Diabetes & Nutrition Support Services

A Plant-Based Update for the Diabetes Professional

Special Edition for Diabetes Education Services & Beverly Thomassian, RN, MPH, CDE, BC-ADM
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Every day you are on the forefront of selling health. Understanding the power of a plant-based diet to improve diabetes management and in some cases reverse diabetes is crucial in the care of your patients. Health begins in our patient's kitchen, on their plate, in their pantry and at their dining room table. Good food choices promote good heath, and learning what to eat and how to cook is a vital part of wellness and diabetes management. Many of us simply do not know how to prepare great tasting meals and do not fully understand the impact of our food choices.

The Academy of Nutrition and Dietetics reports vegetarians and vegans have lower weights, blood pressure and cholesterol levels than non-vegetarians. They also report decreased rates of type 2 diabetes, colon cancer, prostate cancer, hypertension and heart disease.

The following will help provide you information on these foods and will support you in supporting your patients.

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Table of Contents

Plant-Based Articles

Breaking Medical News

Plant-Based Recipes

Preparing to Prescribe Plant-Based Diets for Diabetes Prevention and Treatment

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The number of people worldwide with type 2 diabetes is expected to double by 2030.[1] In the United States, diabetes affects ~ 26 million people of all ages, about one-fourth of whom are not yet diagnosed.[2] Despite the availability of a wide range of pharmacological treatments and the best efforts of diabetes educators and other health care professionals, good control of diabetes and its comorbidities remains elusive for much of the population, as evidenced by rates of cardiovascular morbidity and mortality that are two to four times higher than those of people who do not have diabetes.[2]

Although dietary habits and body weight play undisputed roles in type 2 diabetes, the question of what eating pattern best addresses glycemia, cardiovascular risk factors, and weight control remains controversial. The uniform, calorie-controlled diabetic diet plans of the past have been replaced by individualized meal-planning approaches, and in more recent years, nutrition guidance has focused on carbohydrate counting and minimizing saturated and *trans* fats. With the release of the U.S. Department of Agriculture's 2010 Dietary Guidelines for Americans[3] came praise for plant-based eating patterns, which have been extensively studied for weight management and disease prevention and treatment.

Individuals following a plant- based eating pattern typically consume fewer calories and less fat, saturated fat, and cholesterol and have lower BMIs than non-vegetarians. They also consume more fiber, potassium, and vitamin C.

In prospective studies of adults, compared to non-vegetarian eating patterns, vegetarian eating patterns have been associated with lower prevalence rates of type 2 diabetes,[4] cardiovascular disease (CVD),[5] hypertension,[6] and obesity[7,8] and reduced medical care usage.[9] Both the American Academy of Nutrition and Dietetics and the American Diabetes Association (ADA) now include well-planned, plant-based eating patterns (vegetarian and vegan) as a meal-planning option in their nutrition recommendations for people with diabetes.[10,11] This article provides a brief discussion of research on plant-based eating pat- terns, relevant nutrition issues, and practical applications for clinicians.

Prevention of Type 2 Diabetes

Diabetes prevalence in the United States is lower among vegetarians than non-vegetarians.[12–15] In two large Adventist cohort studies (*n* = 25,698 and *n* = 60,903), the prevalence of diagnosed diabetes was 1.6–2.0 times higher among non-vegetarians than among vegetarians or vegans.[12,15] Part of the difference is attributable to higher body weight among non-vegetarians, but much of the difference persists after adjustment for body weight.

A 2009 study[14] found that, among a range of diets from vegan to non-vegetarian, as consumption of animal products increased, so did diabetes prevalence, ranging from 2.9% in vegans to 7.8% among individuals with unlimited consumption of animal products.

Data from the Harvard Women's Health Study, the Nurses' Health Study the Health Professionals Follow-Up Study, and other trials were part of a systematic review[15] of 12 cohort studies that found that men and women who ate the most meat had the highest risk of type 2 diabetes. Intake levels of red meat, processed meat, and fish were all associated with risk of type 2 diabetes.[13–18]

These studies suggest that the total amount of meat consumed may be more important than the type of meat.

Treatment of Type 2 Diabetes

Plant-based eating patterns combined with exercise have been found to improve diabetes control and reduce the need for medication in intervention trials as far back as 1976.[19,20] A more recent study[21] funded by the National Institutes of Health set out to examine the effect of a plant-based eating pattern isolated from the effect of exercise on type 2 diabetes. This prospective, randomized study compared 49 participants on a very-low-fat (10%), low–glycemic index (GI), vegan (legumes, fruits, vegetables, and whole grains) diet to a control group of 50 participants following individualized diet plans that included animal products and were based on macronutrient recommendations from the ADA's 2002 nutrition principles and recommendations.[22] Those recommendations included the following energy intake distribution and cholesterol levels: carbohydrate and monounsaturated fat together should provide 60–70% of caloric intake, protein should provide 15–20% calories, saturated fat should account for < 7% of calories, and cholesterol should be limited to ≤ 200 mg/day.

In the vegan group, portion sizes, carbohydrate[12] intake, and energy intake were unrestricted; subjects in the control diet group with a BMI ≥ 25 kg/m^2 (all but three) were prescribed an energy intake deficit of 500–1,000 kcal/day. All participants were instructed not to modify their exercise habits during the intervention period.

Both groups experienced improvements at 22 weeks. However among medication-stable participants after 22 weeks, the vegan arm had greater weight loss (14.3 vs. 6.8 lb, $P < 0.001$) and a greater reduction in A1C (1.23 vs. 0.38 percentage points, $P = 0.01$). Medication-stable participants in the vegan group lowered their LDL cholesterol levels by an average of 22.6 mg/dl (21.2%) compared to an average reduction of 10.7 mg/dl (9.3%) in the conventional group ($P = 0.02$).

Although medication changes were not a goal of the study, requirements for medication also dropped; 43% (21 of 49) of those following the vegan diet reduced their diabetes medications compared to 26% (13 of 50) in the conventional diet group. After 74 weeks, improvements in glycemia and plasma lipid concentrations remained greater in the vegan group.[23]

An assessment was conducted of the nutrient intake and dietary quality of participants in the two arms of the study described above. Using Harvard School of Public Health's Alternative Healthy Eating Index (AHEI), a nine-component dietary quality index that predicts the risk of cardiovascular and other major diseases,[24] Turner-McGrievy et al.[25] found that both nutritional approaches resulted in beneficial decreases in total calories, total fat, *trans* fat, and cholesterol.

The vegan group increased intake of fruits and vegetables, soluble and insoluble fiber, and several micronutrients and demonstrated improvements in AHEI score in all categories. The AHEI score for those in the conventional diet group remained unchanged.[23]

The study found that those in the vegan arm consumed adequate vitamin B (through fortified foods) and iron, two nutrients often cited as concerns for those following vegan eating patterns. The authors concluded that both groups had difficulty meeting the recommended intake levels for vitamins D and E, calcium, and potassium and consumed excessive sodium, although less than at baseline.

