

Food is Medicine

*A cooking program of
plant-based, olive oil recipes*

Mary M. Flynn, PhD, RD, LDN
The Miriam Hospital and Brown University
January 2017

Week 1.

Welcome to *Food is Medicine!* The purpose of this program is to teach you how to make meals that will improve your health and lower your food costs. The program is based on a study of food pantry clients that showed how recipes which are plant-based and include extra virgin olive oil for 2 to 3 main meals a week lead to a decrease in food insecurity, food costs, and body weight ¹. Recipes for the program can be found at www.medfooddiet.com. The recipes include shelf-stable foods so you can both purchase ingredients whenever you like, and stock up on them when they are on sale. The recipes are also quick to make, allowing you to prepare a healthy, tasty dinner typically in 20 minutes or less.

What is a healthy diet?

There is no set definition for a “healthy diet”. I define a “healthy diet” as one that contains mainly foods that the literature has shown will improve risk factors for chronic diseases. Many studies of plant foods demonstrate how consumption of these foods improves risk factors. In short, the more plant foods you eat, the healthier you will be. A plant-based diet is also very economical; especially one that includes daily use of extra virgin olive oil. Compared to my plant-based diet, the most economical meal plan of the USDA cost an average \$14.36 more per week for a total of \$746.46 more per year ².

Meal plan for eating a plant-based, olive oil diet.

We will discuss a meal plan for a plant-based, olive oil diet. A meal plan for 1500 and 1800 calories can be found on the website www.medfooddiet.com under the “Food as Medicine” tab, “weight management” section.

Grocery list

Starch

Beans: ½ cup cooked= 1 serving

black – canned or dried

cannellini – canned or dried

lentils

barley

Rice – preferably brown

pasta – preferably whole wheat

potatoes: red, white, Yukon gold, baking

bread - preferably whole grain or whole wheat
(including pita, rolls, etc.)

tortilla – preferably whole wheat

vegetables: ½ cup = 1 serving

Canned: ** a can contains about 3 servings

tomatoes (crushed or whole)

corn

peas

green beans

Fresh:

carrots

mushrooms

onions (red or white/yellow)

pepper: green, red

spinach (baby or regular)

squash (summer or zucchini)

Frozen:

broccoli

corn

greens – such as kale, collard

peppers – red and green

spinach

Dairy:

cheese – American, others (check what is on sale)

milk

eggs

Optional: dried basil, oregano, chili powder, cumin, garlic cloves

Week 2. **Extra virgin olive oil**

Extra virgin olive oil essentially consists of the juice of the olive, making it a plant product. All extra virgin olive oil is both cold-pressed and first press. The health benefits of extra virgin olive oil stem from their phenol content, some of which are found only in olive oil. There are a number of different phenols in olive oil being researched. People who use extra virgin olive oil consistently have a lower risk of developing chronic diseases.

Some of the benefits of daily use of extra virgin olive oil include decreasing:

- fasting glucose and insulin ^{3,4}, blood pressure ^{5,6}, oxidation ^{7,8}, and inflammation ⁹

Some extra virgin olive oil is rich in oleocanthal, which has been shown to be an anti-inflammatory agent ⁹. Daily use of extra virgin olive oil has also been shown to independently increase HDL-c ^{7,10}.

Extra virgin olive oil also makes vegetables taste better, especially ones that are bitter, like spinach, kale, and broccoli. Cooking vegetables in extra virgin olive oil also means that you will absorb the carotenoids in vegetables because we need fat to absorb and transport carotenoids ^{11,12}. For this reason, you do not get the maximum health benefits in vegetables if you do not use fat when you prepare/ eat vegetables.

Extra virgin olive oil is a pure but a very healthy fat. Including fat in a meal leads to satiety, thereby increasing the time until you get hungry. This is very useful for weight control. Extra virgin olive oil costs more than vegetable seed oil (e.g., corn, safflower, soybean). If you calculate the cost per tablespoon, however olive oil is actually quite inexpensive in the long run. Moreover it has so many health benefits, extra virgin olive oil works like a medicine.

The healthy components in olive oil decrease with exposure to light, heat, and oxygen. You can cook with extra virgin olive oil although the greatest loss seems to be with air exposure ¹³. Placing a cover on the pan however will help decrease loss. A study comparing vegetables that were raw, cooked in water, sautéed, or fried in olive oil showed that cooking vegetables in olive oil led to the vegetables absorbing the healthy components in the olive oil. In contrast, vegetables cooked in water lost their healthy components to the water ¹⁴.

