

THRIVING ON A PLANT BASED DIET

Guidelines on Nutrients & Beyond to Empower Your Patients





PERFORMANCE INDICATORS

- 8.3.6: Keeps abreast of current nutrition and dietetics knowledge and trends.
- 8.3.7: Integrates new knowledge and skills into practice.
- 12.4.5: Provides nutrition information and education to the community.

LEARNING CODES

- 2000: Science of food and nutrition
- 4040: Disease prevention
- 6000: Education, Training, and Counseling

Overview

CURRENT LANDSCAPE

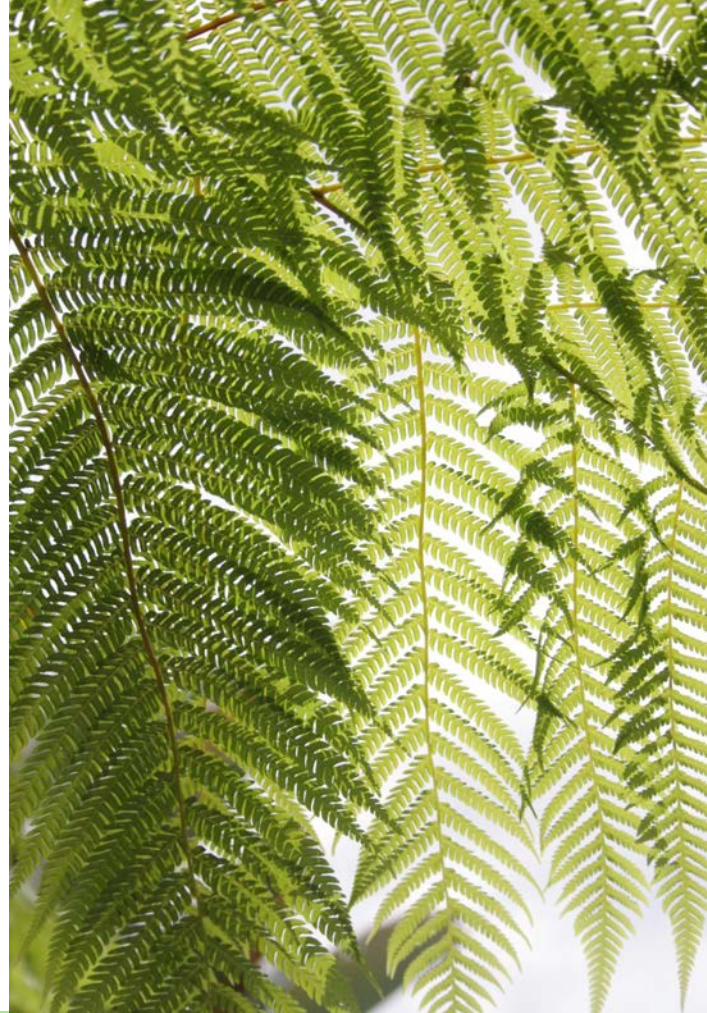
NUTRITION GUIDELINES

BENEFITS

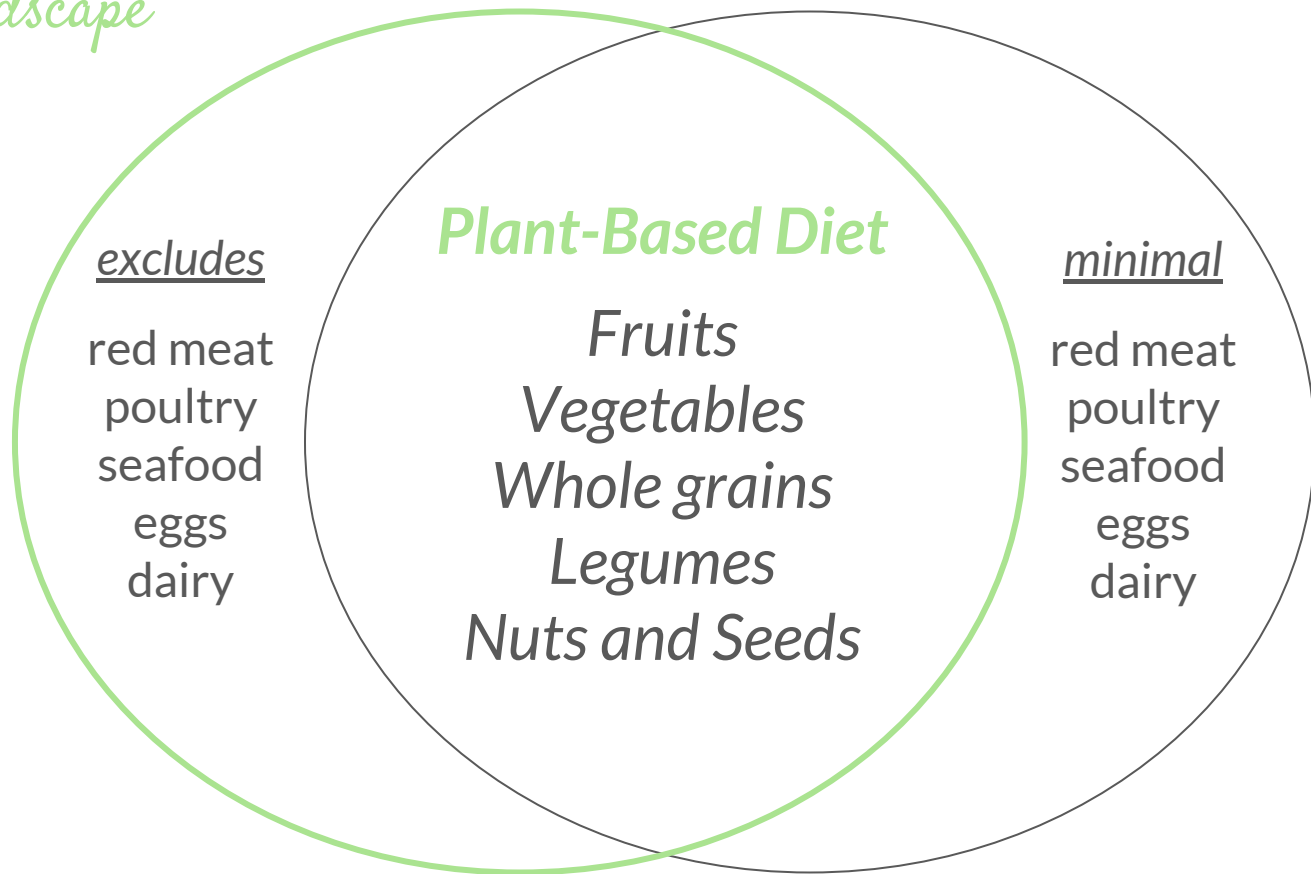
ADVISING

RESOURCES

Q&A



Current Landscape

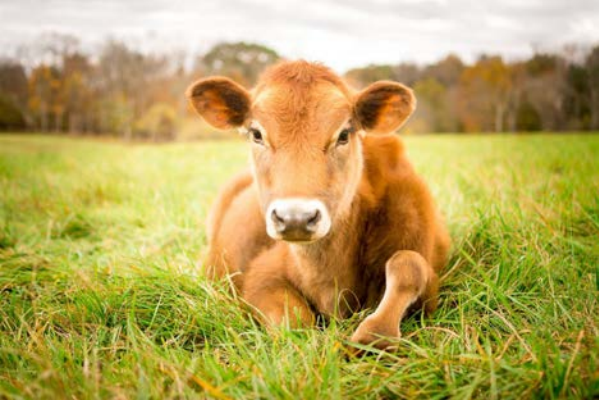


Types of Vegetarian Diets



Vegetarian	May or may not include egg or dairy products.
Lacto-ovo-vegetarian	Includes eggs and dairy products.
Lacto-vegetarian	Includes dairy products, but not egg products.
Ovo-vegetarian	Includes eggs and egg products, but no dairy.
Vegan	Excludes eggs and dairy products, and may exclude honey.
Raw vegan	Based on vegetables, fruit, nuts and seeds, legumes, and sprouted grains. The amount of uncooked food varies from 75% to 100%.

All vegetarian diets exclude flesh foods such as land and sea animals.