CVD Prevention and Treatment

Low-fat, plant-based eating patterns have shown efficacy in reducing LDL cholesterol concentrations and result in significant reductions in CVD risk and cardiovascular events.[5,6,21,26–29] Appleby et al.[6] studied hypertension across a range of eating patterns and found that blood pressure control was inversely proportional to the amount of animal products consumed, with those abstaining from all animal products achieving the most significant improvements. In a review of 27 randomized

controlled and observational trials, Ferdowsian et al.[5] concluded that a plant-based eating pattern that includes nuts, soy, and/or soluble fiber can reduce LDL cholesterol by 25–30%, an amount comparable to what can be achieved with statin drugs. Ornish et al.[26] effectively used a low-fat (10%), plant-based eating pattern in the 5-year landmark Multicenter Lifestyle Demonstration Project (MLDP) clinical trial demonstrating reversal of heart disease. The MLDP included a subset of people with diabetes (*n* = 55 men and 36 women) who achieved the same improvements in cardiovascular risk factors as those who did not have diabetes.[30]

Long-Term Weight Loss

In observational studies, vegetarians and vegans are slimmer than non- vegetarians.[7] When vegetarian and vegan eating patterns are used in clinical trials, they elicit significant weight loss.[21,26,27,31] Importantly, weight loss occurs in the absence of intentional calorie restriction (providing an obvious benefit with regard to facilitating adherence), even when exercise regimens remain constant.[21,31]

Clinical trials show that weight loss achieved in short-term interventions is partially sustained over the longer term.[8,26] In a study[8] of overweight postmenopausal women who began a low-fat, vegan diet without added exercise as part of a 14-week randomized clinical trial, body weight was followed for an additional 2 years. Median net weight reduction was 4.9 kg at 1 year and 3.1 kg at 2 years, both of which were greater than weight changes associated with a comparison diet based on National Cholesterol Education Program (NCEP) guide- lines. Among individuals with CVD, a lifestyle program including a low- fat, vegetarian diet and mild exercise was associated with a net weight loss of 10.9 kg at 1 year and 5.8 kg at 5 years.[30]

Mechanisms: Why Does It Work?

Three biological factors may explain why a low-fat, plant-based eating pattern is effective for glycemic control. First, foods from plants contain less total and saturated fat, resulting in reduced caloric intake, weight loss, and improved A1C levels.[21] Second, independent of weight loss, a low-fat, plant-based diet improves insulin sensitivity,[31] presumably by reducing intramyocellular lipid accumulation.[32] As insulin sensitivity improves, carbohydrate tolerance increases. Third, participants in the diabetes studies by Barnard et al.[28] consumed low-GI carbohydrates and limited high-GI foods, which has been shown to be beneficial in other studies[10,28,33] and may also explain why triglyceride levels did not increase even with higher carbohydrate intake.

Translating Research into Practice Clinicians may agree that plant- based eating patterns are effective for weight loss, glycemic control, and reduced cardiovascular risk but believe that this approach is too difficult for their patients to follow. Indeed, meat and dairy are now commonly consumed for breakfast, lunch, and dinner in the United States across a wide range of ethnic and socioeconomic groups, and a shift to plant-based food choices from current eating patterns represents a significant dietary change for many. This section will review research on the acceptability of a plant-based eating pattern and present ideas on how to effectively incorporate instructions for following it into clinical practice.

Acceptability research

Nutrition researcher Neal Barnard, MD, has extensively studied adherence to and acceptability of plant-based eating patterns compared to other therapeutic eating patterns.[34 - 40] In quantitative comparisons in which individuals beginning vegan eating patterns rate several parameters of acceptability (e.g., taste and effort), vegan eating patterns have scored similarly to eating patterns based on NCEP[36] and ADA[39] guidelines. Furthermore, beneficial outcomes were achieved without requiring participants to limit unrefined or minimally refined carbohydrates or to adhere to a fixed daily caloric intake, which may have improved adherence. A University of Pittsburgh survey[38] of young women who had tried either a vegetarian or calorie-restricted diet showed that the mean duration of adherence to vegetarian diets was at least 2 years, compared to only 4 months for calorie-restricted diets.

Practical applications for clinicians After assessing a patient's current eating pattern and readiness for change, a clinician could state, "Studies have shown there are many health benefits when individuals eat fewer meat and dairy products." If true, it is also helpful to say, "I have seen people in this practice improve their diabetes control by avoiding animal products altogether." Follow with the question, "Would you like to know more about this meal- planning approach?"

A visual aid, such as The Power Plate (Figure 1; available online from www.ThePowerPlate.org), may be used to explain the four plant-based food groups (legumes, grains, vegetables, and fruits), and a hand- out such as "Diet and Diabetes: Recipes for Success" (available online for download at http://www.pcrm.org/search/?cid=129) can be provided to explain the scientific evidence behind this approach and offer a list of low-fat, plant-based ideas for meals and snacks.

In the authors' experience, it is not unusual to find that patients have some familiarity with this eating pattern, perhaps through hearing about famous vegan athletes, celebrities, or politicians, or they may have a son or daughter who has been encouraging them to try it, or they have tried it themselves in the past. Sometimes, just validation from a health care professional that plant-based eating is effective, along with useful educational resources, provides the impetus to give it a try.

Table 1 provides a sample 3-day menu. Table 2 provides a grocery list. Additional resources are provided in Table 3. Key educational issues identified for healthful eating will need to be addressed, relative to plant-based nutrition. These include shopping and cooking, modifying recipes, eating out, snacking, and managing special situations such as travel and holidays.

Clinicians should be prepared to provide some general diabetes nutrition "un-learning." In this eating pattern, pasta, grains, starchy vegetables, and other whole or minimally processed carbohydrates are not limited; sufficient protein intake
will likely occur if patients are eating enough calories (even skinless chicken and fish are sources of fat and cholesterol and are recommended to be left off the plate); and calcium is obtained from beans, green leafy vegetables, and fortified foods rather than from dairy products.

Specific nutrition considerations should be addressed for those who maintain long-term adherence to a plant-based eating pattern, including finding a consistent source of vitamin B12.

