humans
-
- Only chlorella has lowered MMA in published research
 - Took very large amounts
 - Didn't normalize

B12 Deficiency

- Overt
 - Macrocytic or megaloblastic anemia
 - Neurological damage
- Subclinical – determined by elevated homocysteine
 - Dementia & Alzheimer's disease
 - Stroke
 - Low bone mineral density in vegetarians

B12 Recommendations

Do one (or more):

- Fortified foods twice per day
- 25-100 micrograms per day from supplements
- 1,000 micrograms twice a week, chewed well

Vitamin D Levels in EPIC-Oxford

Diet	nmol/l
Meat Eaters	76.4
Pescatarians	74.3
Lacto-Ovo	66.9
Vegan	55.9

Reference: 50 – 125 nmol/l

D2 vs. D3

D2 is vegan, D3 is usually not vegan

- Vitashine (aka Nordic Naturals) is vegan D3 from lichen

In large doses (50,000 IU 1x per week), D3 stays in the system longer.

In smaller amounts (1,000 IU per day), D2 just as effective.

Taking vitamin D with fat increases absorption.

Vitamin D Recommendations

RDA is 600 IU (15 mcg)

Typical fortified soymilk has 80-120 IU/Cup

Options

1. Sun

- 10-15 min • 20 min if dark-skinned • 30 min if elderly
- Midday – 10 am to 2 pm
- Without sunscreen
- On a day when sunburn is possible – not winter or cloudy

2. Supplement

- 25 mcg (1,000 IU) supplement

Iodine in Vegans

Boston (2011)

Diet	Number	Avg. Urinary Iodine (µg/l)	Range (µg/l)	Abnormal Thyroid
Lacto-Ovo	78	147	9–779	0
Vegan	62	79	7–965	1

Population iodine sufficiency: $\geq 100 \mu\text{g/l}$

Iodine Recommendations

- RDA: 150 mcg
- Supplement if:
 - Don't regularly eat iodized salt or sea vegetables
 - Regularly eat soy
- Most vegan multivitamins contain iodine.
- Don't take more than the RDA.

Iron Facts

- Vegans tend to have as high or higher iron *intakes* than meat eaters.
- Plant iron is not absorbed as well as iron from meat.
- Vegan men rarely have iron deficiency.
- Not uncommon for vegetarian women to have deficiency, but rates about same as normal population.
- Vitamin C significantly increases iron absorption.
 - Orange juice, potatoes, broccoli, cauliflower, fortified fruit juices
- Coffee & tea inhibit iron – don't drink w/meals if prone to anemia.
- See a doctor to diagnose anemia.
- Iron article at VeganHealth.org

Zinc

- Vegans intakes close to RDA
- Deficiency Symptoms
 - Poor wound healing
 - Hair loss
 - Impaired immune function
 - Dermatitis (especially around body orifices)
- Legumes, nuts, seeds, and oatmeal
- Supplement

Soy & Breast Cancer Recurrence

Women's Healthy Eating and Living Study

“Our study is the third epidemiological study to report no adverse effects of soy foods on breast cancer prognosis. These studies, taken together, which vary in ethnic composition (two from the US and one from China) and by level and type of soy consumption, provide the necessary epidemiological evidence that clinicians no longer need to advise against soy consumption for women diagnosed with breast cancer.”

American Cancer Society on Soy (2012)

"Even though animal studies have shown mixed effects on breast cancer with soy supplements, studies in humans have not shown harm from eating soy foods. Moderate consumption of soy *foods* appears safe for both breast cancer survivors and the general population, and may even lower breast cancer risk. *Avoid soy supplements* until more research is done."

Omega-3 Fatty Acids Recommendations

1. 0.5 g of uncooked ALA daily
 - 1/5 oz walnuts (3 halves)
 - 1/4 tsp of flaxseed oil
 - 1 tsp of canola oil
 - 1 tsp ground flaxseeds
2. Avoid cooking with omega-6
 - Corn, soy, safflower, sunflower, "vegetable," sesame oil
 - Use olive, peanut, avocado, or canola (low heat)
3. Optional: 200 - 300 mg DHA every 2-3 days
 - Good idea if over 50 years

Vegan Kids

Real Vegan Children

Some women stop being vegan when they become pregnant, because either they or their doctors think a vegan cannot have a healthy pregnancy. On the contrary, as long as pregnant women, infants, and children are getting a reliable source of vitamin B12, they typically thrive on a vegan diet.

Mothers of the children below were vegan during pregnancy, and the kids have been vegan since birth.

For more information on healthy eating during pregnancy, see [Pregnancy, Infants, & Children](#).

