Nutrition in Clinical Practice

Neal Barnard, MD, FACC
Adjunct Associate Professor of Medicine,
George Washington University
Physicians Committee for Responsible Medicine
Lifestyle Heart Trial

Dean Ornish, M.D.
Preventive Medicine Research Institute
Sausalito, California

lifestyle intervention vs. usual care

Lifestyle Heart Trial

Experimental program:
1. Vegetarian foods
2. Half-hour walk daily
3. Manage stress
4. Avoid tobacco

Lifestyle Heart Trial
1-year results

Cholesterol ↓ 24%
LDL ↓ 37%
Weight ↓ 22 lbs (10 kg)
Reversal 82% of participants

A. Diseased distal left anterior descending artery

B. After 32 months on low-fat, vegan diet with no lipid-lowering medications
Weight-Loss Trial in Healthy Participants

64 overweight women

Low-fat vegan vs “conventional” diet

No calorie limits

No exercise

No food provided
<table>
<thead>
<tr>
<th>Time</th>
<th>Meals</th>
</tr>
</thead>
</table>
| **Breakfast** | Blueberry pancakes or Oatmeal with cinnamon and raisins  
Half cantaloupe  
Rye toast with jam |
| **Lunch**   | Chunky vegetable chili  
Garden salad with sesame dressing |
| **Snack**   | Banana                                                               |
| **Dinner**  | Lentil soup with crackers  
Linguine with artichoke hearts and seared oyster mushrooms  
Steamed broccoli |

Baseline

NCEP

Vegan

14 Weeks

Body Weight (kg)

P = 0.012

-12.8 lb (5.8 kg)

-8.4 lb (3.8 kg)
Intention-to-treat model, last value brought forward.
Intention-to-treat model, last value brought forward.
Mechanisms

- ↑ fiber

- fat (9 kcal/g) → carbohydrate (4 kcal/g)
The After-Meal Calorie Burn

The After-Meal Calorie Burn

The After-Meal Calorie Burn

Does fat slow metabolism?
Fatty Diet Impairs Mitochondrial Biogenesis

Pennington Biomedical Research Center

50% fat diet for 3 days

Fat in cells slows your after-meal calorie burn.
Getting fat out of cells boosts your after-meal calorie burn.
“Conventional diet” vs Plant-based diet


Dietary Interventions

“Conventional”:
1. Limit calories
2. Keep carbohydrate steady
3. Limit “bad” fats

Plant-based:
1. No animal products
2. Minimize oils
3. Low-Glycemic Index
Hemoglobin A1c at Baseline and at 11 and 22 Weeks

Individuals with no medication changes, n = 24 vegan, 33 ADA

P = 0.01
Inside the Cell

Glucose

Insulin

Intramyocellular lipid
Offspring of Patients with Type 2 Diabetes

<table>
<thead>
<tr>
<th></th>
<th>Insulin sensitive controls</th>
<th>Insulin-resistant Parent or grandparent with diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>28y</td>
<td>26y</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>132 lb (60 kg)</td>
<td>141 lb (64 kg)</td>
</tr>
<tr>
<td><strong>A1C</strong></td>
<td>5.1%</td>
<td>5.2%</td>
</tr>
</tbody>
</table>

Intramyocellular lipid  Mitochondrial activity

Meta-Analysis: Plant-Based Diets & A1C

Study name | Subgroup within study | Difference in means | Difference in means and 95% CI
--- | --- | --- | ---
Ferdowsian et al., 2010 | low fat vegan | -0.700 | 
Mishra et al., 2013 | low fat vegan | -0.700 | 
Barnard et al., 2009 | low fat vegan | -0.410 | 
Nicholson et al., 1999 | low fat vegan | -0.400 | 
Kahlecova et al., 2011 | lacto vegetarian | -0.090 | -0.387

Combined effect = 0.39

There were a few missteps along the way…

Vegan Burger with Bacon & Cheese

Quarter pound vegan burger topped with bacon and cheese on kaiser served with your choice of two house sides

$5.99
Hemoglobin A1c

Week 0

Week 18

Control

Intervention

Cerebral Cortex.
Stores memories as links between brain cells.
Chicago Health and Aging Project
Saturated Fat

13 grams

25 grams

Alzheimer’s Risk
Trans Fats

Low: 1.8 grams

High: 4.8 grams

Alzheimer’s Risk
“Where do you get your protein?”
Protein Requirements

Women: 46g
Men: 56g
Protein in Everyday Foods

In 2000 calories:

- Broccoli: 146
- Lentils: 157
- Corn: 79
- Oatmeal: 62
- Carrots: 49
- Blueberries: 48
- Brown rice: 43
- Potato (skinless): 42
<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Calcium (mg/cup)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli</td>
<td>94</td>
</tr>
<tr>
<td>Collards</td>
<td>358</td>
</tr>
<tr>
<td>Kale</td>
<td>94</td>
</tr>
<tr>
<td>Mustard greens</td>
<td>150</td>
</tr>
<tr>
<td>Swiss chard</td>
<td>102</td>
</tr>
<tr>
<td>Spinach</td>
<td>(244)</td>
</tr>
</tbody>
</table>
Vitamin B12 (cobalamin)

Healthy blood cells

Healthy nerves

RDA: 2.4 mcg
What about children?
CDC on Childhood Obesity

18.5% of children are obese.