Table 1. Grocery List

A good beginning grocery list includes the following:

Grains:
Rolled oats
High-fiber or pumpernickel bread
Brown rice
Quinoa
Whole-wheat pasta

Beans:
Fortified soy, rice, almond, or plant milk of choice
Black beans, canned or dried Garbanzo beans, canned or dried red, green, or French lentils
Frozen edamame
Hummus, 2 g fat/serving or less

Fruits:
Apple butter Bananas Apples
Berries, fresh or frozen
Raisins

Vegetables:
Broccoli, fresh or frozen Spinach, fresh or frozen Sweet potatoes
Kale Lettuce Carrots Cucumbers
Canned tomatoes
Marinara sauce

Condiments:
Balsamic or other flavored vinegar
Cinnamon Mustard Soy sauce
Agave nectar

Figure 1: The Power Plate.
The Power Plate is a useful plant- based nutrition educational tool. This diagram consists of four food groups: fruits, vegetables, legumes, and grains. It was created by the Physicians Committee for Responsible Medicine in 2009 to offer a simple plant-based nutrition blueprint for the public. Additional information is available online at www.ThePowerPlate.org.

Practical information for patients

When adopting a plant-based eating pattern, are patients better off avoiding all meat and dairy products "cold-turkey?" Or, is a slow and steady shift better? Either option may work. Dean Ornish MD, encourages what he calls the "spectrum approach": begin with moderate changes, such as meatless meals on a certain number of days per week, and progress to more significant changes if the moderate changes do not achieve the desired goals.[39] Alternatively, Barnard recommends a 3-week trial of 100% plant-based eating. With this approach, a short-term commitment is manageable, and individuals might see results faster, which may provide glucose could gradually decrease to the normal range over weeks or months. Less frequently, some patients initially see their blood glucose level increase. By selecting unrefined and low-GI carbohydrates, this response can be mitigated.

Patients need to be prepared for both possibilities; a review of recognition, treatment, and prevention of hypoglycemia is important for those who are on oral hypoglycemic agents or insulin, along with information on what types of blood glucose patterns would warrant action, such as a call to discuss changes in medication dose or type.

Current blood glucose levels, along with patients' level of confidence that they will make and sustain dietary changes, could suggest a need to reduce medication with implementation of a plant-based eating pattern. For those who see blood glucose levels initially increase, it is usually acceptable to watch this for a short period without concluding that the eating pattern is ineffective or rushing to add medication. Over time, blood glucose levels do generally decrease in those who adhere to the guidelines of a low-fat, low-GI, and vegan diet.

Of note, blood pressure may also decrease in patients taking antihypertensive medications. A review of signs of low blood pressure and encouragement to contact a health care provider to review medications should they have symptoms is warranted.

Insulin doses might need to be adjusted. This varies greatly among patients, depending on factors such as their degree of hyperglycemia, the quality of their eating pattern before adopting a plant-based diet, and their degree of adherence. Initially, some patients who use insulin might need a change in their insulin-to-carbohydrate ratios and specifically higher bolus and lower basal insulin doses. As with any significant dietary change, it is important to closely monitor blood glucose patterns and adjust insulin to avoid hypoglycemia.

Patients with persistent hyperglycemia will benefit from diet reassessment; it is common to find that those who do not achieve glycemic control are continuing to consume excessive dietary fat, often hidden in the form of cooking oils and salad dressings, especially in restaurant meals. If blood glucose control is not achieved, offer other useful lifestyle interventions such as physical activity and stress management.

Table 2: Sample Menu

A 3-day sample menu of low-fat vegan foods would not have portion sizes. Low-fat plant-based meal plans may be created online at www.NutritionMD.org.

Breakfast	Lunch	Snack	Dinner
Old-fashioned oats with plant-based milk,* raisins, banana, and cinnamon	Lentil soup with hummus sandwich on rye bread; add mustard, lettuce, tomatoes, and onions	Air-popped popcorn with spices Apple	Stir-fry (sauté in water or vegetable broth) mixed vegetables, tofu, and brown rice; add low-sodium soy sauce
Vegan buckwheat pancakes topped with whole fruit and a touch of real maple syrup	Spinach salad with low-fat dressing and a baked sweet potato	Baked corn tortillas with salsa Fruit smoothie (frozen berries, banana, and almond milk)	Beans, greens, and grains: cook a pot of your favorite grain (such as quinoa) with a bean (such as red lentils) and throw in a leafy green (kale) at end of cooking time; add spices to taste
Scrambled tofu, vegetables and pumpernickel toast with apple butter	Burrito with black beans, lettuce, tomato, salsa, corn, rice, and cilantro	Hummus with carrots and celery Grapes	Whole-wheat penne pasta with vegetable and marinara sauce; side salad with low-fat dressing

**Fortified plant-based milks come in a many varieties and are easily found in health food stores and larger grocery store chains. Varieties include soy, rice, and almond.*

Table 3. Principles of a Low-Fat, Plant-Based Eating Pattern

- Ad libitum from whole grains, legumes (beans, peas, and lentils), vegetables, and fruits.
- Individuals who adjust insulin based on carbohydrate intake will still need to count carbohydrate grams or servings; insulin requirements may change, requiring dose adjustments.
- Whole foods or unprocessed or minimally processed foods are best.
- Limit added vegetable oils and other high-fat foods to aid in weight loss and weight maintenance efforts and to help optimize glycemic control. Include about 1 oz of nuts or seeds per day but not significantly more because of their high caloric content.
- Choosing low-GI foods such as old-fashioned oatmeal, sweet potatoes, beans, whole grains, and most fruits and vegetables may help to improve glycemia and reduce triglyceride levels.
- Getting > 40 g of fiber from whole foods per day is recommended. A gradual increase is suggested for people who are not used to digesting fibrous foods. The 40-g recommendation can be achieved when choosing fruits, vegetables, whole grains, and legumes for each meal and snack.
- Avoiding all animal products eliminates dietary intake of cholesterol and significantly minimizes sources of saturated fat.
- Vitamin B^{12} supplementation of 2.4 µ/day (e.g., a regular multivitamin) is recommended for anyone avoiding animal products and all people > 50 years of age.
- A macronutrient profile of ~ 75–80% of energy from carbohydrate, 10–15% from protein, and 10% from fat is recommended.

Table 4. Plant-Based "Power Plate" Sources of Key Nutrients

Protein

An assortment of plant foods eaten over the course of a day can provide all essential amino acids and ensure adequate nitrogen retention and use in healthy adults. Thus, complementary proteins do not need to be consumed at the same meal.[42] Athletes can also meet their protein needs on plant-based diets.[43] Plant-based protein sources include beans, tofu, tempeh, seitan, and grains. Consider options such as lentil or black bean soup, stir-fries with steamed tofu, "bacon"-lettuce-tomato sandwich made with tempeh instead of bacon, hummus roll-up sandwich, bean burrito, pasta with white beans, and quinoa and chick pea salad.

Vitamin B12

For individuals following a diet free of animal products, vitamin B^{12} needs can be met by consuming fortified breakfast cereals, fortified non-dairy milk, and fortified meat analogs or with a daily multivitamin or supplement containing 2.4 µ of B^{12}. Older adults following any eating pattern are at risk of B12 deficiency because absorption decreases with age.

