

# What We Need to Know About Plant Based Eating Patterns

Matt Ruscigno, MPH, RD

North Dakota Academy of  
Nutrition and Dietetics

2022 'Nourishing Health'  
Symposium and Expo

7 March 2022

## Vegetarian Nutrition

a dietetic practice group of the



Academy of Nutrition  
and Dietetics

*Experts in Plant-Based Nutrition*

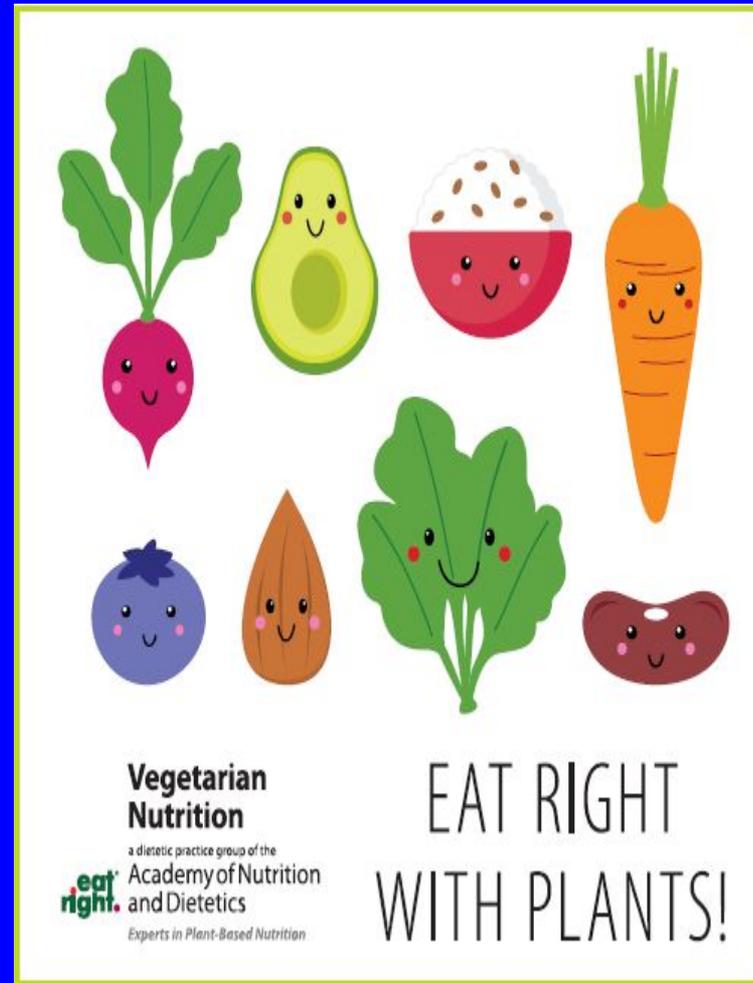
# Goals of Vegetarian Nutrition DPG

## MISSION

to empower members to be the leading authority on evidence-based plant-based nutrition for health professionals and the public.

## VISION

to foster planetary health and well-being as the leading source for education and resources on plant-based nutrition. We are committed to an equitable and sustainable future achieved through influential policy, research, diversity, equity, and inclusion.



# VN Member Benefits



## State Coordinators Program

Promote VN DPG by exhibiting at affiliate meetings and events



## Vegetarian Nutrition Update Newsletter

Published by VN DPG and distributed free to all members



## Webinars

Continuing education on plant-based nutrition



## VN Speaker's Bureau

A database of members with expert speaking experience on a wide array of plant-based nutrition issues

# VN Member Benefits



## **RD Resources**

FREE handouts with specific information on plant-based diets and nutrition



## **Research Grant**

Recognizes an individual for innovative research related to vegetarian nutrition. One award of \$10,000 at least every two (2) years or as the budget allows



## **Scholarships for Public Policy Workshop**

Scholarship for one Professional and one Student Member to attend the Academy's Public Policy Workshop



## **Diversity & Sustainability Initiatives**

We are committed to supporting and developing influential policy and research for a more equitable and sustainable future

# VN DPG Community



@vegetariannutrition



@vndpg



@vndpg



[linkedin.com/groups/8315844](https://www.linkedin.com/groups/8315844)



@studentvndpg



Join the **VN DPG** discussion board to stay connected and chat about current topics related to plant-based nutrition

# Academy of Nutrition and Dietetics Position Paper

“Appropriately planned vegetarian diets, including vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases...

[and] are appropriate for individuals during all stages of the lifecycle, including pregnancy, lactation, infancy, childhood, adolescence and for athletes.”

# Different Types of Vegetarians

- Flexitarian or semi-vegetarian: actively eats plant foods but animal foods not avoided
- Vegetarian: avoids animal flesh
- Vegan: avoids eggs, dairy and animal flesh in diet and also lifestyle
- Plant-based: Usually defined as a vegan or near-vegan diet that emphasizes whole foods
- Whole Food Plant Based (WFPB): avoidance of processed food, limited high-fat plant foods

# Whole Food Plant Based (WFPB)

- Focus is on cardiovascular disease prevention and treatment
- Whole plant foods only: grains, beans, vegetables, fruits and limited nuts, seeds, avocado, coconut
- No refined grains or sugar
- No vegetable oil
- Esselstyn, Ornish, McDougal, Greger, Barnard