REASONS



I started being a
vegan for health
reasons, then it was
a moral choice, and
now it's just to
annoy people.



som^{ee}cards
user card



GROWING INTEREST

3:5 millennials consume plant-based meats
60% of millennials consume plant-based meats

Ref: 210 Analytics, 2015

-

1:4 consumers are cutting down on meat
26% of consumers reported eating less animal meat in the past 12 months

Ref: Nutrition Business Journal, 2015

-

1:3 consumers prefer plant-based milks
36% of consumers prefer plant-based milks

Ref: Nutrition Business Journal, 2015



MARKET SHARE

+8.1% vs -0.2%

Growth in plant-based foods that directly replace animal products sold in same channels

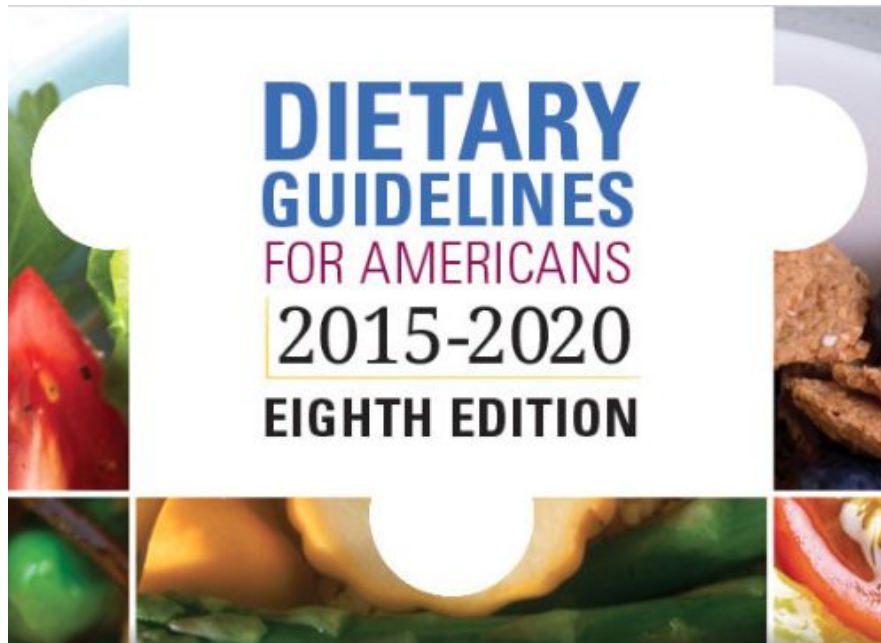
+8.1% = \$3.1bn

Growth of plant-based foods compared over 52 weeks to Aug. 2017

+18.3% = \$168.7m

Growth in plant-based meals

Nutrition Guidelines



Dietary Guidelines is to inform the development of Federal food, nutrition, and health policies and programs.

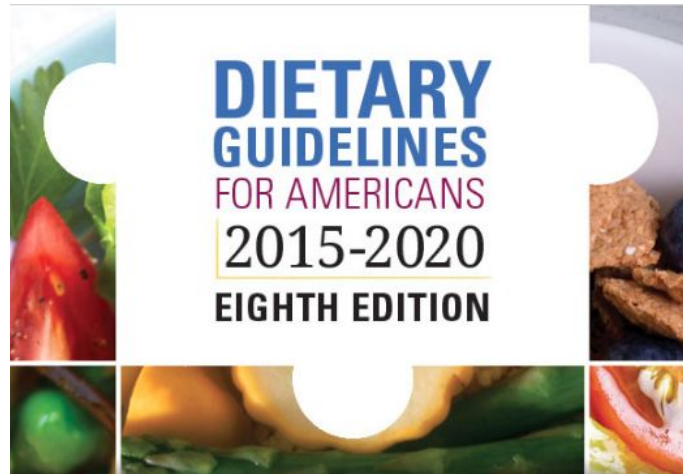
The 2015-2020 Dietary Guidelines translates science into succinct, food-based guidance that can be relied upon to help Americans choose foods that provide a healthy and enjoyable diet.