Iron

Green, leafy vegetables and legumes provide iron. The incidence of iron deficiency anemia is similar among vegetarians and nonvegetarians.[44]

Omega 3 Fatty Acids

Fish flesh contains omega-3 fatty acids because fish eat plants. Plant sources of omega-3 fatty acids include ground flaxseeds, walnuts, cauliflower, soybeans, tofu, and Brussels sprouts. These non-animal sources are free of saturated fat and cholesterol.

Calcium and Vitamin D

Bok choy, broccoli, Chinese cabbage, collard greens, and kale are highly bioavailable sources of calcium, as are fortified foods such as some juices, breakfast cereals, non-dairy milks, and calcium-set tofu. Almonds and dried beans also contain calcium, although these have a lower bioavailability. Vitamin D status depends on sun exposure and intake of fortified foods. Vitamin D^2 (ergocalciferol) supplements are made from non-animal sources. Limiting salt, getting regular weight-bearing exercise, and not smoking are other important actions for building strong bones.

Table 5. Resources

For Clinicians

- Continuing education offerings are available online at no cost from www.NutritionCME.org.
- Evidence-based nutrition recommendations for many chronic diseases are available online at www.NutritionMD.org and in the book *Nutrition Guide for Clinicians*, 2nd ed. Washington, D.C., Physicians Committee for Responsible Medicine, 2009
- Patient education resources are available online at www.PCRM.org/Nurses.

For Patients or Anyone Wishing to Try a Plant-Based Diet

- Barnard N, Grogan BC: *Dr. Neal Barnard's Program for Reversing Diabetes*. New York, Rodale, 2007
- Barnard N, Webb R: *Get Healthy, Go Vegan*. Cambridge, MA, De Capo Press, 2010
- Physicians Committee for Responsible Medicine Web site: www.PCRM.org/Diabetes
- Physicians Committee for Responsible Medicine Power Plate Web site: www.ThePowerPlate.org
- Physicians Committee for Responsible Medicine 21-Day Vegan Kickstart Web site: www.21DayKickstart.org

Another key practical consideration is the eating pattern's impact on gastrointestinal function. Some people believe that they cannot tolerate beans because of flatulence; they should be assured that the body will adjust over time if they regularly consume beans. Some also need reassurance that more frequent bowel movements, as opposed to constipation and straining, is a normal and beneficial sign of significant dietary changes. To promote a smooth transition, provide instruction about how to manage discomfort. Advise patients to choose lentils and split peas initially instead of larger beans because these are easier to digest, begin with small portions of larger beans, cook beans thoroughly, and discard soaking water if preparing dried beans. Beans suffer from a lack of advertising and marketing, yet they are a healthful and economic choice worthy of our advocacy.

Summary and Conclusions

Like other meal-planning approaches that result in weight loss, a plant- based eating pattern can reduce the risk of developing type 2 diabetes. For those who already have diabetes, a low-fat, plant-based approach has shown efficacy for metabolic control, weight loss, and cardiovascular risk reduction, with demonstrated acceptability and adherence comparable to other therapeutic eating patterns.

The Power Plate is a diagram that provides a simple means to begin instruction. Many other free or low-cost evidence-based nutrition education resources are available. Clinicians are encouraged to increase their knowledge and expertise as needed and to offer a plant-based eating pattern as an option for individuals who are at risk for or already have type 2 diabetes.

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Plant-Based Diet Information

The Protein Myth

The Building Blocks of Life

Protein is an important nutrient required for the building, maintenance, and repair of tissues in the body. Amino acids, the building blocks of protein, can be synthesized by the body or ingested from food. There are 20 different amino acids in the food we eat, but our body can only make 11 of them. The nine essential amino acids, which cannot be produced by the body, must be obtained from the diet. A variety of grains, legumes, and vegetables can provide all of the essential amino acids our bodies require. It was once thought that various plant foods had to be eaten together to get their full protein value, otherwise known as protein combining or protein complementing. We now know that intentional combining is not necessary to obtain all of the essential amino acids. As long as the diet contains a variety of grains, legumes, and vegetables, protein needs are easily met.

Protein Requirements

With the traditional Western diet, the average American consumes about double the protein her or his body needs. Additionally, the main sources of protein consumed tend to be animal products, which are also high in fat and saturated fat. Most individuals are surprised to learn that protein needs are actually much less than what they have been consuming. The Recommended Dietary Allowance (RDA) for protein for the average adult is 0.8 grams per kilogram of body weight. To find out your average individual need, simply perform the following calculation: Body weight (in pounds) x 0.36 = recommended protein intake (in grams).

However, even this value has a large margin of safety, and the body's true need may be lower for most people. Protein needs are increased for women who are pregnant or breastfeeding. In addition, needs are also higher for very active persons. As these groups require additional calories, increased protein needs can easily be met through larger intake of food consumed daily. An extra serving of legumes, tofu, meat substitutes, or other high protein sources can help meet needs that go beyond the current RDA.

The Problems with High-Protein Diets

High-protein diets for weight loss, disease prevention, and enhanced athletic performance have been greatly publicized over recent years. However, these diets are supported by little scientific research. Studies show that the healthiest diet is one that is high in carbohydrate, low in fat, and adequate in protein. Increased intake of whole grains, fruits, and vegetables is recommended for weight control and preventing diseases such as cancer and heart disease. High-carbohydrate, low-fat, moderate- protein diets are also recommended for optimal athletic performance. Contrary to the information on fad diets currently promoted by some popular books, a diet that is high in protein can actually contribute to disease and other health problems.

- **Osteoporosis.** High protein intake is known to encourage urinary calcium losses. Plant-based diets, which provide adequate protein, can help protect against osteoporosis. Calcium-rich plant foods include leafy green vegetables, beans, and some nuts and seeds, as well as fortified fruit juices, cereals, and nondairy milks.

- **Cancer.** Although fat is the dietary substance most often singled out for increasing one's risk for cancer, animal protein also plays a role. Specifically, certain proteins present in meat, fish, and poultry, cooked at high temperatures, especially grilling and frying, have been found to produce compounds called heterocyclic amines. These substances have been linked to various cancers including those of the colon and breast.[6-8]
  Long-term high intake of meat, particularly red meat, is associated with significantly increased risk of colorectal cancer. The 2007 report of the World Cancer Research Fund and American Institute for Cancer Research, Food, Nutrition, and the Prevention of Cancer reported that, based on available evidence, diets high in red meat were considered probable contributors to colorectal cancer risk. In addition, high-protein diets are typically low in dietary fiber. Fiber appears to be protective against cancer.[3] A diet rich in whole

grains, fruits, and vegetables is important in decreasing cancer risk, not to mention adding more healthful sources of protein in the diet.

