



Vegetarian Diets: Weight Loss and Maintenance

Kathleen Law

FN630 – Interventions & Strategies in Weight Management

Spring 2023

Agenda

INTRODUCTION to Vegetarian Diets

3

MECHANISMS of Action

8

RESEARCH Summary

9

PROS & CONS

12

CULTURAL CONSIDERATIONS

13

Vegetarian Diet Basics¹

A vegetarian diet is one that is made up of mostly plants, including legumes, grains, fruits, vegetables, nuts, and seeds.

A vegetarian diet does not include animal-based meats, such as poultry, beef, pork, lamb, or seafood.

Vegetarians do not usually consume gelatin or rennin (found in some cheeses).

Some vegetarian diets may include various animal products – more about that on the next slide.

The term “plant-based” encompasses the multiple forms of vegetarian diets.



Variations of the Vegetarian Diet¹



VEGAN

100% plant-based;
excludes ALL animal-
based foods



LACTO-OVO- VEGETARIAN

Plants + eggs
and/or dairy



PESCATARIAN

Plants + seafood



SEMI-VEGETARIAN

Plants + some animal-based
items, like chicken, seafood,
eggs, and/or dairy

Sample Meal Plan – Vegetarian Diet – Vegan Version

BREAKFAST

Tofu scramble with baked potato cubes, steamed beets & carrots, arugula, dulse flakes, and a Brazil nut

SNACK

Matcha soy latte with a piece of fruit

LUNCH

Baked tempeh, chickpeas, brown rice, steamed broccoli, beets & carrots with a tahini dressing, arugula, and pumpkin seeds

SNACK

Dairy-free Greek-style yogurt with blueberries, strawberries, chia seeds, almonds, and chocolate chips

DINNER

Red lentil & mushroom Bolognese with whole wheat pasta, spinach, and hemp hearts

POPULARITY & ACCEPTANCE

In America, vegan diets have experienced major growth in the last several years.²

The number of American vegans was up 600% from 2014 to 2018.²

Plant-based food sales grew 27% in 2020, while total foods sales were only up 15% over the same time.³

Flexitarian diet (a.k.a. semi-vegetarian) ranked #1 easiest diet to follow in 2023.⁴

Ornish Diet (low-fat vegetarian diet, mostly vegan) ranked #10 best diet overall and #11 easiest diet to follow in 2023.⁴

Diet Philosophy

Historically⁵

- In ancient Greek and Roman times, philosophers debated what justice was and who deserved it
- Justice for animals was considered in these debates
- Pythagoras was not only known for his theorem, but also for his stance on ethical vegetarianism, circa 550 BCE
- He believed in immortality through reincarnation, and that all animals, not just humans, had souls
- Pythagoras also thought meat was unhealthy for human consumption and led to war

Presently²

- Today, many people are experimenting with a more plant-based diet that ranges from semi- or flexitarian to 100% plant-based
- Reasons for doing so include animal welfare, the environment, and personal health
- Lacto-ovo-vegetarians do not consume meat, often for ethical reasons, but believe that using animal by-products, such as dairy, is acceptable
- Vegans do not consume any animal products, in their diets, but also in other areas, for instance – no honey, leather, or wool, in home, body, or clothing items

Mechanisms of Action

A healthful plant-based diet is naturally lower in energy-dense foods and saturated fat; and higher in carbohydrates, fiber, water, and bioactive compounds, including polyphenols.^{6,7,8,9,10}

Increased satiety, possibly due to increased fiber consumption, may be the reason weight loss accompanies a plant-based diet, even in the absence of restricting calories or changing physical activity levels.^{7,9,10}

Secretion of incretin hormones, including GLP-1, from the GI tract, stimulate the release of insulin and promote glucose homeostasis.⁹

Fiber and bioactive compounds, such as polyphenols, appear to increase the secretion of satiety hormones, including glucagon-like peptide-1 (GLP-1), peptide YY (PYY), and amylin.⁹

Soluble fiber, specifically, slows digestion, ferments in the large intestine, and promotes the secretion of GLP-1 and PYY.¹¹

Insoluble fiber speeds travel through the GI tract, possibly decreasing energy absorption.¹¹

PYY concentration may be increased by consumption of resistant starch.⁹

Research Summary

There was no significant difference in the adherence or acceptability between vegan, vegetarian, pescatarian, semi-vegetarian, and omnivorous diets.¹²

Of participants in the New DIETs weight loss study, non-adherent vegans and vegetarians lost more weight than non-adherent omnivores.¹²