Some of the olive oil sold as retail extra virgin olive oil is not actually extra virgin. There are tests that can be done to determine if the olive oil is really extra virgin olive oil. Although it is currently (2017) quite confusing to determine which olive oil retail brands are really extra virgin. California has taken steps to implement fairly strict laws for what can be sold and labelled as extra virgin. Moreover, to the benefit of the consumer, some of these brands are quite expensive.

The health benefits of extra virgin olive oil make themselves felt at about 2 tablespoons a day ^{15,16}. A 500 ml (approximately 17 fl.oz.) bottle contains 32 tablespoons of olive oil, or about enough olive oil for 16 meals. To maximize health benefits and to produce a more flavorful taste, use **1 tablespoon** of olive oil per **cup** of vegetables.

Week 3. **Vegetables – fresh, canned, and frozen**

All vegetables are good sources of vitamins and some minerals. Yet, vegetables also contain compounds called “phytochemicals” or “phytonutrients”. These are protective compounds in plant products which offer an explanation for why people who eat a diet rich in plant products contract less diseases than those who eat less plant products. In the plant, the phytonutrients protect the plant from the environment making the exterior of the plant products higher in phytonutrients versus the interior.

The recipes for *Food is Medicine* use mainly frozen and canned vegetables. This is a deliberate choice for two reasons: 1. canned and frozen vegetables not only have a comparable nutrient content to “retail fresh” vegetables ¹⁷, but also tend to be higher in some phytonutrients ¹⁸ because they are kept on the plant longer. 2. frozen and canned vegetables can also be bought when they are on sale, thus helping to decrease food costs.

Vegetables which are dark in color supply carotenoids. The darker the color of the vegetable, the higher the carotenoid content. Although frozen and canned vegetables have a similar nutrient content to retail fresh vegetables ¹⁷ they tend to be higher in carotenoids ¹⁸, likely because of the longer time spent on the plant. Carotenoids seem to be especially effective for decreasing cancer risk ¹⁹. Carotenoids are absorbed most when consumed with fat ¹¹. Cooking vegetables with a fat increases the carotenoid absorption compared with merely adding fat to the vegetable ¹². As previously mentioned with the extra virgin olive oil lesson, cooking vegetables with extra virgin olive oil causes them to absorb the phenols, thus increasing the health properties in comparison to vegetables eaten raw or cooked with water ¹⁴.

A serving of vegetables consists of: ½ cup of most vegetables or 1 cup leafy green. You should try to eat at least 4 to 5 servings of vegetables each day.

Week 4. Protein in the diet and meat consumption

We need to eat much less protein daily than most people realize. By using what is “ideal body weight”, you can determine your protein needs. This is a quick way to estimate lean tissue.

To calculate “ideal body weight”:

Female: start at 100 pounds for a height of 60 inches, then add 5 pounds for every inch over 60 inches. For example, a woman who is 63 inches would have an ideal body weight of 115 pounds.

Male: start at 106 pounds for a height of 60 inches, then add 6 pounds for every inch over 60 inches. For example, a man who is 68 inches would have an ideal body weight of 154 pounds.

IBW in kg X 0.8 grams gives you the approximate protein needs for the day.

So the 63 inch women would need: $(115/2.2) \times 0.8 = 41.8$ grams of protein

The 68 inch male would need: $(154/2.2) \times 0.8 = 56$ grams of protein

Both animal and vegetable products contain protein. You can actually get all the protein you need in vegetable foods, thus making a vegan diet adequate in protein. There is protein in the food groups of starch (which includes all grains like rice; pasta and all wheat products; potatoes; beans/legumes), and vegetables.

Neither do we need to eat meat daily nor do we need protein bars or to drink protein shakes. Businesses which make protein bars and drinks promote them, not the people in the health profession. Animal products, especially beef, lean poultry, and seafood, comprise the most expensive part of a food budget. This program is based on a study which found that when people use plant-based recipes including extra virgin olive oil for 2 to 3 dinners per week, their grocery bill went down about \$30.00 a week ¹.

When you eat more protein than needed, this extra protein is stored not as protein after it is broken down but as fat. Therefore, eating extra protein will cause you to gain weight through fat, rather than muscle. In earlier studies when people used the recipes from this program for 2 to 3 main meals a week, they not only lost weight but they also said that they did not feel very hungry after eating the plant-based, olive oil rich meals ¹.

Putting it all together

You can use the recipes found at www.medfooddiet.com or make up your own using this basic formula per person:

Extra virgin olive oil - at least 1 tablespoon, preferably 2 tablespoons

Vegetables - at least 2 servings or 1 cup

Starch - (pasta, rice, grains, potatoes, beans/legumes)

About 3 servings for a woman (1500 calories) and 4 servings for a man (1800 calories).