# Increased Interest

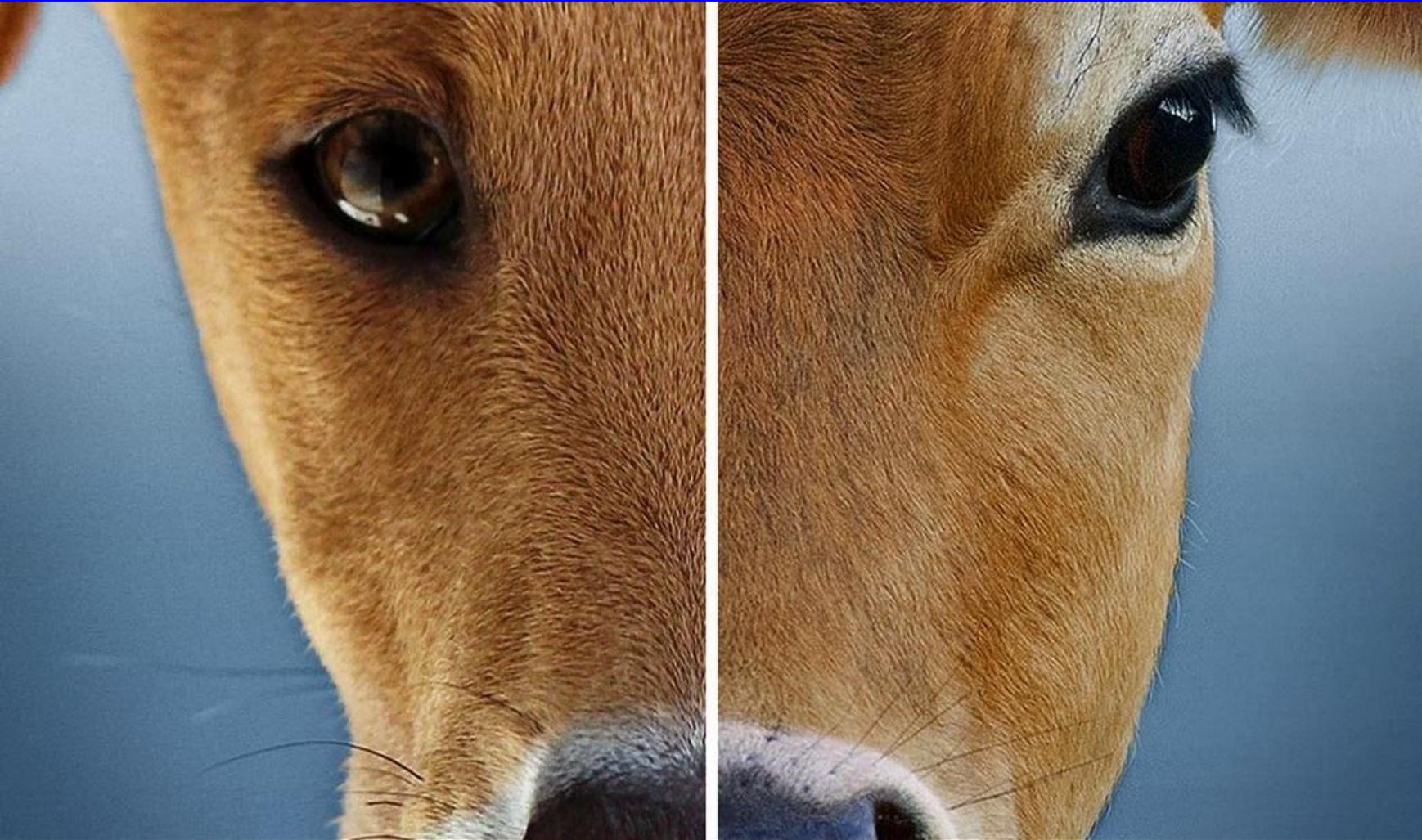
- One third of US consumers use meat alternatives
- 66% growth in vegetarian menu items since 2013
- Dairy alternative market ~\$20 billion

# Why?

- Health: fruits, vegetables, beans, whole grains
- Ethical concern for animals
- Environmental impact
- Physical performance



# Ethical Considerations



# A Social Justice Framework

**FOOD EMPOWERMENT PROJECT**

*Because your food choices can change the world*

Facebook Twitter Instagram YouTube

EN ESPAÑOL DONATE

search here ... **Go**

Sign Up

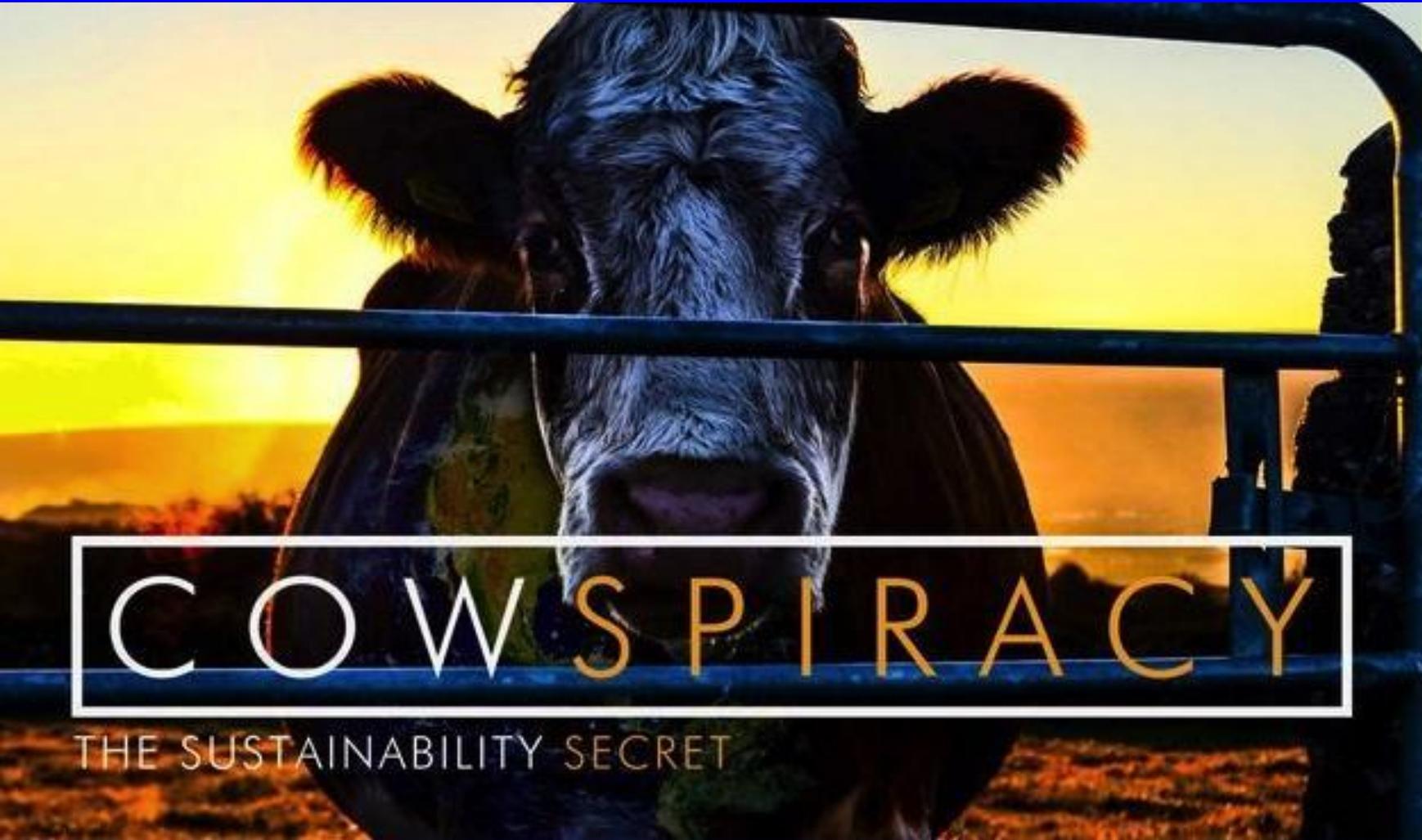
About F.E.P.