Nutrition Guidelines

Appendix 5. USDA Food Patterns: Healthy Vegetarian Eating Pattern

*The **Healthy Vegetarian Pattern** is adapted from the Healthy U.S.-Style Pattern, modifying amounts recommended from some food groups to more closely reflect eating patterns reported by self-identified vegetarians in the National Health and Nutrition Examination Survey (NHANES).*

“This Pattern can be vegan if all dairy choices are comprised of fortified soy beverages (soymilk) or other plant-based dairy substitutes”



1 of 3 USDA Healthy Eating Patterns

- Healthy US Pattern
- Healthy Med. Pattern
- Healthy Veg. Pattern

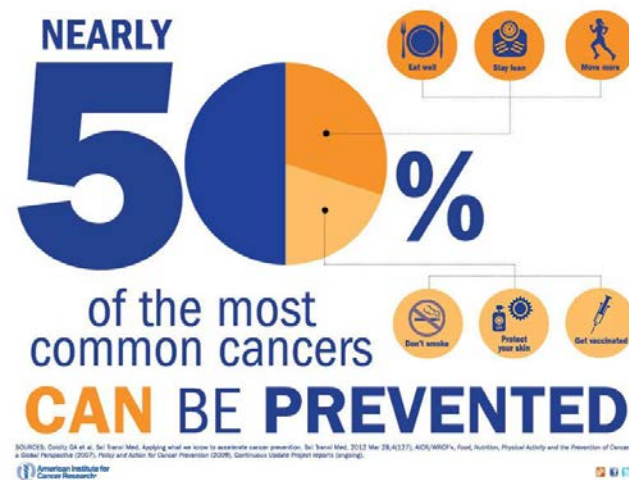
Nutrition Guidelines

Aim for meals made up of 2/3 (or more) vegetables, fruits, whole grains or beans and 1/3 (or less) animal protein.

A vast array of phytochemicals found in vegetables, legumes, fruits, spices, and whole grains may provide protection against cancer.

sulforaphane, ferulic acid, genistein, indole-3-carbinol, curcumin, epigallocatechin-3-gallate, diallyl disulfide, resveratrol, lycopene, and quercetin

“These phytochemicals are known to interfere with cellular processes in the progression of cancer.”



Nutrition Guidelines



Academy Co-Founder Lenna Frances Cooper

A Pioneer in Vegetarian Nutrition and Dietetics

“Vegetarian nutrition and cooking was the foundation of the dietetics courses taught at the school (Battle Creek Sanitarium School of Home Economics) under Lenna’s supervision. More than 500 dietitians graduated from Battle Creek under her tenure. Lenna became a leading proponent for health care through diet and a pioneer in the field of vegetarian nutrition and dietetics.”

John Westerdahl, PhD, MPH, RDN, FAND



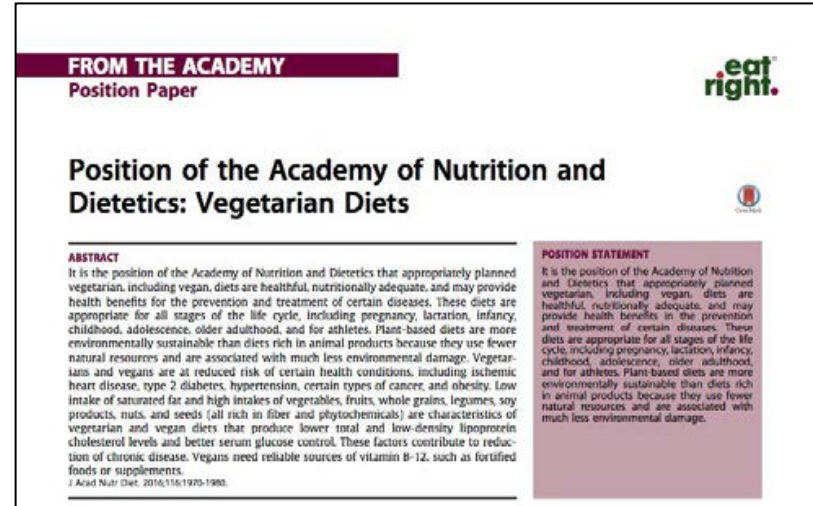
Nutrition Guidelines

“It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases.

These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes.”



Academy of Nutrition
and Dietetics



J Acad Nutr Diet. 2016;116:1970-1980.

Authors: Vesanto Melina, MS, RD;

Winston Craig, PhD, MPH, RD; Susan Levin, MS, RD, CSSD

Benefits of A Plant-Based Diet



Adventist Health Study - 2



- 8% are vegan
- 28% are lacto-ovo vegetarian
- 10% are pesco-vegetarian (fish, no meat or poultry)
- 6% are semi-vegetarian (meat/fish/poultry < 1x/wk)
- 48% are non-vegetarian

Study Participants

- 96,000 Adventists
- Ages 30 to 112 from all 50 U.S. states + Canada
- 65.3% of our study members are White
- 26.9% of our study members are Black

***“linking a vegetarian diet to a lower risk of heart disease and diabetes;
linking a high consumption of cooked green vegetables, dried fruit,
legumes, and brown rice to a lower risk of colon polyps, a precursor to colon
cancer; higher quality of life...”***



LOMA LINDA
UNIVERSITY

Study



European Prospective Investigation into Cancer and Nutrition–Oxford
>65,000 participants from the UK
Began in 1993 - ongoing

“Those who consumed a vegan diet ate the most fiber, the least total fat and saturated fat, and had the healthiest body weights and cholesterol levels compared with omnivores and other vegetarians.”