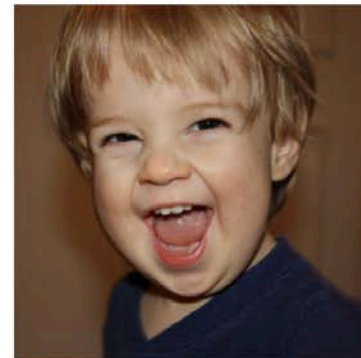
Contents

- Amélie - Sacramento, CA
- Ciera - Indiana
- Dagny - St. Louis
- Eden - Fayetteville, AR
- Ellen - Tucson, AZ
- Eliza - Fairfield, PA
- Emily - Kensington, MD
- Gia - Sacramento, CA
- Jay and Zobiana - Austin, TX
- Jonah - San Francisco
- Jonah - Bangor, Maine
- Journey - Birmingham, AL
- Kjonaas - Austin, TX
- Rayyan - Rockville, MD
- Max, Miranda, and Callum - Freeland, WA
- Ruby - Portland, OR
- Saige - Birmingham, AL
- Sasha - Fairfax Station, VA
- Solomon - Big Island, HI
- Tyler, Will, and Maya - Lutherville, MD
- Vincent - Takoma Park, MD
- William - Los Angeles, CA
- Zander Earl - Orange County, CA

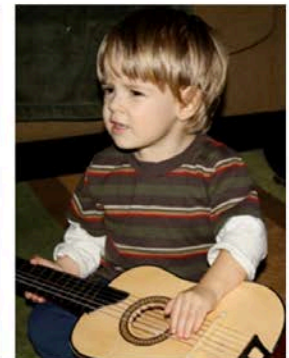
Jay and Zobiana - Austin, TX



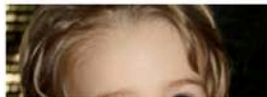
Jay at 16 months



Jay at 16 months



Jay at 2 years



VEGAN *for* LIFE

EVERYTHING YOU NEED TO KNOW
TO BE HEALTHY AND FIT ON
A PLANT-BASED DIET



"Take the
guesswork out of
vegan eating with this
essential guide for
optimum health."

—RORY FREEDMAN,
coauthor of
Skinny Bitch

JACK NORRIS, RD
VIRGINIA MESSINA, MPH, RD



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Home

- [Tips for New Vegans](#)
- [Daily Recommendations](#)
- [Plant-Based Diets Defined](#)

Nutrients that Need Attention in Vegan and Vegetarian Diets

- [Vitamin B12](#)
- [Omega-3 Recommendations](#)

More in-depth material on fats:

- [High ALA Sources](#)
- [The Fatty Acids](#)
- [High Fat Plant Foods and Oils Tables](#)

Nutrients that Need Attention in Vegan Diets

- [Calcium and Vitamin D](#)
- [Iodine](#)
- [Vitamin A](#)

Other Nutrients

- [Protein](#)
- [Non-Protein Amino Acids](#)
 - [Taurine & Carnitine](#)
 - [Creatine](#)
 - [Carnosine & beta-Alanine](#)
- [Iron](#)
- [Zinc](#)
- [Selenium](#)
- [Vitamin K](#)
- [Choline](#)
- [Manganese](#)
- [Miscellaneous Nutrients - B2, B6, etc.](#)



Best Study on Vegan Protein Intakes to Date

January 31st, 2016 by Jack Norris RD



I just updated the Protein page at VeganHealth.org with a new section, [Intakes and Plasma Amino Acid Levels in Vegans](#), based on a recent study from EPIC-Oxford.

The new research cannot substitute for a nitrogen balance or protein synthesis study on vegans, which I have been hoping to see, but for now it's what we have.

The takeaway message is that vegans, and particularly vegan women, should continue to make sure they eat plenty of lysine-rich foods, and that if you do, you will should be covering all your protein needs.

I have reproduced the new section below.

Intakes and Plasma Amino Acid Levels in Vegans

A 2015 report from EPIC-Oxford analyzed the dietary intakes and blood levels of amino acids in various diet groups in adult men (15). The study included 98 men for each diet group (vegan, lacto-ovo, pesco, and meat-eater). The authors say, "[T]his is the largest study to date of amino acids in the circulation or in the diet by habitual diet group, and on average participants had followed their diet for several years."

RDA

The study didn't compare the intakes of the various diet groups to the

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Vegan Hamburger Helper!

April 17, 2015

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By *Toni Okamoto*

When I was younger, my single-parent dad mastered the art of Hamburger Helper. He cooked the noodles perfectly, and poured the sauce packet gracefully. Now that my whole family is trying their hand at vegetarianism, I thought I'd share an old family favorite done cruelty-free!

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The End