Food Justice:  
Know the Issues

**FOOD IS POWER**

Food Empowerment Project seeks to create a more just and sustainable world by recognizing the power of one's food choices. We encourage choices that reflect a more compassionate society by spotlighting the abuse of animals on farms, the depletion of natural resources, unfair working conditions for produce workers, the unavailability of healthy foods in communities of color and low-income areas, and the importance of not purchasing chocolate that comes from the worst forms of child labor.

# Environmental Concern

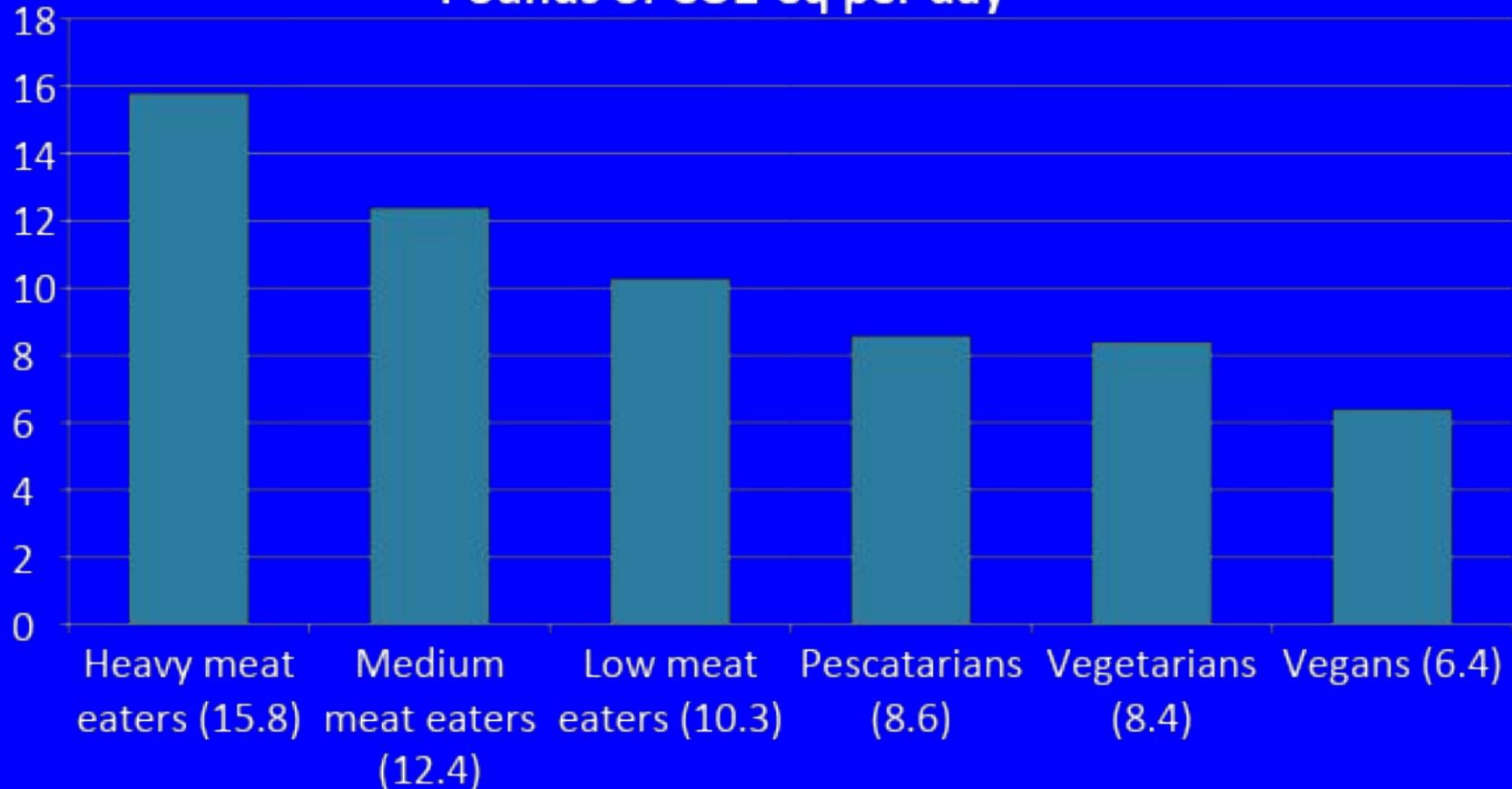


COWSPIRACY

THE SUSTAINABILITY SECRET

# More Meat, More Impact

Pounds of CO<sub>2</sub>-eq per day



Scarborough, P., Appleby, P.N., Mizdrak, A. et al. Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK. *Climatic Change* (2014) 125: 179.



## Vegetarian Nutrition

a dietetic practice group of the  
**eat right.** Academy of Nutrition  
and Dietetics

**RD Resources** for Professionals:

# Plant-Based Diets in Climate Change Mitigation and Resource Conservation

## Overview

Climate change refers to variations in the climate attributed to human activity that alters the global atmosphere.<sup>1</sup> Scientific data demonstrates that human activity over the past 100 years has generated increased levels of greenhouse gas emissions effecting our atmosphere

## Greenhouse Gas Emissions

The landmark publication *Livestock's Long Shadow: Environmental Issues and Options* drew attention to the global environmental impact of the livestock industry. The livestock industry not only emits large amounts of greenhouse gases

# Research

- Vegetarians have been under research for decades
- Adventist Health Study 2- Cohort of 100,000; about 50% vegetarian, 10% vegan
- Oxford EPIC Study- Emphasis on vegetarians

Le L, Sabaté J. Beyond Meatless, the Health Effects of Vegan Diets: Findings from the Adventist Cohorts. *Nutrients*. 2014;6(6):2131-2147.

Appleby P, Key T. The long-term health of vegetarians and vegans. *Proceedings of the Nutrition Society*. 2015;75(03):287-293.

# Positive Health Outcomes

- Lower BMI, blood pressure, total cholesterol, fasting glucose
- Lower rates of heart disease, type-2 diabetes, some cancers
- Mechanisms
  - More soluble and insoluble fiber
  - More phytochemicals, anti-oxidants
  - Less saturated fat

Chiu Y et al. Cross-sectional and longitudinal comparisons of metabolic profiles between vegetarian and non-vegetarian subjects: a matched cohort study. *British Journal of Nutrition*. 2015;114(08):1313-1320.