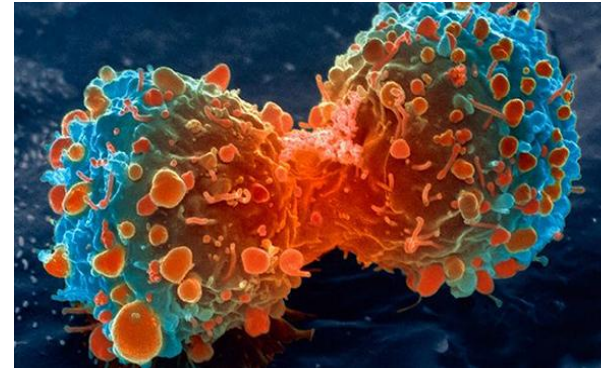
“Vegans have the lowest systolic and diastolic blood pressure levels and the lowest rate of hypertension of all diet groups (vegans, vegetarians, fish eaters, and meat eaters).”



Health Benefits - Therapeutic Diet



“Provided that adequate nutrition education is given, a therapeutic vegetarian diet performs as well as omnivorous diets in terms of adherence.”



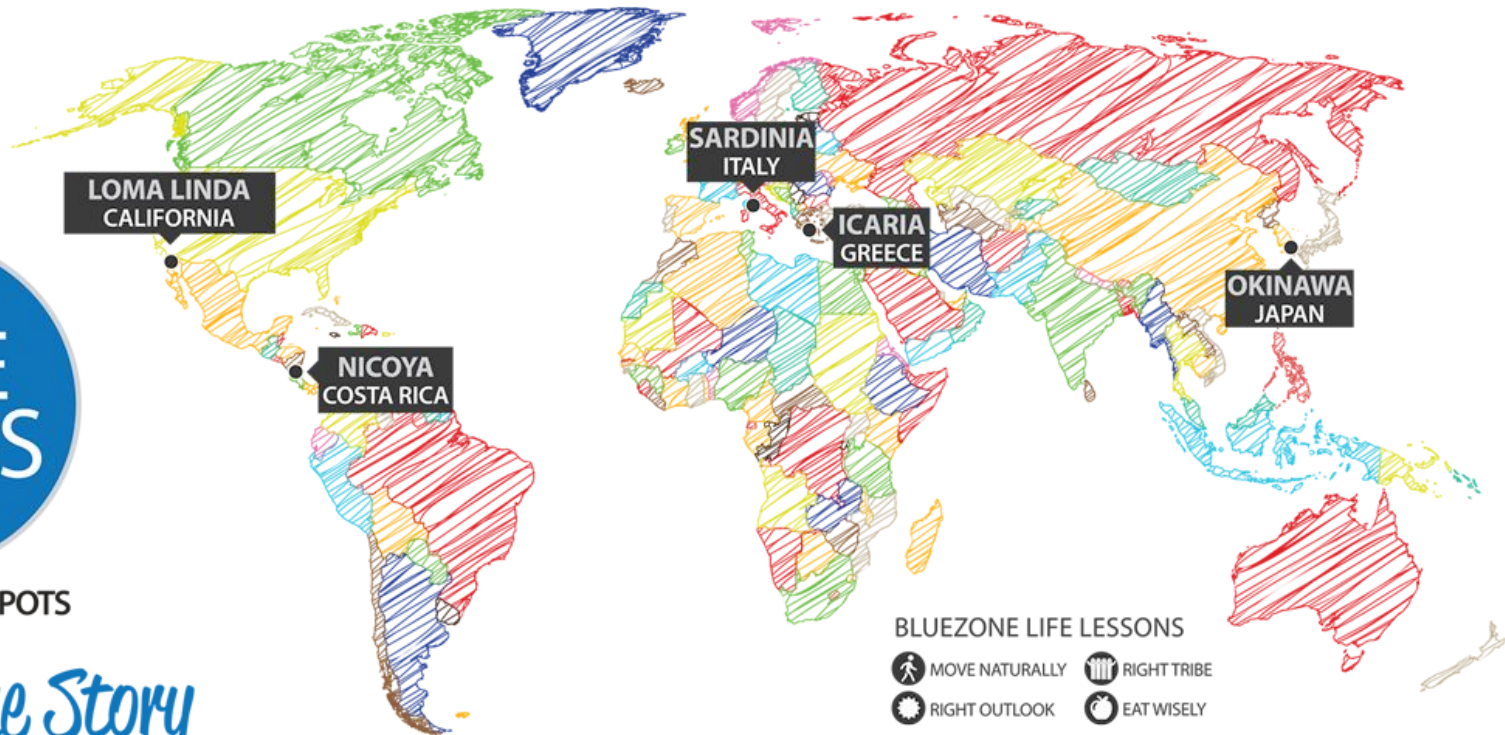
Blue Zones

Where people live the longest, healthiest lives. High concentrations of centenarians (+100 y/o) compared to global life exp. 71.4 y/o



LONGEVITY HOTSPOTS

The Bluezone Story



— Discover the Habits —

POWER 9[®]

PRINCIPLES

Many residents living in the original Blue Zones[®] areas share nine healthy lifestyle habits that help them live longer, healthier, happier lives. Click the buttons below to learn more!