Increased insoluble fiber* consumption was shown to have a positive effect on BMI, fat mass, and visceral fat volume.¹⁰

Satiety was increased after a plant-based meal, due in part to increased secretion of satiety hormones GLP-1, PYY, and amylin, caused by consumption of fiber and bioactive compounds, including polyphenols.⁹

Research Summary

Plant-based diets were accompanied by positive changes in macronutrients, fiber, and cholesterol, especially in the vegan group of a weight loss study comparing four versions of the plant-based diet and an omnivorous diet.⁸

At six months, vegans had lost significantly more weight than pescatarians, semi-vegetarians, and omnivores.⁸

A vegan diet may result in consumption of less protein than those that include meat, if not properly planned.⁸

A low-fat plant-based diet intervention resulted in statistically and clinically significantly greater weight loss than for the omnivorous control group of the GEICO study.⁷

The BROAD study saw weight loss, decreased chronic disease risk, and improved quality of life in their whole food, plant-based experimental group, that were still positive at 12 months.⁶

Short & Long Term Results

- Secretion of satiety hormones was shown to be greater immediately following a plant-based meal when compared with an animal-based meal⁹
- Several studies have shown good short-term weight loss results related to various versions of a vegetarian diet (at 2, 4, 4.5, 6, and 12 months)^{6,7,8,10}
- Long-term prospective studies, like the Adventist Health Study 2, show that vegetarian diets lead to better health outcomes long-term, including maintaining a healthy weight and decreasing chronic disease risks^{1,13}
- Some people find it difficult to adhere to a low-fat vegetarian/vegan diet long-term¹²
- Following a semi-vegetarian diet may help people follow a more plant-based eating pattern over time

Pros & Cons

CON:

Nutrients of concern
(B12, calcium, protein, etc.)^{2,14}

FIX:

Follow a well-planned plant-based diet; see an RDN for help¹⁴

CON:

Adherence & acceptability¹²

FIX:

Find the version of a vegetarian diet that works for you; the more plants, the better the outcomes^{8,10,14}

PRO:

Better health outcomes seen over time, including maintaining a healthy weight^{6,7,8,10,13,14}

PRO:

Better health outcomes seen over time, including decreasing the risk of chronic diseases, such as CVD & T2D^{13,14}

PRO:

More plants and less animals consumed is also better for the environment and the animals¹⁴

Cultural Considerations – Afro-Caribbean

CULTURE & RISKS

- The Afro-Caribbean culture is made up of people from around the Caribbean Islands who are of African descent
- People of Afro-Caribbean heritage may be at higher risk of chronic diseases and conditions, including obesity, hypertension, stroke, and type 2 diabetes¹⁵
- There may be less pressure to lose weight, due to different views on body shape in Afro-Caribbean culture¹⁵

NATIVE AFRO-CARIBBEAN FOODS¹⁶

- Rice
- Beans
- Plantain
- Sweet potato
- Papaya
- Coconut
- Cassava
- Tomatoes
- Lentils
- Fish
- Meat

AFRO-CARIBBEAN DISHES¹⁶

- Rice and peas
- Jamaican goat curry
- Callaloo
- Pumpkin soup
- Jerk Chicken
- Yam rissoles
- Corn porridge
- Ackee
- Beef patties
- Salfish stew

Cultural Considerations

- Many Afro-Caribbean dishes are plant-centered
- A few easy swaps can be made to others to make them vegetarian
- Replicating these dishes while keeping them vegetarian is all about the spices and duplicating flavors
- Jamaican goat curry
 - Replace goat with marinated tofu or jackfruit
 - Both will take on the flavor of the marinade
 - Jackfruit will give a meaty texture
- Beef patties
 - Replace ground beef with cooked lentils
 - Pulsing lentils in a food processor or mashing them with a fork will give a ground beef texture
- Jerk Chicken
 - Replace chicken with marinated/spiced oyster mushrooms or tofu
 - Oyster mushrooms give a chicken texture



Summary

A well-planned plant-based diet, whether a vegetarian variation, such as lacto-ovo-vegetarian or pescatarian, or 100% plant-based vegan, that considers nutrients of concern, such as B12 and calcium, as well as, includes adequate protein and healthy fat, specifically omega-3, can be beneficial for overall positive health outcomes, in particular maintaining a healthy weight and decreasing the risk of multiple chronic diseases.

Well-planned vegetarian diets, including vegan diets, are safe for people throughout their lifespan.