Orlich M et al. Vegetarian Dietary Patterns and Mortality in Adventist Health Study 2. *JAMA Internal Medicine*. 2013;173(13):1230.

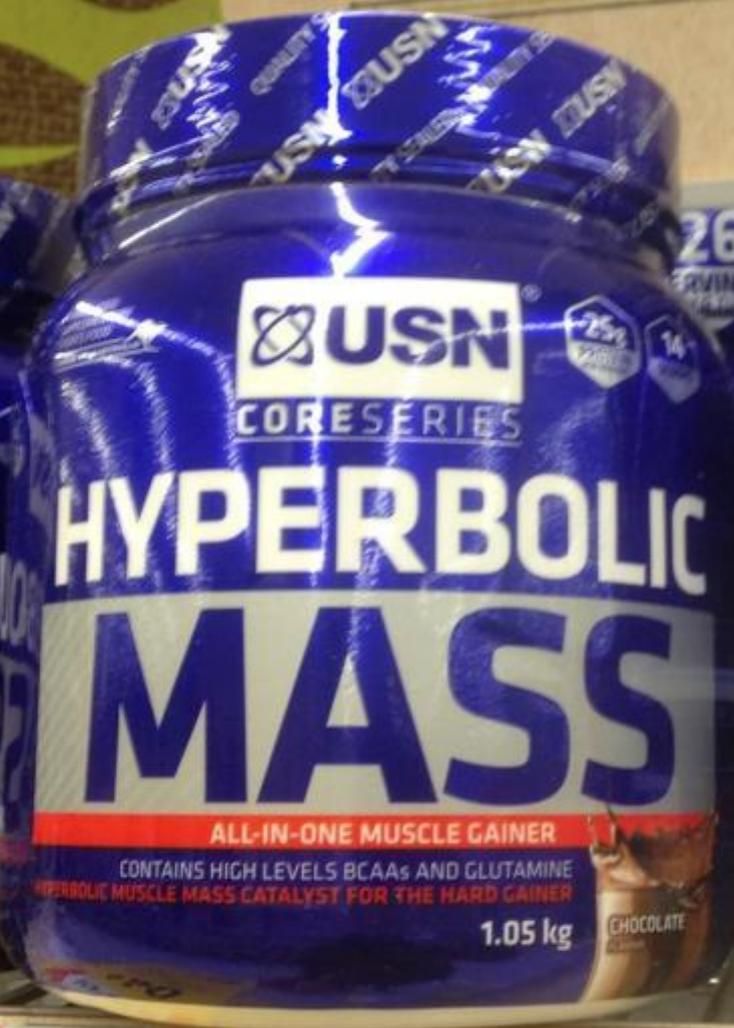
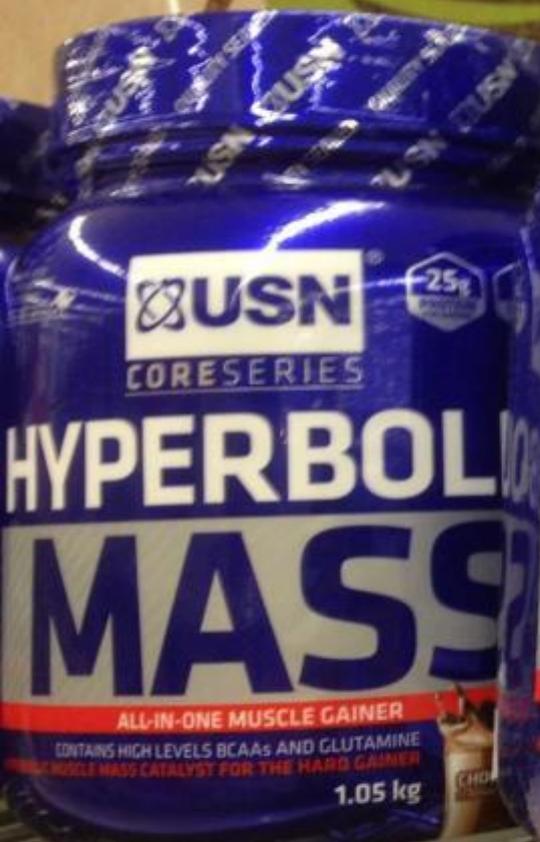
Tonstad S et al. Vegetarian diets and incidence of diabetes in the Adventist Health Study-2. *Nutrition, Metabolism and Cardiovascular Diseases*. 2013;23(4):292-299.

Tantamango-Bartley Y et al. Are strict vegetarians protected against prostate cancer?. *American Journal of Clinical Nutrition*. 2015;103(1):153-160.

# Protein

- Whole plant foods contain all of the essential aa's
- Need to combine proteins is long disproven
- Term 'incomplete protein' is misleading
- Legumes, nuts, seeds, whole grains and more
- Spinach is 30% protein, 1 cup cooked = 5 grams

Those eating mostly plants: RDA plus 10%



20% OFF  
\$50.00  
\$40  
WAS \$50 SAVE \$10  
1kg 100% Premium Whey Protein  
Chocolate 908g  
\$5.51 per 100g

20% OFF  
\$40  
WAS \$50  
Usn 100% Premium

# Amino Acid Content: Legumes

Legumes										
Food	PRO	HIS	ISO	LEU	LYS	MET CYS	PHE TYR	THR	TRP	VAL
<b>Black Beans - cooked</b> Serving: 0.50 cup (86 g)	7.6	212	336	609	523	197	627	321	90	399
Number of servings to meet RDA	8.4	5.3	4.5	5.5	5.8	7.7	4.2	5.0	4.4	4.8
<b>Garbanzos (Chick Peas) - cooked</b> Serving: 0.50 cup (82 g)	7.3	200	312	517	486	193	569	270	70	305
Number of servings to meet RDA	8.8	5.6	4.8	6.5	6.2	7.8	4.6	5.9	5.7	6.3
<b>Kidney Beans - cooked</b> Serving: 0.50 cup (89 g)	7.7	214	339	613	527	198	631	323	91	402
Number of servings to meet RDA	8.3	5.2	4.5	5.5	5.7	7.6	4.2	4.9	4.4	4.7
<b>Lentils - cooked</b> Serving: 0.50 cup (99 g)	8.9	251	386	647	624	193	680	320	80	444
Number of servings to meet RDA	7.1	4.4	3.9	5.2	4.8	7.8	3.9	5.0	5.0	4.3