Blue Zones

“Family studies demonstrated that about 25 % of the variation in human longevity is due to genetic factors”

No. 1
MOVE
NATURALLY

No. 2
KNOW
YOUR PURPOSE

No. 3
DOWN
SHIFT

No. 4
80%
RULE

No. 5
PLANT
SLANT

No. 6
WINE
@ FIVE

No. 7
RIGHT
TRIBE

No. 8
COMMUNITY

No. 9
LOVED
ONES FIRST

Diet and Environment

**DIETARY
GUIDELINES
FOR AMERICANS
2015-2020
EIGHTH EDITION**

What is the relationship between population-level dietary patterns and long-term food sustainability?

“studies were consistent in showing that higher consumption of animal-based foods was associated with higher estimated environmental impact, whereas consumption of more plant-based foods as part of a lower meat-based or vegetarian-style dietary pattern was associated with estimated lower environmental impact”

“To produce 1 kg protein from kidney beans requires 18 times less land, 10 times less water, 9 times less fuel, 12 times less fertilizer, and 10 times less pesticide in comparison to producing 1 kg protein from beef.”



Advising - Nutrients to Consider

- PROTEIN
- OMEGA-3s
- IRON
- ZINC
- IODINE
- CALCIUM
- VIT D
- VIT B-12

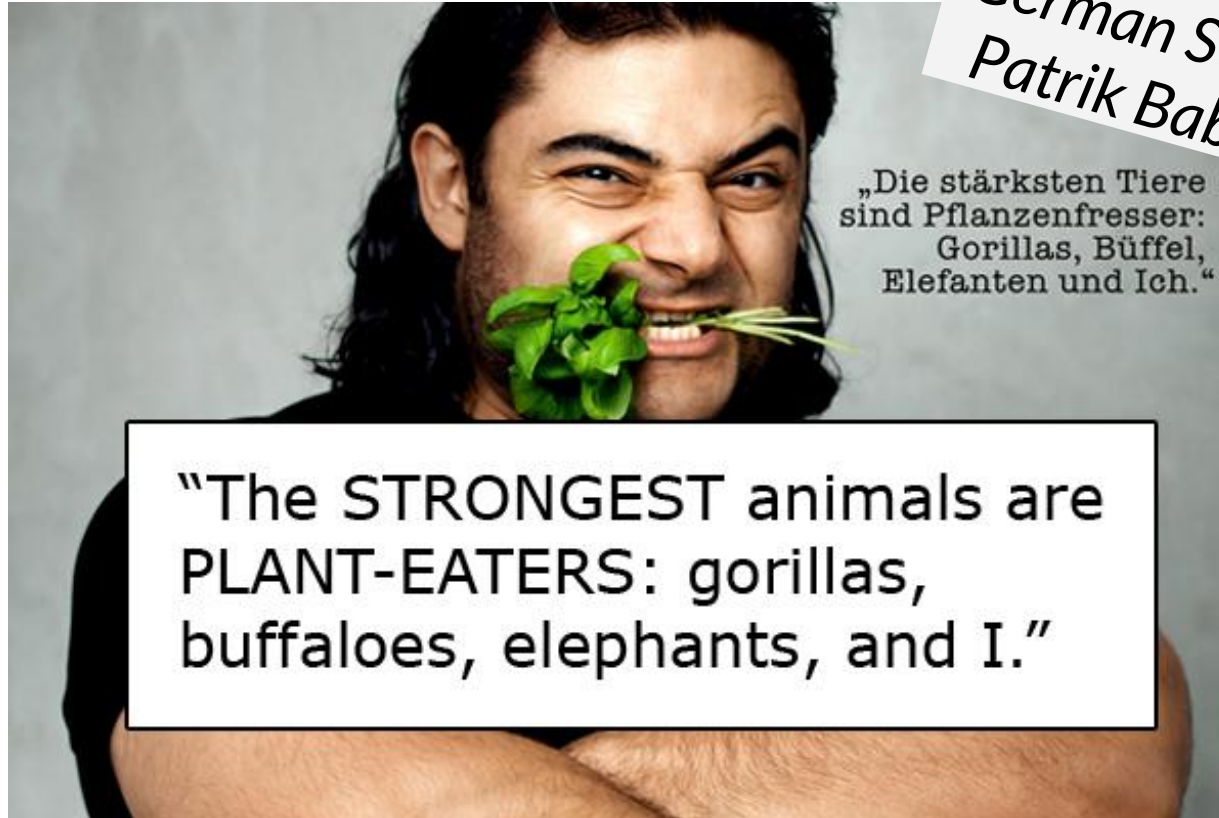


"Don't tell me to improve my diet. I ate a carrot once and nothing happened!"



"Potato chips, root beer, and cupcakes aren't an unhealthy lunch — it's vegetarian!"

Protein



Protein



“Vegetarian, including vegan, diets typically meet or exceed recommended protein intakes, when caloric intakes are adequate.”

Protein - Complete vs Incomplete

Complementary Proteins?

“Eating a variety of plant foods throughout the day supplies enough of all essential amino acids when caloric intake is met”

“Liver stores the various essential amino acids over the course of a day to ensure adequate nitrogen retention and use in healthy adults”



Protein

Plant Protein Digestibility

Vegans may require a slightly higher protein intake due to the slight decrease in digestibility of plant proteins.

- 10% higher than RDA is recommended
- 1 to 1.1 g/kg of protein
- Higher for athletes + older adults



“Protein needs at all ages, including those for athletes, are well achieved by balanced vegetarian diets.”

Protein

“EPIC-Oxford found that vegan men met the recommended dietary allowance (RDA) for all essential amino acids, and the vegan women had lysine intakes that were at 98.7% of the RDA.”

Beans 1C = 16g



[onegreenplanet](https://www.onegreenplanet.org)

Tempeh 1/2C = 16g



Food52

“All plant foods contain at least some of every essential amino acid, but in general, legumes are lower in methionine, and most other plant foods are lower in lysine”

Plant Proteins By Sharon Palmer, RDN
Today's Dietitian Vol. 19, No. 2, P. 26

Omega - 3s

“Evidence suggests that n-3 needs of healthy individuals can be met with ALA alone, and that endogenous synthesis of EPA and DHA from ALA is sufficient to keep levels stable over many years.”