Heart Disease at Birth?
Heart Disease at Birth?

University of Sydney

23 women and their newborns

Aortic thickness: 0.65mm to 0.97mm

Babies born to overweight mothers had 0.06mm thicker aortic walls.

Skilton M. Fetal and Neonatal Edition of Archives of Disease of Childhood
Combat Childhood Obesity

• Introduce healthful foods at a young age
• Work with your school’s food service director to add plant-based options
• Be a healthy role model
Why Plant-Based Meals?

Fiber, vitamins, minerals

Low in saturated fat, no cholesterol

Reduce risk for diet-related diseases
Successful Schools: NYC

- Meatless Mondays
- 4 fully vegetarian schools
- Daily plant-based option at every school
Successful Schools: Los Angeles

Vegan pilot program in 14 schools

<table>
<thead>
<tr>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegan Burrito</td>
<td>Falafel Flatbread</td>
<td>Three Bean Vegan Chili Crunchy Tortilla Chips</td>
<td>Italian Sausage Sub</td>
<td>Chicken-Free Tenders Artisan Roll</td>
</tr>
</tbody>
</table>
Successful Schools: Santa Barbara

50% of meals are vegan
No processed meats

Santa Barbara Unified School District Becomes First in the U.S. to DROP PROCESSED MEAT!
Resources and Recipes
HealthySchoolLunches.org

Drop the Hot Dog: Removing Processed Meat from School Meals

Vegan Options for School Lunch Programs

- Advantages for Children's Health
- Meeting USDA Requirements
- Menu Makeovers
- Commodities
- Product Vendors
- Introducing New Options
- Putting Best Practices into Action
- Key Nutrients
- Additional Resources
What is the Natural Diet of Human Beings?
The Dental Test
The Bunny Test
Starting a Healthful Diet

Step 1. “Check out the possibilities”
Foods to Try this Week

Breakfast

Lunch

Dinner

Snack
Healthy Breakfasts

- Cinnamon Raisin Oatmeal
  - Blueberry Pancakes
- Bran Flakes with Almond Milk
- Veggie sausage, veggie bacon
  - Breakfast Scrambler
- Fantastic Fruit Smoothie
- Whole-Grain Bagel with Jam
  - Swiss Style Muesli
- Slow Cooker Whole-Grain Porridge
  - Orange-Pineapple Crush
Lunches and Dinners

- Veggie Pizza
- Chunky Vegetable Chili
  - Bean Burrito
- Veggie burgers, veggie hot dogs
  - Mandarin Stir-Fry
- Portobello Mushroom Steaks
- Oven-Barbecued Tofu Steaks
  - Sweet & Sour Tempeh
- Southern Beans & Greens
  - Seitan Cassoulet
- Stuffed Vegetable Rolls
Italian Cuisine
Latin American Cuisine
Chinese Cuisine
Japanese Cuisine
Fast-Food Options

Veggie sub

Bean burrito, hold the cheese
Foods to Try this Week

Breakfast
- Cornflakes with almond milk
- Oatmeal with blueberries
- Veggie sausage
- Scrambled tofu w/ mushrooms

Lunch
- Veggie sub
- Split pea soup
- Black bean chili

Dinner
- Angel hair pasta arrabbiata
- Veggie burger
- Cucumber sushi (at restaurant)

Snack
- Bananas, apples, oranges
- Papayas, mangos
- Low-fat hummus w/ crackers
Beginning a Healthful Diet

Step 1. “Check out the possibilities”
Step 2. A 3-week “test drive”
Kickstart Your Health

Download the free 21-Day Vegan Kickstart app or sign up online.
GET HEALTHY WITH THE
21-DAY VEGAN KICKSTART

BREAKFAST

LUNCH

SNACK

DINNER

21DayKickstart.org

This comprehensive medical reference provides the latest evidence-based information on nutrition for disease prevention, including risk factors, diagnoses, and treatments.

nutritionguide.pcrm.org
NutritionCME
Free Continuing Medical Education Credits

Start Earning Credits Now

Browse CMEs By Topic
HIV/AIDS CME
Cardiovascular Disease CME

Physicians receive AMA PRA Category 1 Credits™ for completed courses. Nurses are awarded continuing nursing education credits (CNE), and registered dietitians and dietetic technicians, registered, are awarded continuing professional education units (CPEUs).

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ICNM
International Conference on Nutrition in Medicine

The very latest powerful and practical information for you and your practice, plus continuing medical education credits.

AMA
International Conference on Nutrition in Medicine 2020

Grand Hyatt Washington

August 6, 2020—August 8, 2020

Register at: PCRM.org/ICNM
Thank you!