# Amino Acid Content: Vegetables

Vegetables										
Food	PRO	HIS	ISO	LEU	LYS	MET CYS	PHE TYR	THR	TRP	VAL
<b>Baked Potato</b> Serving: 1.00 med (173 g)	4.3	93	175	260	263	121	351	157	67	244
Number of servings to meet RDA	14.8	12.0	8.6	12.8	11.5	12.5	7.5	10.1	5.9	7.8
<b>Broccoli - cooked, chopped</b> Serving: 1.00 cup (156 g)	3.6	82	180	216	234	88	244	152	48	212
Number of servings to meet RDA	17.7	13.6	8.4	15.5	12.9	17.2	10.8	10.5	8.3	9.0
<b>Carrot - 5 12 inches long</b> Serving: 1.00 small (50 g)	0.5	20	38	51	51	52	51	96	6	35
Number of servings to meet RDA	135.4	55.7	39.8	65.5	59.3	29.1	51.5	16.6	66.3	54.5
<b>Kale - cooked, shredded</b> Serving: 1.00 cup (130 g)	2.5	52	148	173	148	56	215	111	30	135
Number of servings to meet RDA	25.5	21.4	10.2	19.3	20.4	27.0	12.2	14.3	13.3	14.1

# Protein in Plant Foods

---

Tempeh	1 cup	31	9.6
Soybeans, cooked	1 cup	29	9.6
Seitan	3 ounces	21	17.5
Lentils, cooked	1 cup	18	7.8
Black beans, cooked	1 cup	15	6.7
Kidney beans, cooked	1 cup	15	6.8
Chickpeas, cooked	1 cup	15	5.4
Pinto beans, cooked	1 cup	15	6.3
Lima beans, cooked	1 cup	15	6.8

from Vegetarian Resource Group



# Iron

- Iron needs of plant-based eaters are increased
- Non-heme iron is less well absorbed...
- Vitamin C can increase absorption up to 5x
- Vegans may have higher iron intake than vegetarians
- Variety of sources increases absorption

Sobiecki J et al. High compliance with dietary recommendations in a cohort of meat eaters, fish eaters, vegetarians, and vegans: results from the European Prospective Investigation into Cancer and Nutrition–Oxford study. *Nutrition Research*. 2016;36(5):464-477.

# Plant Sources of Iron

<b>Food</b>	<b>Amount</b>	<b>Iron (mg)</b>
Soybeans, cooked	1 cup	8.8
Blackstrap molasses	2 Tbsp	7.2
Lentils, cooked	1 cup	6.6
Spinach, cooked	1 cup	6.4
Tofu	4 ounces	6.4
Bagel, enriched	1 medium	6.4
Chickpeas, cooked	1 cup	4.7
Tempeh	1 cup	4.5
Lima beans, cooked	1 cup	4.5
Black-eyed peas, cooked	1 cup	4.3

# Calcium

- There is a mistrust on recommendations because of the Dairy Industry's relationship with the USDA
- Many vegans believe they don't need to meet recs
- The previously disproven idea that 'animal protein leaches calcium from the bones' is prevalent
- Meetings needs
  - Leafy greens
  - Non-dairy milks
  - Tofu (calcium-set), corn tortillas (with limewater)

# Vitamin B12

- Must be supplemented
- Fortified vegan foods such as plant milks, nutritional yeast and vegan meats may contain B-12, but they cannot be relied upon
- Seaweed, tempeh, spirulina, and fermented foods do not contain a reliable source of B12.



CENTENNIAL TELEPHONE NUMBER  
1911  
CLARA WATSON WOODRUFF & ASSOCIATES  
COLUMBIA CLASS BUILDING  
CAROLYN AND BILL FOSTER  
AND ASSOCIATES  
PAUL THOMAS POLLOCK  
HARRIS WOODRUFF  
CORPORATION  
OF THE CITY OF COLUMBIA  
1911

# Basic Sample Meal

Black beans, kale, and roasted sweet potato



## Nutrition Facts

Serving Size Entire Recipe 728g (727 g)

### Amount Per Serving

**Calories** 690      **Calories from Fat** 71

### % Daily Value\*

**Total Fat** 8g      13%

Saturated Fat 1g      7%

Trans Fat

**Cholesterol** 0mg      0%

**Sodium** 161mg      7%

**Total Carbohydrate** 126g      42%

Dietary Fiber 36g      144%

Sugars 9g

**Protein** 38g

Vitamin A 1263% • Vitamin C 578%

Calcium 50% • Iron 65%

# Black beans, kale, and roasted sweet potato

Calcium	496 mg	50%
Iron	11.8 mg	65%
Magnesium	337 mg	84%
Phosphorus	645 mg	64%
Potassium	2866 mg	82%
Sodium	161 mg	7%
Zinc	5.0 mg	33%
Copper	1.6 mg	80%
Manganese	4.0 mg	201%

# Creating Plant-Based Meals

- Grains, vegetables (leafy!), legumes, nuts, seeds
- Emphasize whole foods first
- Vegan meat or cheese option as complements
- Variety, variety, variety
- Fruit and salads can be meals! BIG servings.

# Plate: Brenda Davis, RD

## THE VEGAN PLATE



NUTS AND SEEDS

OTHER ESSENTIALS\*

\*Omega 3s  
Vitamin B<sub>12</sub>  
Vitamin D  
Iodine

# Plate: Julieanna Hever, MS, RD

## Plant-Based Dietitian's Food Plate<sup>®</sup>

By: Julieanna Hever, M.S., R.D., C.P.T.  
[www.PlantBasedDietitian.com](http://www.PlantBasedDietitian.com)