Table 1: Adequate Intakes (AIs) for Omega-3s [5]

Age	Male	Female	Pregnancy	Lactation
Birth to 6 months*	0.5 g	0.5 g		
7–12 months*	0.5 g	0.5 g		
1–3 years**	0.7 g	0.7 g		
4–8 years**	0.9 g	0.9 g		
9–13 years**	1.2 g	1.0 g		
14–18 years**	1.6 g	1.1 g	1.4 g	1.3 g
19–50 years**	1.6 g	1.1 g	1.4 g	1.3 g
51+ years**	1.6 g	1.1 g		



flax, chia, camelina, canola, and hemp, walnuts, and their oils

Omega - 3 Balance

Optimal balance of LA/ALA

In the range 2:1 to 4:1 for optimal conversion

*Both are essential, most consume
10-20 times more omega-6 fatty acids
than omega-3 fatty acids.*

*High omega-6 fatty acid intake can significantly
reduce conversion of ALA to EPA and DHA.*



Special Concerns (DHA) for supplementation

Pregnant and lactating women

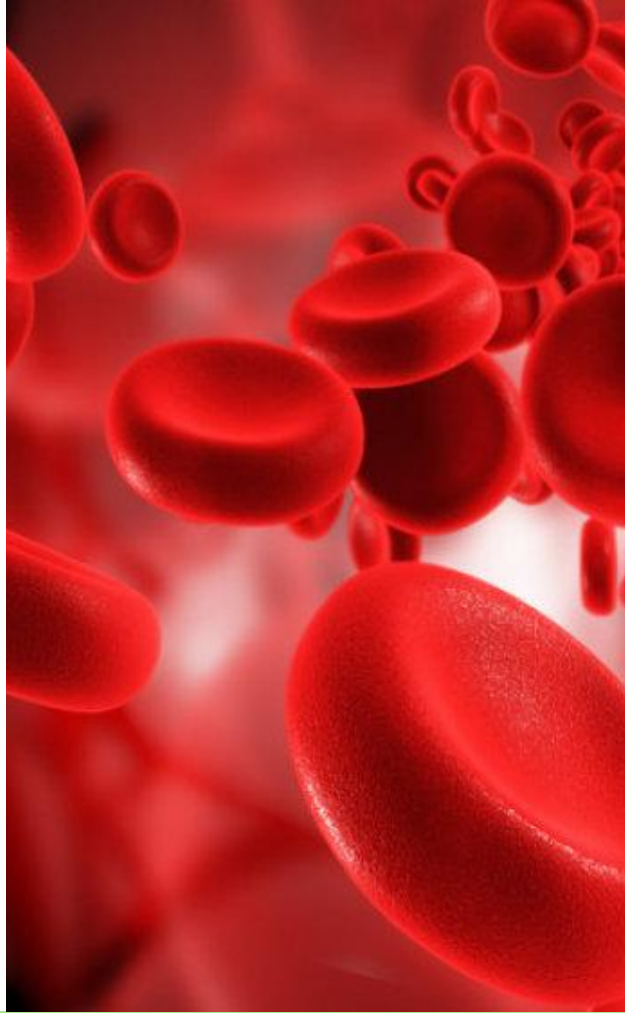
Can't convert efficiently:
People with diabetes,
metabolic syndrome or
hypertension

Iron Status

“Vegetarians generally consume as much iron as, or slightly more than, omnivores.”

“Iron deficiency anemia is about the same among meat-eaters and people who eat plant-based.”

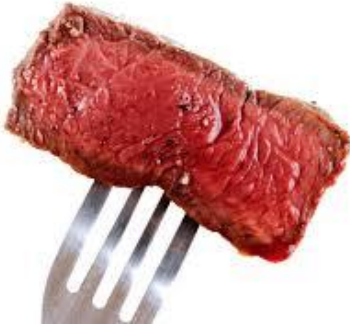
“Veg Iron stores are typically below those of non-vegetarians”



Iron Comparison

Heme vs Non-Heme Iron

- Meat only
- Only 50-60% iron (heme)
- Bioavailability 15-35%



- Plants + Meat
- Absorption based on need and regulated by iron stores
- Vary based on inhibitors (phytates)/enhancers (Vit C)
- Bioavailability 1-23%

Iron

Serum Ferritin (Iron Stores)

“Diet had a greater effect on iron absorption when serum ferritin levels were low. Non-heme iron absorption can be as much as 10X greater in iron deficient individuals compared to iron-replete.”



Absorption Adapted

“In one study, total iron absorption significantly increased by almost 40% after 10 weeks of consuming the low-bioavailability diet.”

Lower Serum Ferritin - Advantage?

- Low levels don't impact how a person feels when replenished through diet
- High SF has been associated with risk of developing metabolic syndrome

Iron RDA



National Institutes of Health
Office of Dietary Supplements

Table 1: Recommended Dietary Allowances (RDAs) for Iron
[5]

Age	Male	Female	Pregnancy	Lactation
Birth to 6 months	0.27 mg*	0.27 mg*		
7–12 months	11 mg	11 mg		
1–3 years	7 mg	7 mg		
4–8 years	10 mg	10 mg		
9–13 years	8 mg	8 mg		
14–18 years	11 mg	15 mg	27 mg	10 mg
19–50 years	8 mg	18 mg	27 mg	9 mg
51+ years	8 mg	8 mg		

* Adequate Intake (AI)



*Recommended low-dose
(30mg) supplementation
during pregnancy*

Iron Absorption

Challenges	Solutions
Phytate can reduce absorption by 90%	Cook with Vit-C rich foods, alliums, spices (turmeric, pepper, ginger) to increase, cast iron with acid, increase iron rich foods
Too much phytate	Reduce by leavening, sprouting, fermenting, soaking or roasting
Polyphenolic Compounds (tannins) may reduce absorption by 50-90%	Drink black and green teas at least an hour before or after meals



Zinc

Why we need it?