- **Impaired Kidney Function.** When people eat too much protein, it releases nitrogen into the blood or is digested and metabolized. This places a strain on the kidneys, which must expel the waste through the urine. High-protein diets are associated with reduced kidney function. Over time, individuals who consume very large amounts of protein, particularly animal protein, risk permanent loss of kidney function. Harvard researchers reported that high-protein diets were associated with a significant decline in kidney function, based on observations in 1,624 women participating in the Nurses' Health Study. The good news is that the damage was found only in those who already had reduced kidney function at the study's outset. The bad news is that as many as one in four adults in the United States may already have reduced kidney function, suggesting that most people who have renal problems are unaware of that fact and do not realize that high-protein diets may put them at risk for further deterioration. The kidney-damaging effect was seen only with animal protein. Plant protein had no harmful effect.
- The American Academy of Family Physicians notes that high animal-protein intake is in part responsible for the high prevalence of kidney stones in the United States and other developed countries and recommends protein restriction for the prevention of recurrent kidney stones.

- **Heart Disease.** Typical high-protein diets are extremely high in dietary cholesterol and saturated fat. The effect of such diets on blood cholesterol levels is a matter of ongoing research. However, such diets pose additional risks to the heart, including increased risk for heart problems immediately following a meal. Evidence indicates that meals high in saturated fat adversely affect the

compliance of arteries, increasing the risk of heart attacks. Adequate protein can be consumed through a variety of plant products that are cholesterol-free and contain only small amounts of fat.

- **Weight-Loss Sabotage.** Many individuals see almost immediate weight loss as a result of following a high-protein diet. In fact, the weight loss is not a result of consuming more protein, but by simply consuming fewer calories. Over the long run, consumption of this type of diet is not practical as it can result in the aforementioned health problems. As with any temporary diet, weight gain is often seen when previous eating habits are resumed. To achieve permanent weight loss while promoting optimal health, the best strategy involves lifestyle changes including a low-fat diet of grains, legumes, fruits, and vegetables combined with regular physical activity.

Protein Checklist

High-protein diets are unhealthful. However, adequate but not excess amounts of protein to maintain body tissues, including muscle, are still important and can be easily achieved on a plant-based diet. If you are uncertain about the adequacy of protein in your diet, take inventory. Although all protein needs are individual, the following guidelines can help you to meet, but not exceed, your needs.

- **Aim for five or more servings of grains each day.** This may include 1/2 cup of hot cereal, 1 ounce of dry cereal, or one slice of bread. Each serving contains roughly 3 grams of protein.

- **Aim for three or more servings of vegetables each day.** This may include 1 cup of raw vegetables, 1/2 cup of cooked vegetables, or 1/2 cup of vegetable juice. Each serving contains about 2 grams of protein.
- **Aim for 2 to 3 servings of legumes each day.** This may include 1/2 cup of cooked beans, 4 ounces of tofu or tempeh, 8 ounces of soy milk, and 1 ounce

of nuts. Protein content can vary significantly, particularly with soy and rice milks, so check labels. Each serving may contain about 4 grams to 10 grams of protein. Meat analogues and substitutes are also great sources of protein that can be added to your daily diet.

Healthful Protein Sources (in grams)

Black beans, boiled	1 cup	15.2
Broccoli	1 cup	4.6
Bulgur, cooked	1 cup	5.6
Chickpeas, boiled	1 cup	14.5
Lentils, boiled	1 cup	17.9
Peanut butter	2 tbsp	8.0
Seitan	4 oz	24.0
Spinach, boiled	1 cup	5.4
Tempeh	½ cup	15.7
Tofu, firm	½ cup	19.9
Whole wheat bread	1 slice	2.7

Protein-Rich Recipes

Split Pea Barley Soup

Makes about 3 quarts

Barley adds texture to this one-pot soup.

- 2 cups split peas
- 1/2 cup hulled or pearled barley
- 8 cups water or vegetable broth
- 1 medium onion, chopped
- 2 celery stalks, sliced
- 1 teaspoon ground cumin
- 1 teaspoon basil
- 1 teaspoon thyme
- 1/4 teaspoon black pepper
- 1-1/2 teaspoons salt

In a large pot, combine peas, barley, water, onion, celery, cumin, basil, thyme, and black pepper. Cover loosely and simmer, stirring occasionally, until peas are tender, about 1 hour.

Transfer 4 cups to a blender and process until smooth. You may have to do this in a couple of batches. Fill blender no more than half full and hold lid on firmly. Return to pot, add salt, and serve.

Per 1-cup serving: 180 calories; 11 g protein; 34 g carbohydrate; 1g fat; 6 g fiber; 337 mg sodium; calories from protein: 24%; calories from carbohydrates: 72%; calories from fats: 4%

Black Bean Burritos

Makes 4 burritos

Black bean burritos make a quick meal when time is short, or they can be made ahead and refrigerated for lunches and easy instant snacks. Instant black bean flakes are sold in natural food stores and some supermarkets.

- 1 cup instant black bean flakes or 1-15 oz can fat-free refried black beans
- 4 flour tortillas
- 2 cups shredded romaine lettuce
- 2 tomatoes, sliced
- 2 green onions, sliced
- 1/2 avocado, sliced (optional)
- 1/2 cup salsa

Mix bean flakes with boiling water in a small pan or bowl. Let stand until completely softened, 3 to 5 minutes. If

using canned beans, heat on the stove or in a microwave if desired.

Warm tortillas, one at a time, in a large dry skillet, flipping to warm both sides until soft and pliable.

Spread warm tortilla with approximately 1/2 cup of bean mixture. Top with lettuce, tomatoes, onions, avocado if using, and salsa. Roll tortilla around filling.

Serve or wrap in plastic and refrigerate.

Per burrito: 233 calories; 10 g protein; 36 g carbohydrate; 7 g fat; 8 g fiber; 510 mg sodium; calories from protein: 16%; calories from carbohydrates: 58%; calories from fats: 26%

Lebanese-Style Lentils and Pasta
Makes 4 servings
This dish makes a full meal.

- 5 cups low-sodium vegetable broth
- salt, to taste
- 2 tablespoons lemon juice
- 1 pinch cayenne pepper
- 1/4 cup chopped fresh parsley or cilantro (optional)
- 4 ounces dry spaghetti (preferably whole-wheat), broken into 4" pieces
- 4 cups chopped kale or 10 ounce package frozen chopped spinach, thawed and squeezed dry
- 1 teaspoon ground cumin
- 2 garlic cloves, chopped
- 2 medium onions, chopped
- 1 cup dry brown lentils, rinsed
- freshly ground black pepper, to taste

Bring broth and lentils to a boil in a medium saucepan. Reduce heat to low, cover, and cook for about 25 minutes or until the lentils are tender but still hold their shape.