### *Leafy, Green Vegetables*

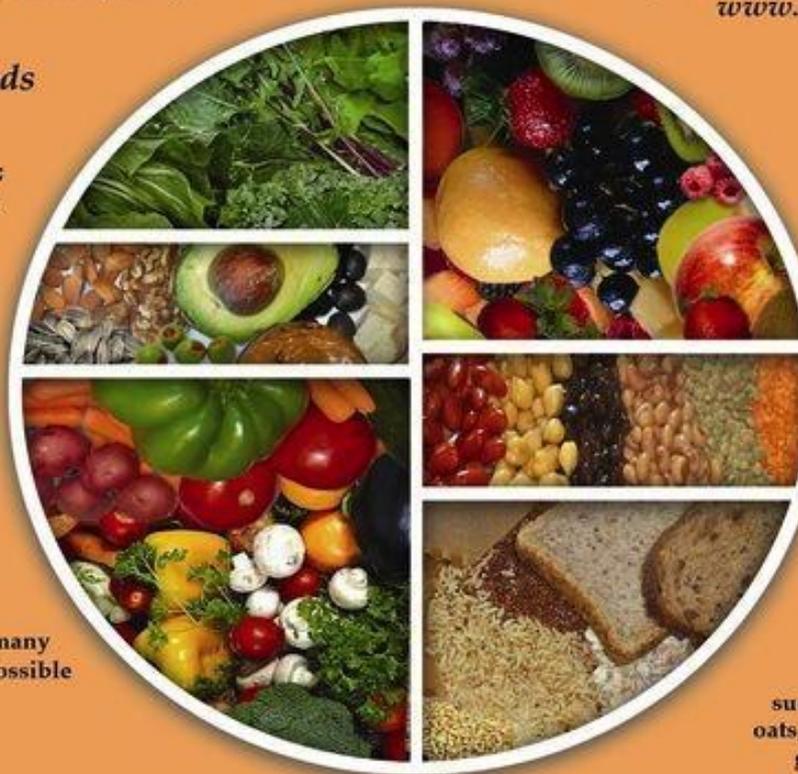
such as collards, spinach, and kale  
Eat at least 2-3 servings  
(1 cup raw or 1/2 cup cooked) per day.

### *High-fat whole foods*

such as: avocados, nuts,  
olives, seeds;  
whole food-sweetened treats;  
dairy substitutes such as oat,  
almond, rice, and soy  
use sparingly.  
Consume 1 to 2 TB.  
seeds per day  
such as ground flax,  
hemp, or chia.

### *Vegetables*

(all types,  
including starchy)  
Eat as much and as many  
different colors as possible  
each day.



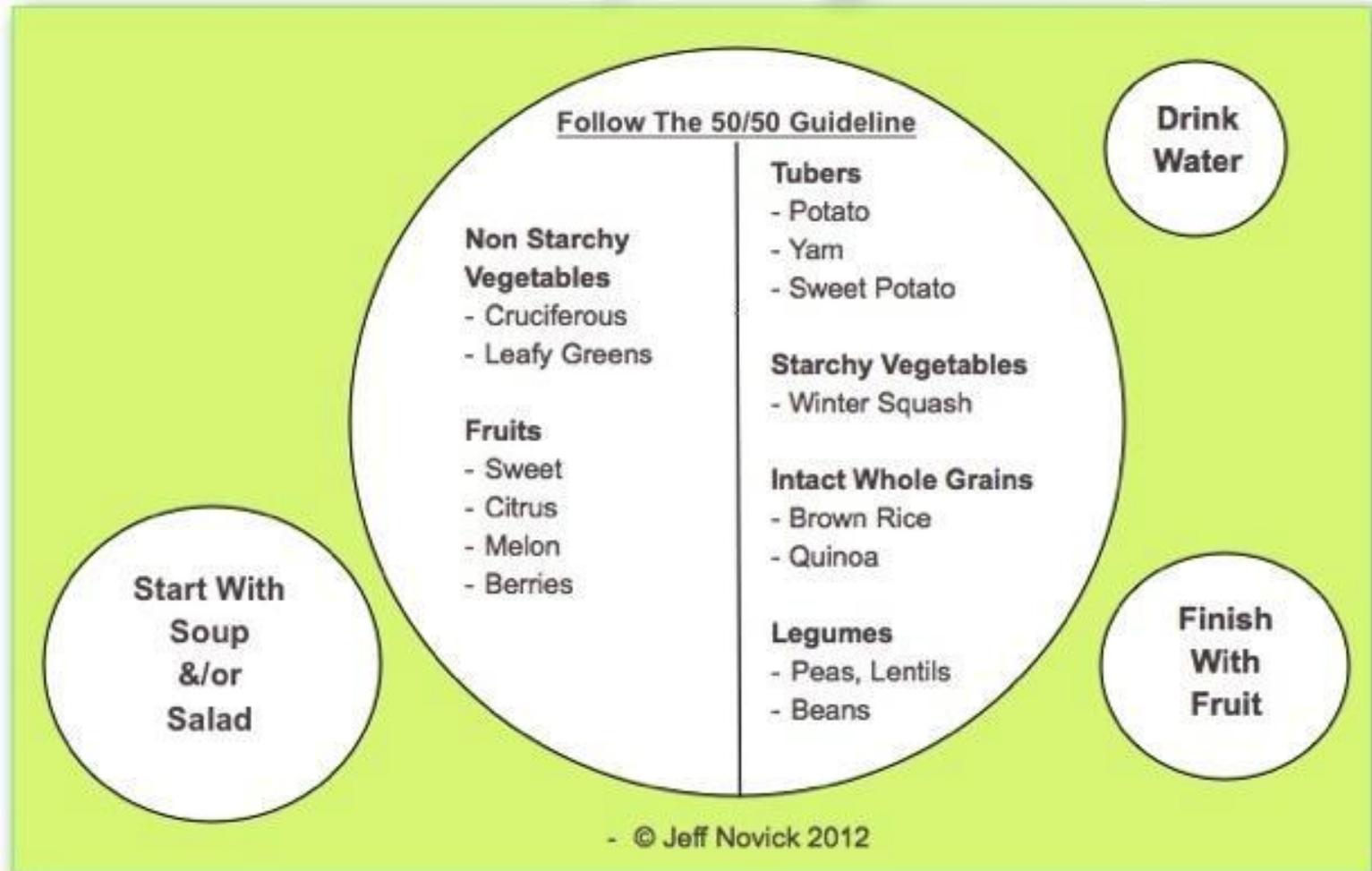
*Fruit* (all types)  
Consume 2-4 servings  
(1 piece or 1/2 cup)  
everyday.

*Legumes*  
(beans, peas, and lentils)  
Consume 2-3 servings  
(1/2 cup) every day

*Whole grains*  
such as brown rice, barley, quinoa,  
oats, amaranth, whole wheat, whole  
grain pasta, and sprouted grains.  
6-11 servings (1/2 cup cooked or  
1 slice whole grain bread) daily.

# Plate: Jeff Novick, MS, RD

## The Healthy Eating Placemat





# Nutrition for Plant-Based Eating

- Nutrients are derived from more diverse foods than the Standard American Diet (SAD)
- General rule: eating smaller amounts of nutrients more often
- Fruits and vegetables are nutrient-dense: many nutrients for fewer calories. BIG portions!!
- Phytochemicals: potential non-nutritive benefits

# Counseling Vegans

- Sources of iron should be emphasized
- B12 needs: supplement, nutritional yeast, fortified foods
- Discuss food volume: takes more to be full
- Fiber: may need to be increased gradually
- Vegan doesn't always equal healthy

# Points to Remember

- Nutrition and health doesn't always drive food choices
- Animal products will be avoided at all costs.
- Very passionate, may be distrustful of health professionals (Big Dairy influence, etc.)
- Must show understanding of lifestyle and earn their trust
- But will do the work to make it successful!