- Immune response
- Wound healing
- Cell growth
- Nerve development
- Brain function
- Metabolize RNA/DNA
- Enzyme function



“Compared with nonvegetarian control groups, studies show adult vegetarians have dietary intakes that are similar or somewhat lower...but within normal range.”

Zinc RDA

Table 1: Recommended Dietary Allowances (RDAs) for Zinc [2]

Age	Male	Female	Pregnancy	Lactation
0–6 months	2 mg*	2 mg*		
7–12 months	3 mg	3 mg		
1–3 years	3 mg	3 mg		
4–8 years	5 mg	5 mg		
9–13 years	8 mg	8 mg		
14–18 years	11 mg	9 mg	12 mg	13 mg
19+ years	11 mg	8 mg	11 mg	12 mg

* Adequate Intake (AI)



National Institutes of Health
Office of Dietary Supplements

Table 3: Tolerable Upper Intake Levels (ULs) for Zinc [2]

Age	Male	Female	Pregnant	Lactating
0–6 months	4 mg	4 mg		
7–12 months	5 mg	5 mg		
1–3 years	7 mg	7 mg		
4–8 years	12 mg	12 mg		
9–13 years	23 mg	23 mg		
14–18 years	34 mg	34 mg	34 mg	34 mg
19+ years	40 mg	40 mg	40 mg	40 mg

“No adverse health consequences for lower zinc status”

“Overt zinc def is not evident in Western vegetarians.”

Zinc Absorption

Challenges	Solutions/Causes
Too much phytate	Reduce by leavening, sprouting, fermenting, soaking or roasting
Inadequate Zinc Intake	Eating disorders Poor appetite
People with Reduced Ability to Absorb	GI Issues Malabsorption syndrome Liver Disease Renal Disease Diabetes Cancer



nuts/seeds



grains



legumes/soy products



Iodine

Why we need it?

- Essential part of thyroid hormones
- Need for energy metabolism
- Brain development during pregnancy

Deficiency

- Most Common Cause of Preventable Mental Retardation
- Hypothyroidism; Goiter
- Fibrocystic Breast Disease

“Plant-based diets can be low in iodine, vegans who do not consume key vegan sources of iodine...may be at risk for iodine deficiency.”

Iodine Food Sources

Amounts with 150 mcg:

Iodized salt, $\frac{1}{2}$ tsp
Kelp, less than $\frac{1}{16}$ tsp
Nori, 1.5 sheets
Dulse granules, $\frac{1}{2}$ tsp



M/F: 14+ y/o = 150 mcg
Pregnancy = 220 mcg
Lactation = 290 mcg

UL = 1100 mcg

Thyroid function can be compromised by consuming too little or too much iodine.

Goitrogens : substances in food that can reduce the thyroid's iodine uptake, and our production of thyroid hormones.

Only problem when intake is insufficient. No problem in healthy people.

Calcium

Why we need it?

- Structure for bones/teeth
- Blood coagulation
- Muscle relaxation
- Nerve cell transmission
- Regulation of cell metabolism
- Regulation of blood pressure



“Prior to the advent of animal husbandry, humans averaged about 1000-2000 mg calcium per day – mostly from plants.”

Calcium RDA

Table 1: Recommended Dietary Allowances (RDAs) for Calcium [1]

Age	Male	Female	Pregnant	Lactating
0–6 months*	200 mg	200 mg		
7–12 months*	260 mg	260 mg		
1–3 years	700 mg	700 mg		
4–8 years	1,000 mg	1,000 mg		
9–13 years	1,300 mg	1,300 mg		
14–18 years	1,300 mg	1,300 mg	1,300 mg	1,300 mg
19–50 years	1,000 mg	1,000 mg	1,000 mg	1,000 mg
51–70 years	1,000 mg	1,200 mg		
71+ years	1,200 mg	1,200 mg		

* Adequate Intake (AI)

“Intakes of lacto-ovo-vegetarians typically meet or exceed calcium recommendations, while calcium intakes of vegans vary widely and sometimes fall below recommendations.”



Calcium Absorption

Oxalates

“Bioavailability of calcium from plant foods, which is related to oxalate content of foods and, to a lesser degree, phytate and fiber, is an important consideration.”

“Fractional absorption from high-oxalate vegetables, such as spinach, beet greens, and Swiss chard, may be as low 5%. Thus, these cannot be considered good sources of calcium, despite their high calcium content”



Low: 5%



Calcium Absorption

High: ~50%+



Mod: 30%+



Fair: 20%+



Calcium Food Sources

Tofu (made with calcium sulfate) ½ c.	~160 to 861 mg
Blackstrap molasses, 2T	400 mg
Fortified non-dairy milk 1C	300 mg
Poppy seeds 2T	254 mg
Kale, Cooked 1C	172 mg
Tahini, 2 Tbsp	128 mg
Navy beans, 1 c. cooked	126 mg
Almonds ¼ C	96 mg
Figs, dried	70 mg

M/F: 19-50 y/o = 1000 mg
F: 51-70 y/o = 1200 mg

“EPIC-Oxford reported a 30% increase in fracture risk of vegans as a group... no increase in fracture risk in lacto-ovo-vegetarians compared to non-vegetarians.

However, when only vegans with calcium intakes >525 mg/ day were included in the analysis, differences in fracture risk disappeared.”

Vitamin D Status

“Low vitamin D intakes have been reported in some vegetarians and vegans, as well as low plasma or serum 25-hydroxyvitamin D levels, the latter especially when the blood was collected in the winter or spring, and especially in those living at high latitudes.”