Steam-fry onions, garlic, and cumin in a large, heavy non-stick saucepan, stir-fry pan, or deep skillet until soft, adding very small amounts of water as needed to prevent sticking and burning. (Or place in a microwavable dish, cover, and microwave on high for 7 minutes.)

Pour lentils and broth into the pan with onions. Add greens, pasta, parsley or cilantro, if using, and cayenne. Bring to a boil, then reduce heat to medium. Cook, uncovered, for about 10 minutes or until pasta is tender and most of the broth has been absorbed, leaving a sauce. Add lemon juice and mix well. Season with salt and black pepper. Serve hot.

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Fruits & Vegetables May Prevent Early Death

Increased intakes of fruits and vegetables may prevent early death, according to a review published online in the *Journal of Epidemiology and Community Health*. Researchers followed 65,226 participants from the Health Surveys for England aged 35 and older for seven years.

Those who consumed seven or more servings of fruits and vegetables per day saw a 42 percent decreased risk of death due to any cause, compared with those who consumed the least amount. Fruit and vegetable consumption was specifically associated with a 25 percent and 31 percent decreased risk of death from cancer and heart disease, respectively. This study recommends governmental bodies take into account this new evidence in order to better promote health and nutrition education and improve policy.

Oyebode O, Gordon-Desagu V, Walker A, Mindell JS. Fruit and vegetable consumption and all-cause, cancer and CVD mortality: analysis of Health Survey for England data. *J Epidemiol Community Health*. Published online March 31, 2014 .

Fiber Extends Life After a Heart Attack

Fiber decreases the likelihood of dying after a heart attack, according to a recently published study in *British Medical Journal*.

A high-fiber diet was associated with a 31 percent reduction in dying and a 35 percent reduction in death from heart disease among 4,098 heart attack survivors from the Health Professionals Study and the Nurses' Health Study.

Fiber, especially fiber from grains, decreases systemic inflammation, lowers bad cholesterol, improves insulin sensitivity, and enhances healthy gut flora. High-fiber foods are also high in vitamins, minerals, antioxidants, and phytochemicals — all nutrients that are beneficial to health.

Li S, Flint A, Pai JK, et al. Dietary fiber intake and mortality among survivors of myocardial infarction: prospective cohort study. *BMJ*. 2014;348:2659-2671.

Plant-Based Foods Prevent Hip Fractures

Vegetables, fruits, and soy products appear to protect against hip fractures, according to a new study in *The Journal of Nutrition*.

Researchers followed the diets and hip fracture risks of 63,257 participants in the Singapore Chinese Health Study for approximately 10 years and found that those who consumed the most vegetables, fruits, and soy products had a 34 percent reduced risk for hip fractures, compared with those who consumed the least.

Those who consumed diets rich in meat and refined starches experienced no protective effect against fractures.

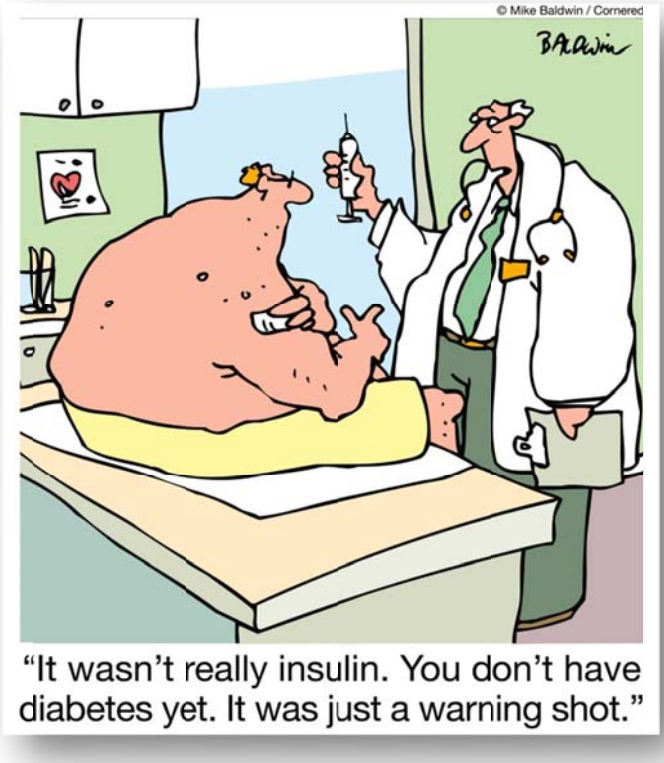
Dai Z, Butler LM, van Dam RM, Ang L, Yuan J, Koh W. Adherence to a vegetable-fruit-soy dietary pattern or the Alternative Healthy Eating Index is associated with lower hip fracture risk among Singapore Chinese. *J Nutr*. 2014;144:511-518.

Animal Protein May Lead to Diabetes

People who eat the most animal protein are more likely to develop diabetes, according to a new study published by the American Diabetes Association.

Researchers looked at participants who were part of the EPIC study and found that those who consumed the most animal protein were 22 percent more likely to develop diabetes, compared with those who ate the least. For every additional 10 grams of protein people ate, the risk for developing diabetes went up by 6 percent.

Van Nielen M, Feskens EJM, Mensink M, et al. Dietary protein intake and incidence of type 2 diabetes in Europe: the EPIC-INTERACT case-cohort study. *Diabetes Care*. Published ahead of print April 10, 2014.



Vegetarians and Vegans Have Lower Heart Disease Risk

Vegetarian and vegan diets lower the risk of heart disease, according to a study published in *Public Health Nutrition*. Researchers tracked the dietary habits of 592 African-American participants from the Adventist Health Study-2 and categorized them into three eating patterns: vegetarian/vegan, pesco-vegetarian, and non-vegetarian.

Those who consumed a vegetarian/vegan diet had fewer heart disease risk factors including lower blood pressure, half the risk of diabetes, and a 44 percent reduced risk for hypertension, compared with those who consumed pesco-vegetarian and non-vegetarian diets. Additionally, vegetarians and vegans were 43 percent less likely to be obese, compared with non-vegetarians. This study stresses the positive effects plant-based diets may have towards disease prevention for African-Americans.

Fraser G, Katuli S, Anousheh R, Knutsen S, Herring P, Fan J. Vegetarian diets and cardiovascular risk factors in black members of the Adventist Health Study-2. *Public Health Nutr*. Published online March 17, 2014.

"We now have much stronger evidence that replacing red meat with plant sources of protein such a nuts or legumes improves blood cholesterol fractions and is associated with lower risks of heart disease, stroke, and diabetes," says Walter Willett, chair of the department of nutrition at Harvard School of Public Health.

Beans Benefit Heart Health

Adding just half a cup of beans a day to the diet can significantly reduce LDL (or "bad") cholesterol levels, according to a new meta-analysis published by the Canadian Medical Association.