Try to use whole grains for most of your starch servings.

References

1. Flynn MM, Schiff AR. A Six-week Cooking Program of Plant-based Recipes Improves Food Security, Body Weight, and Food Purchases for Food Pantry Clients *Journal of Hunger & Environmental Nutrition* 2013;1.
2. Flynn M, Schiff, AR. Economical Healthy Diets (2012): Including lean animal protein costs more than using extra virgin olive oil. *Journal of Hunger & Environmental Nutrition* 2015;10:467-82.
3. Madigan C, Ryan M, Owens D, Collins P, Tomkin GH. Dietary unsaturated fatty acids in type 2 diabetes: higher levels of postprandial lipoprotein on a linoleic acid-rich sunflower oil diet compared with an oleic acid-rich olive oil diet. *Diabetes Care* 2000;23:1472-7.
4. Ryan M, McInerney D, Owens D, Collins P, Johnson A, Tomkin GH. Diabetes and the Mediterranean diet: a beneficial effect of oleic acid on insulin sensitivity, adipocyte glucose transport and endothelium-dependent vasoreactivity. *Qjm* 2000;93:85-91.
5. Ferrara LA, Raimondi AS, d'Episcopo L, Guida L, Dello Russo A, Marotta T. Olive oil and reduced need for antihypertensive medications. *Arch Intern Med* 2000;160:837-42.
6. Fito M, Cladellas M, de la Torre R, et al. Antioxidant effect of virgin olive oil in patients with stable coronary heart disease: a randomized, crossover, controlled, clinical trial. *Atherosclerosis* 2005;181:149-58.
7. Covas MI, Nyssonen K, Poulsen HE, et al. The effect of polyphenols in olive oil on heart disease risk factors: a randomized trial. *Ann Intern Med* 2006;145:333-41.
8. Salvini S, Sera F, Caruso D, et al. Daily consumption of a high-phenol extra-virgin olive oil reduces oxidative DNA damage in postmenopausal women. *Br J Nutr* 2006;95:742-51.
9. Beauchamp GK, Keast RS, Morel D, et al. Phytochemistry: ibuprofen-like activity in extra-virgin olive oil. *Nature* 2005;437:45-6.
10. Weinbrenner T, Fito M, de la Torre R, et al. Olive oils high in phenolic compounds modulate oxidative/antioxidative status in men. *J Nutr* 2004;134:2314-21.
11. Brown MJ, Ferruzzi MG, Nguyen ML, et al. Carotenoid bioavailability is higher from salads ingested with full-fat than with fat-reduced salad dressings as measured with electrochemical detection. *Am J Clin Nutr* 2004;80:396-403.
12. Fielding JM, Rowley KG, Cooper P, K OD. Increases in plasma lycopene concentration after consumption of tomatoes cooked with olive oil. *Asia Pac J Clin Nutr* 2005;14:131-6.
13. Xueqi L, Bremer, G. C., Connell, K. N., Ngai, C., Pham, Q. A. T., Wang, S., Flynn, M. M., Ravetti, L., Guillaume, C., Wang, Y., Wang, S.C. Changes in chemical compositions of olive oil under different heating temperatures similar to home cooking. *Journal of Food Chemistry and Nutrition* 2016;4:7-15.
14. Ramirez-Anaya Jdel P, Samaniego-Sanchez C, Castaneda-Saucedo MC, Villalon-Mir M, de la Serrana HL. Phenols and the antioxidant capacity of Mediterranean vegetables prepared with extra virgin olive oil using different domestic cooking techniques. *Food Chem* 2015;188:430-8.
15. Flynn MM, Wang S. Olive oil as Medicine: the effect on lipids and lipoproteins. UC Davis Olive Center: UC Davis; 2015 March 2015.
16. Flynn MM, Wang S. Olive oil as medicine: the effect on blood pressure: UC Davis; 2015 December 2015.
17. Rickman JC BC, Barrett DM. Nutritional comparison of fresh, frozen, and canned fruits and vegetables II. Vitamin A and carotenoids, vitamin C, minerals and fiber. *Journal of the Science of Food and Agriculture* 2007;87:1185-96.
18. Rickman JC BD, Bruhn CM. Nutritional comparison of fresh, frozen and canned fruits and vegetables. Part 1. Vitamins C and B and phenolic compounds. *Journal of the Science of Food and Agriculture* 2007;87:930-44.
19. Tapiero H, Townsend DM, Tew KD. The role of carotenoids in the prevention of human pathologies. *Biomed Pharmacother* 2004;58:100-10.