1,000-2,000 IU

Vitamin D-2: Ergocalciferol

Produced from the ultraviolet irradiation of ergosterol from yeast

Vitamin D-3: Cholecalciferol

May be from plant or animal origins

**more effective at higher doses*

Vitamin B-12

“Vegetarians and vegans, especially raw vegans, are at greater risk for B12 deficiency than are non-vegetarians.”



“Homocysteine is a byproduct of protein metabolism that the body clears with the help of vitamin B12. Elevated homocysteine levels are linked with increased risks of dementia, heart disease, and stroke.”

Vitamin B-12

“Vitamin B-12 is not a component of plant foods. Fermented foods (such as tempeh), nori, spirulina, chlorella, algae, and unfortified nutritional yeast, cannot be relied upon as adequate or practical sources of B-12.”



To prevent elevated homocysteine and maintain B12 status:

Options for Ages 14–65:

- Fortified foods of 2.0-3.5 μg per serving, twice a day.
- Daily supplement of 25–100 $\mu\text{g}/\text{day}$.
- Supplement of 1,000 μg , twice/week.

Older adults - atrophic gastritis 50+ years possibly 500-1,000 $\mu\text{g}/\text{day}$

<https://veganhealth.org>

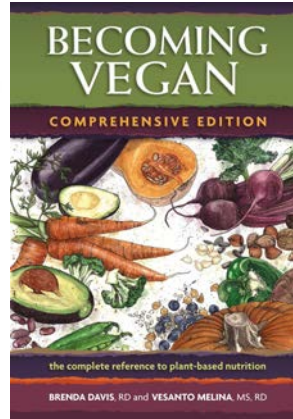
THE VEGAN PLATE



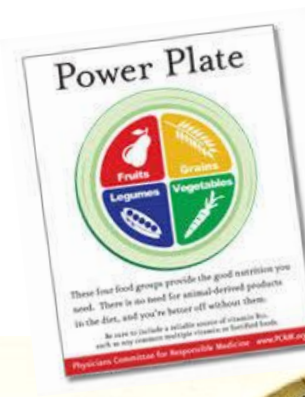
NUTS AND SEEDS

OTHER ESSENTIALS*

*Omega 3s
Vitamin B₁₂
Vitamin D
Iodine



Focus on Food



Physicians
Committee
for Responsible Medicine

Free Evidence-Based Resources

Vegetarian Dietitian Resources

Research-based vegetarian diet handouts by registered dietitians.

These FREE handouts are available as a resource for those looking for more information on plant-based diets and nutrition. They're written and reviewed by registered dietitians from the Vegetarian Nutrition Dietetic Practice Group and cover a variety of topics.

If you have questions, or suggestions for future handouts, please [contact us](#).



B12 in Vegetarian Diets (PDF)



Choline in Vegetarian Diets (PDF)



Combining Vegetarian, Vegan and Gluten-Free Diets (PDF)



Diets vegetarianas durante el embarazo (Spanish PDF)



Eat More Plant-based Meals (PDF)



Health Effects of Soy (PDF)



Healthy Tips for



Iron in Vegetarian



Meeting Calcium



Protein in



Safety of Soyfood



Sports Nutrition for

Vegetarian Nutrition

a dietetic practice group of the
Academy of Nutrition and Dietetics



FROM THE ACADEMY Position Paper



Position of the Academy of Nutrition and Dietetics: Vegetarian Diets

ABSTRACT

It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases. These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes. Plant-based diets are more environmentally sustainable than diets rich in animal products because they use fewer natural resources and are associated with much less environmental damage. Vegetarians and vegans are at reduced risk of certain health conditions, including ischemic heart disease, type 2 diabetes, hypertension, certain types of cancer, and obesity. Low intake of saturated fat and high intakes of vegetables, fruits, whole grains, legumes, soy products, nuts, and seeds (all rich in fiber and phytochemicals) are characteristics of vegetarian and vegan diets that produce lower total and low-density lipoprotein cholesterol levels and better serum glucose control. These factors contribute to reduction of chronic disease. Vegans need reliable sources of vitamins B-12, such as fortified foods or supplements.

J Acad Nutr Diet. 2016;116(1):915-1000.

POSITION STATEMENT

It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases. These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes. Plant-based diets are more environmentally sustainable than diets rich in animal products because they use fewer natural resources and are associated with much less environmental damage.

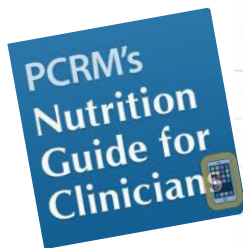
Professional: vndpg.org
Consumer: vegetariannutrition.net
Academy of Nutrition: eatright.org

Free Resources



The Vegetarian Resource Group

HEALTH | ENVIRONMENT | ETHICS



PCRM's
Nutrition Guide for Clinicians

- ★ Favorites >
- 📄 Notes >
- 📖 Introductory Topics >
- 📋 Conditions >
- 📖 Resources for Patients >
- 📖 About the Nutrition Guide >

Evidence-based Resources

Veganhealth.org

Vegetarian Resource Group: vrg.org

Physicians Committee for Responsible

Medicine: PCRM.org

Health professionals factsheets: NIH.gov

Nutritionfacts.org

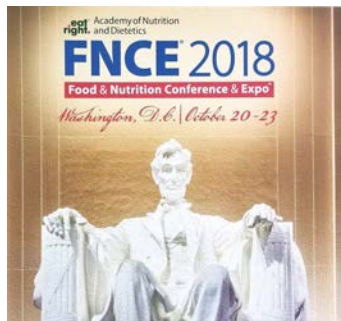
VEGAN
HEALTH 

 **NutritionFacts.org**



National Institutes of Health
Office of Dietary Supplements

Resources - Conferences & Associations



Plant-based Prevention Of Disease

ANNUAL NATIONAL CONFERENCE

<https://www.preventionofdisease.org/>



American College of
Lifestyle Medicine



Healthy Kitchens,
Healthy Lives®



THANK YOU!



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