Researchers analyzed data from 26 randomized control trials, which included 1,037 participants, and found that LDL cholesterol dropped an average of 5 percent after consuming half a cup of beans per day over an average of six weeks. They go on to suggest that adding beans to the diet can be a simple way to benefit heart health.

Ha V, Sievenpiper JL, de Souza RJ, et al. Effect of dietary pulse intake on established therapeutic lipid targets for cardiovascular risk reduction: a systematic review and meta-analysis of randomized controlled trials. *CMAJ*. Published ahead of print April 7, 2014.

Plant-Based Diet Reverses Heart Disease

A new research report confirms that heart disease can be dramatically improved—and even reversed—by a plant-based diet.

Researchers from this study counseled 198 patients with cardiovascular disease on a diet free of fish, meat, dairy, and added oils. Of the 89 percent of participants who followed the diet, 81 percent improved their symptoms and experienced fewer complications from heart disease.

In addition, those participants lost an average of 18.7 pounds, while 22 percent saw a complete reversal of their condition. This study employed a nutritional training program that eliminated both added oils and animal products.

Esselstyn CB Jr., Gendy G, Doyle J, Golubic M, Roizen MF. A way to reverse CAD? J Fam Pract. 2014;63:356-364b

"Everyone has a doctor in him or her; we just have to help it in its work. The natural healing force within each one of us is the greatest force in getting well. Our food should be our medicine. Our medicine should be our food."

- Hippocrates

Plant-Based Diets Better for Weight Loss

A plant-based diet leads to more weight loss, according to findings presented at the Obesity Society's annual conference. Researchers followed 63 obese and overweight adults on an eight-week weight-loss program based on five different dietary patterns: vegan, vegetarian, semi-vegetarian, pesco-vegetarian, and omnivorous. Each regimen encouraged low-fat, low-glycemic index foods without caloric restrictions and offered support from weekly classes. Of the five groups, the participants following the plant-based diets lost the most weight, compared with those following the nonvegetarian diets. The researchers suggest plant-based diets may work better for weight loss, because they do not focus on portion control or calorie counting.

Turner-McGrievy B, Wingard E, Davidson C, Taylor M, Wilcox S. "How plant-based do we need to be to achieve weight loss? Results of the New Dietary Interventions to Enhance the Treatment for Weight Loss (New DIETs) study." Obesity Week. November 15, 2013; Abstract T-53-OR.

When diet is wrong, medicine is of no use. When diet is correct, medicine is of no need.

Ayurvedic Proverb

Plant-Based Recipes

Very Primo Pasta
Makes 10 servings

Pasta and beans, an Italian favorite, are simple and satisfying!

Ingredients:

- ½ cup water or vegetable broth
- 1 onion, chopped
- 1 bell pepper, seeded and diced
- 1 carrot, sliced
- 1 celery stalk, sliced
- 2 cups sliced mushrooms (½ pound)
- 1, 15-ounce can kidney beans, drained
- 1, 15-ounce can chopped tomatoes
- 1/2 teaspoon paprika
- 1/2 teaspoon black pepper
- 1 tablespoon low sodium soy sauce
- 8 ounces dry pasta

Directions: In a large pot, heat water or broth. Add onions and cook over high heat until soft, about 5 minutes. Reduce heat to medium and add bell pepper, carrot, and celery. Cook 5 minutes. Add mushrooms, cover and cook 7 minutes, stirring occasionally. Add tomatoes, beans, paprika, black pepper, and soy sauce. Cover and cook 10 to 15 minutes. Meanwhile, cook pasta according to package directions. Drain and rinse, then add to sauce.

Per serving: 174 calories; 8 g protein; 33 g carbohydrate; 3 g sugar; 1 g total fat; 5% calories from fat; 5 g fiber; 68 mg sodium

Parmesan Cheese
Makes 50

Ingredients:

- ½ cup almonds
- ½ cup nutritional yeast flakes
- 1 teaspoon onion powder
- 1 teaspoon garlic powder
- ½ teaspoon salt

Directions: Add all ingredients to a blender or food processor and blend briefly, to mix. Don't over mix or the almonds will get pasty. Store in refrigerator in tightly sealed container.

Per serving: 8 calories; 1 g protein; 0.4 g carbohydrate; 1 g total fat; 0.2 g fiber; 22 mg sodium

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King Kale and Purple Cabbage
Makes 6 servings

Kale is the king of nutrient density, and this simple recipe shows you it can stand alone with no apologies. Although delicious in other recipes and smoothies, simple steamed kale sprinkled with a bit of Parmesan "Cheese" is amazing.

Ingredients:

- 2 bunches of Kale (about 12 cups)
- ½ head of purple cabbage

Directions: Wash cabbage and slice into strips. Wash kale. Remove tough stems, and chop leaves into approximately 1-inch pieces. Mix with cabbage. Place about 1/2 cup water in bottom of pan and insert steamer tray. Add chopped kale to fill pan. Cover. Bring water to a boil, then turn down to low. Cook about 10 minutes until desired doneness.

Per serving: 73 calories, 1 g fat, 11.7% calories from fat, 5 g protein, 14 g carbohydrate, 3 g fiber, 62 mg sodium

Green Monster Smoothie
Makes 3 servings

Ingredients:
- 3 cups fresh kale or baby spinach
- 3/4 cup fresh or drained canned pears or pineapple chunks
- 1 1/2 cups green grapes
- 1/2 – 3/4 banana, fresh or frozen
- 3/4 cup water
- 3/4 cup ice, optional

Directions: Blend all ingredients together. Start your blender on the lowest setting and slowly crank up the setting as the smoothie starts to puree. Add more ice as necessary to achieve desired consistency and blend for about 2 minutes. Best if served cold.

Per serving: 139 calories; 3.3 g protein; 34.3 g carbohydrate; 20.2 g sugar; 0.7 g total fat; 4.5 % calories from fat; 4.2 g fiber; 36 mg sodium

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Seared Cauliflower with Garlic & Tamari
Makes 2 servings

Ingredients:
- I head of cauliflower cut into florets
- 2 Tablespoons low-sodium tamari
- Water
- 3 cloves garlic, minced
- 2 Tablespoons parsley, minced

Directions: Over medium-high heat, sauté the cauliflower stirring it slowly until it just browns. Then add the tamari. When the tamari starts to stick to the pan add 3-4 tablespoons of water and garlic; allow the sauce to reduce until it just coats the cauliflower. Remove from heat and toss with parsley.