# Questions to Ask

- Where are they getting their information on nutrition?
- What influenced this new eating behavior?
- Do they have support from friends or family?
- Do they know where to access or how to prepare food?
- Are they restricting their diet in any way?

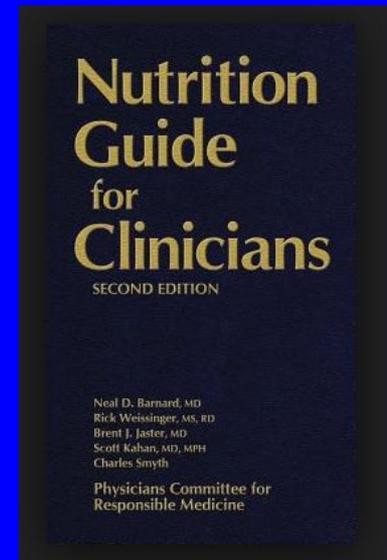
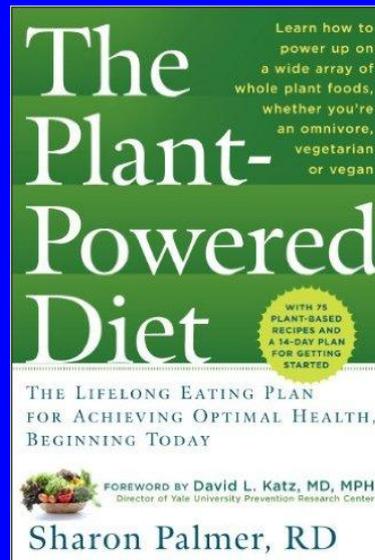
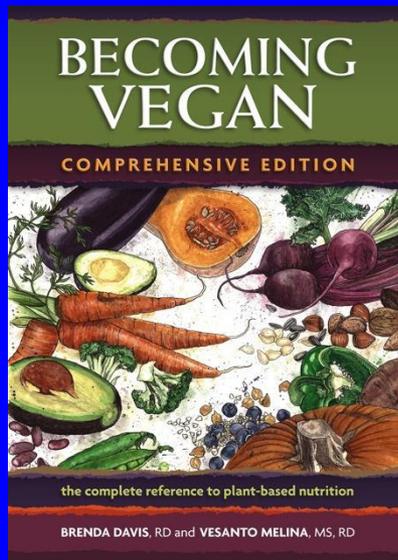
# RD-based Resources

## Becoming Vegan

-Vesanto Melina, RD; Brenda Davis, RD

## Plant-Powered Diet -Sharon Palmer, RD

## Nutrition Guide for Clinicians





Home

Like 4.2K

Share

Tweet

Follow @JackNorrisRD

Subscribe

Google Custom Search

## Home & Site Map

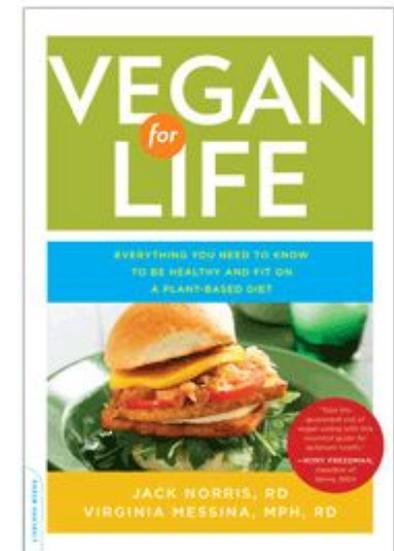
- [Tips for New Vegans](#)
- [Daily Recommendations](#)

## Nutrients that Need Attention in Vegan and Vegetarian Diets

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



# Plant-Based Diets: A Physician's Guide

Julieanna Hever, MS, RD, CPT

Perm J 2016 Summer;20(3):15-082

E-pub: 07/06/2016

<http://dx.doi.org/10.7812/TPP/15-082>

## ABSTRACT

Because of the ever-increasing body of evidence in support of the health advantages of plant-based nutrition, there is a need for guidance on implementing its practice. This article provides physicians and other health care practitioners an overview of the myriad benefits of a plant-based diet as well as details on how best to achieve a well-balanced, nutrient-dense meal plan. It also defines notable nutrient sources, describes how to get started, and offers suggestions on how health care practitioners can encourage their patients to achieve goals, adhere to the plan, and experience success.

## SUMMARY OF HEALTH BENEFITS

Plant-based nutrition has exploded in popularity, and many advantages have been well documented over the past several decades.<sup>1</sup> Not only is there a broad expansion of the research database supporting the myriad benefits of plant-based diets, but also health care practitioners are seeing awe-inspiring results with their patients across multiple unique subspecialties. Plant-based diets have been associated with lowering overall

recommendations<sup>15</sup> for a heart-healthy diet to include no more than 5% to 6% of total calories from saturated fat, which is just the amount found naturally in a vegan diet (one consisting of no animal products).

- **Dietary cholesterol:** Human bodies produce enough cholesterol for adequate functioning. Although evidence suggests that dietary cholesterol may only be a minor player in elevated serum cholesterol levels, high intakes are linked

growth factor-1, more is generated endogenously.<sup>21</sup> Fostering growth as a full-grown adult can promote cancer proliferation.

- **Heme iron:** Although heme iron, found in animal products, is absorbed at a higher rate than nonheme iron, found in plant-based and fortified foods, absorption of nonheme iron can be increased by pairing plant-based protein sources with foods high in vitamin C.<sup>22</sup> Additionally, research suggests that excess iron is pro-oxidative<sup>23</sup> and may increase colorectal cancer risk<sup>24</sup> and promote atherosclerosis<sup>25</sup> and reduced insulin sensitivity.<sup>26</sup>
- **Chemical contaminants formed from high temperature cooking of cooked animal products:** When flesh is cooked, compounds called polycyclic aromatic hydrocarbons,<sup>27</sup> heterocyclic amines,<sup>28</sup>

# 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 vitamin B-12, such as fortified foods or supplements.

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

---

## 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 in 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.



## Vegetarian Nutrition

a dietetic practice group of the  
**eat right.** Academy of Nutrition and Dietetics

### RD Resources for Consumers:

# Eat More Plant-based Meals

**More and more people have become concerned about their health, the environment or the animals that are raised for food and are eating more vegetarian meals.**

According to a 2012 National Harris Poll\* 47% of Americans eat at least one vegetarian meal a week and as many as 14 million adults consider themselves to be vegetarians. If you are interested in becoming a vegetarian or just adding more plant-based foods to your diet, this resource will help make that change easy, fun and sustainable.