Research into various plant-based diets has increased over the last decade, but due to small sample sizes, short durations, and no standard definition/separation of “vegetarian” or “plant-based” diets, there is a need for more properly designed studies that define and separate the variations of vegetarian diets.



References

- ¹MedlinePlus. Vegetarian Diet. Medlineplus.gov. Reviewed October 10, 2020. Accessed March 20, 2023. <https://medlineplus.gov/ency/article/002465.htm>.
- ²Clem J, Barthel B. A Look at Plant-Based Diets. *Mo Med*. 2021;118(3):233-238. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8210981/pdf/ms118_p0233.pdf. Accessed March 20, 2023.
- ³Statista. Sales value of the plant-based foods market in the United States in 2021, by category. Statista.com. Accessed March 20, 2023. <https://www.statista.com/statistics/771457/plant-based-food-sales/>.
- ⁴U.S. News. Best Diets 2023. health.usnews.com. Accessed March 20, 2023. <https://health.usnews.com/best-diet>.
- ⁵Morgan N. The Hidden History of Greco-Roman Vegetarianism. Britannica.com. Accessed March 20, 2023. <https://www.britannica.com/explore/savingearth/the-hidden-history-of-greco-roman-vegetarianism>.
- ⁶Wright N, Wilson L, Smith M, Duncan B, McHugh P. The BROAD study: A randomised controlled trial using a whole food plant-based diet in the community for obesity, ischaemic heart disease or diabetes. *Nutr Diabetes*. 2017;7(3):e256. doi:10.1038/nutd.2017.3.
- ⁷Mishra S, Xu J, Agarwal U, Gonzales J, Levin S, Barnard ND. A multicenter randomized controlled trial of a plant-based nutrition program to reduce body weight and cardiovascular risk in the corporate setting: the GEICO study. *Eur J Clin Nutr*. 2013;67(7):718-724. doi:10.1038/ejcn.2013.92.
- ⁸Turner-McGrievy GM, Davidson CR, Wingard EE, Wilcox S, Frongillo EA. Comparative effectiveness of plant-based diets for weight loss: a randomized controlled trial of five different diets. *Nutrition*. 2015;31(2):350-358. doi:10.1016/j.nut.2014.09.002.
- ⁹Klementova M, Thieme L, Haluzik M, et al. A Plant-Based Meal Increases Gastrointestinal Hormones and Satiety More Than an Energy- and Macronutrient-Matched Processed-Meat Meal in T2D, Obese, and Healthy Men: A Three-Group Randomized Crossover Study. *Nutrients*. 2019;11(1):157. Published 2019 Jan 12. doi:10.3390/nu11010157.
- ¹⁰Kahleova H, Dort S, Holubkov R, Barnard ND. A Plant-Based High-Carbohydrate, Low-Fat Diet in Overweight Individuals in a 16-Week Randomized Clinical Trial: The Role of Carbohydrates. *Nutrients*. 2018;10(9):1302. Published 2018 Sep 14. doi:10.3390/nu10091302.
- ¹¹Lattimer JM, Haub MD. Effects of dietary fiber and its components on metabolic health. *Nutrients*. 2010;2(12):1266-1289. doi:10.3390/nu2121266.
- ¹²Moore WJ, McGrievy ME, Turner-McGrievy GM. Dietary adherence and acceptability of five different diets, including vegan and vegetarian diets, for weight loss: The New DIETs study. *Eat Behav*. 2015;19:33-38. doi:10.1016/j.eatbeh.2015.06.011.
- ¹³Loma Linda University Health. Findings for Lifestyle, Diet & Disease. Adventisthealthstudy.org. Accessed March 17, 2023. <https://adventisthealthstudy.org/studies/AHS-2/findings-lifestyle-diet-disease>.
- ¹⁴Melina V, Craig W, Levin S. Position of the Academy of Nutrition and Dietetics: Vegetarian Diets. *J Acad Nutr Diet*. 2016;116(12):1970-1980. doi:10.1016/j.jand.2016.09.025.
- ¹⁵British Heart Foundation. How African Caribbean background can affect you heart health. Accessed March 21, 2023. <https://www.bhf.org.uk/information-support/heart-matters-magazine/medical/african-caribbean-background-and-heart-health>
- ¹⁶Afro-Caribbean Food. History of Afro-Caribbean Food. Accessed March 21, 2023. <https://www.africanfoods.co.uk/afro-caribbean-food.html>.