**Eat more of the plant-based foods you already eat.**

Do you eat peanut butter and jelly sandwiches? How

**Find recipes and cookbooks that you like and create time to cook.**

Skip the gourmet cookbooks (unless you are a gourmet chef!) and go for the ones that are most similar to your cooking style. Today there is a wide selection of vegetarian cookbooks that cater to a number of tastes, style and type of vegetarian. And there's no better way to control what food you eat than to prepare it at home. The internet has millions of vegetarian and vegan recipes (see below for our favorites sites).

**Explore familiar – and unfamiliar – stores.**

What if you don't have a grocery store nearby? How

# Thank You!

Matt Ruscigno, MPH, RD  
@MattRuscigno



# Bonus Content

Some slides from presentations on athletes that may be helpful follow from here

**Table 2. Sources of notable nutrients**

Nutrient	Food sources
Protein	legumes (beans, lentils, peas, peanuts), nuts, seeds, soy foods (tempeh, tofu)
Omega-3 fats	seeds (chia, hemp, flax), leafy green vegetables, microalgae, soybeans and soy foods, walnuts, wheat germ
Fiber	vegetables, fruits (berries, pears, papaya, dried fruits), avocado, legumes (beans, lentils, peas), nuts, seeds, whole grains
Calcium	low-oxalate leafy greens (broccoli, bok choy, cabbage, collard, dandelion, kale, watercress), calcium-set tofu, almonds, almond butter, fortified plant milks, sesame seeds, tahini, figs, blackstrap molasses
Iodine	sea vegetables (arame, dulse, nori, wakame), iodized salt
Iron	legumes (beans, lentils, peas, peanuts), leafy greens, soybeans and soy foods, quinoa, potatoes, dried fruit, dark chocolate, tahini, seeds (pumpkin, sesame, sunflower), sea vegetables (dulse, nori)
Zinc	legumes (beans, lentils, peas, peanuts), soy foods, nuts, seeds, oats
Choline	legumes (beans, lentils, peas, peanuts), bananas, broccoli, oats, oranges, quinoa, soy foods
Folate	leafy green vegetables, almonds, asparagus, avocado, beets, enriched grains (breads, pasta, rice), oranges, quinoa, nutritional yeast
Vitamin B <sub>12</sub>	fortified foods (nutritional yeast, plant milks), supplement (2500 µg per week)
Vitamin C	fruits (especially berries, citrus, cantaloupe, kiwifruit, mango, papaya, pineapple), leafy green vegetables, potatoes, peas, bell peppers, chili peppers, tomatoes
Vitamin D	sun, fortified plant milks, supplement if deficient
Vitamin K	leafy green vegetables, sea vegetables, asparagus, avocado, broccoli, Brussels sprouts, cauliflower, lentils, peas, natto (a traditional Japanese food made from soybeans fermented with <i>Bacillus subtilis</i> var <i>natto</i> )

# Benefits of Plants for Athletes

- Great carbohydrate to protein ratio
- Fruits and vegetables are hydrating
- Anti-oxidants that may aid recovery
- Healthy fats for increased caloric needs
- Easy to eat

# Athlete Fueling Options

- Pre-workout: smoothie, preferred foods as tolerated
- Workout: bananas, dates, potatoes, rice balls, bars, gels, nut butters, pretzels, crackers
- Post-workout: Bean burritos, hummus (and other bean dips), fruit and nut butter, 'normal' meals

# Case Study: Vegan Ultrarunner

- 37 yr old white male, 20+ years vegan
- Two children: 2 and 8 years old
- Cooks often, with wife
- Focused on simplicity, economics (\$65/week for family of 4)
- Meals: rice w/ frozen veggies, soaked beans
- Struggles to maintain weight

# Vegan Ultrarunner (cont)

- Breakfast- cereal with soymilk, raisins; coffee
- Lunch- tacos: black beans and rice with corns, peppers, tomatoes, lettuce on corn tortillas; pasta with chickpeas, spinach, tomatoes, raisins
- Dinner- mac & cheeze made with pasta, nutritional yeast, carrots, peas; rice with chickpeas, broccoli, carrots; salads
- Snacks- lots of fruit, homemade banana ‘ice cream’ with chocolate chips
- Workout/recovery- shot blocks, pb&j sandwich

“These are BIG servings”

# Case Study 2- Bodybuilder

- Breakfast: smoothie with soymilk, protein powder, juice, cocoa
- Meals through day: Soup with bread and vegan bacon; green beans with vegan chicken, broccoli
- Snacks: roasted chickpeas, almonds, fruit, cashew ice cream

# Case Study 2- Bodybuilder

- 30 yo white female, competitive bodybuilder
- 5' 7", 140# (64kg), 1700-2400 calories/day (varies by cycle)
- Strength athlete with focus on building muscle
- Flexible eating: includes vegan meats, desserts
- Protein 105-140g per day (1.6-2.2 g/kg bw/d)
- ~25% of calories from protein at 1700 calories/d
- Working with a trainer

## **A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial.**

Barnard ND<sup>1</sup>, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Green A, Ferdowsian H.

### **⊕ Author information**

#### **Abstract**

**BACKGROUND:** Low-fat vegetarian and vegan diets are associated with weight loss, increased insulin sensitivity, and improved cardiovascular health.

**OBJECTIVE:** We compared the effects of a low-fat vegan diet and conventional diabetes diet recommendations on glycemia, weight, and plasma lipids.

# Non-nutrient Benefits

- Phytochemicals and antioxidants
  - Reduced inflammatory markers
  - Possibly similar function as in cardiovascular disease prevention<sup>1</sup>
- Nitric oxide: beets, cacao, plant foods
  - Increase vasodilation and oxygen flow to muscles; increased time to exhaustion<sup>2</sup>
- Most research on supplements, not food<sup>3</sup>

Ha V, de Souza RJ. “Fleshing out” the benefits of adopting a vegetarian diet. *J Am Heart Assoc.* 2015;4(10):e002654.

Wylie L et al. Beetroot juice and exercise: pharmacodynamic and dose-response relationships. *Journal of Applied Physiology.* 2013;115(3):325-336.

Peternejl TT, Coombes JS. Antioxidant supplementation during exercise training: beneficial or detrimental? *Sports Med.* 2011;41(12):1043-1069