Per serving: 91 calories; 7 g protein; 18 g carbohydrate; 6 g sugar; 1 g total fat; 8% calories from fat; 6 g fiber; 791 mg sodium

Quick Black Bean Chili
Makes 2 servings

Ingredients:
- 1 yellow onion, diced
- 2 cloves garlic, minced
- 16 ounces black beans, cooked or canned, rinsed and drained
- 8 ounces crushed fire-roasted tomatoes
- 1 teaspoons chili powder
- 1 teaspoons ground cumin
- 1 teaspoon oregano
- Water
- Fresh cilantro, chopped (optional)
- Fresh squeezed lime juice (optional)

Directions: Over medium-high heat, sauté the onion until browned. Add a thin layer of water and quickly stir the onion. Let the onion sit and the water evaporate. Repeat this process again up to four times. Reduce the heat to medium, add garlic, and sauté for 1 minute more. Add black beans, tomatoes, chili powder, cumin, and oregano, mixing everything together. Simmer for at least 5 minutes.

Per serving: 377 calories; 23.1 g protein; 69.7 g carbohydrate; 10.3 g sugar; 3.2 g total fat; 7% calories from fat; 24.7 g fiber; 96 mg sodium

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Toasted Brown Rice
Makes 3 servings

Ingredients:
- 1 cup dry short- or long-grain brown rice
- 4 cups boiling water
- 1/2 teaspoon salt (optional)

Directions: Rinse rice in cool water. Drain off as much water as possible. Place rice in a saucepan over medium heat, stirring constantly until completely dry, 3 to 5 minutes. Add boiling water and salt, then cover and simmer until rice is just tender, about 35 minutes. Pour off excess liquid.

Per serving: 229 calories, 1.9 g fat, 0.4 g saturated fat, 7.3% calories from fat, 0 mg cholesterol, 5.3 g protein, 47.5 g carbohydrate, 0.7 g sugar, 6.9 g fiber, 403 mg sodium (if adding salt)

Pumpkin Steel Cut Oatmeal
Makes 2 servings

Ingredients:
- 2/3 cup steel cut oats
- 2 cups water
- 1/2 cup canned pumpkin
- 1 teaspoon cinnamon
- 2 pinches nutmeg
- 2 tablespoons sugar
- 2 tablespoons chopped walnuts
- 2 teaspoons vanilla

Directions: Bring oats and water to a boil, reduce heat and let simmer for 10-15 minutes, stirring occasionally until oats are slightly tender. Once oats are almost done, add remaining ingredients into the oats and continue to cook until the oats are done. Add any non-dairy milk if desired.

Per serving: 223 calories; 7 g protein; 36 g carbohydrate; 6 g fat, 25% calories from fat;, 4 g fiber.
With no walnuts: 176 calories, 5 g protein, 35 g carbohydrate, 2 g fat, 9% calories from fat, 4 grams fiber.

Chickpea Salad & Orange Miso Dressing
Makes 2 servings

Ingredients:
- 12 cherry tomatoes, halved
- 4 green onions, sliced
- 1/2 cup dry quinoa (cooked)
- 1 1/2 cup low-sodium garbanzo beans, (chickpeas), cooked or canned and rinsed
- 3 tablespoons fresh cilantro

Dressing:
- 1/4 cup fresh orange juice (juice of 2 oranges)
- 1/4 cup seasoned rice vinegar
- 2 teaspoons white or yellow miso
- 1 tablespoon maple syrup or agave nectar
- 1 clove garlic, grated or minced
- 1 teaspoon ginger, grated or minced
- 2 teaspoons black sesame seeds

Directions:
Combine the tomatoes, onions, cooked quinoa, garbanzo beans, and fresh cilantro in a large bowl. Mix all of the dressing ingredients together in a small bowl then toss with salad ingredients.

Note: To make quinoa, place 1 part quinoa to 2 parts water in a saucepan and bring to a boil. Reduce to a simmer, cover and cook until all the water is absorbed (about 15 minutes). Wait for it to cool to add to the recipe.

Per serving: 502 calories; 20.2 g protein; 90.3 g carbohydrate; 24.8 g sugar; 8.0 g total fat; 13.7% calories from fat; 13.6 g fiber; 597 mg sodium

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Portobello Fajitas
Makes 2 servings

Ingredients:
- 1/2 onion, thinly sliced
- About 3 tablespoons of water
- 2 large portobello caps, thickly sliced
- 2 cloves garlic, minced
- 1/2 teaspoon ground cumin
- 1/4 teaspoon chili powder
- 1 large roasted red pepper, fresh or jarred, sliced
- 3 tablespoons fresh cilantro, chopped
- Corn or whole-wheat flour tortillas
- 1/4 cup low-sodium salsa
- Lime wedges
- Salt, to taste

Directions:
Over medium-high heat, water sauté the onion until browned. Add a splash of water and quickly stir. Reduce the heat to medium. Add the portobellos and garlic and sauté until the mushrooms soften and lose their raw, whitish look. Add the cumin and chili powder; sauté for 15 to 30 more seconds. Remove the pan from heat. If roasting fresh red peppers, wash the pepper and place it whole on a baking sheet at 400 degrees F for roughly 20 minutes. Blackened skin is the indication that the pepper is ready. Warm tortillas in a sauté pan. Add portobellos, roasted red peppers, salsa, and cilantro to tortillas. Serve with lime wedges.

Per serving: 159 calories; 6.9 g protein; 32.9 g carbohydrate; 9.8 g sugar; 2.0 g total fat; 10.6% calories from fat; 6.4 g fiber; 235 mg sodium

Baked Potatoes with Vegetables and Cheesy Sauce
Makes 8 servings

Ingredients:
- 8 medium red potatoes unpeeled, baked
- 2 1/2 cups Cheesy Sauce (1 recipe)
- 2 cups sliced mushrooms
- 4 cups broccoli, chopped
- 1 onion, coarsely chopped
- 1 green bell pepper, chopped
- 1 zucchini, unpeeled, and cut in 1/2-inch slices

Directions: Bake potatoes in the oven until tender, about an hour. Sauté vegetables in 3 tablespoons of water until tender. Prepare the Cheesy Sauce. Cut potatoes in half, top with veggies and cheesy sauce. Serve warm.

Per serving: 229 calories, 7.6 g protein, 47.6 g carbohydrate, 2.4 g total fat, 8.6% calories from fat, 6.1 g fiber, 261 mg sodium

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Cheesy Sauce
Makes 8 servings

Ingredients:
- 1/4 cup raw cashews
- 2 cups water
- 3/4 teaspoon salt
- 1/4 cup nutritional yeast (flakes)
- 1 teaspoon onion powder
- 1/2 teaspoon garlic powder
- 3 tablespoons cornstarch or arrowroot
- 1 to 3 teaspoons lemon juice to taste
- 1/3 cup roasted red bell pepper (packed in water)

Directions: Place all ingredients in blender and mix until smooth. Pour into pan and bring to a boil while stirring constantly. Will thicken to nacho cheese consistency. Serve hot.

Per serving: 36 calories, 0.8 g protein, 4.6 g carbohydrate, 1.8 g total fat, 45% calories from fat, 0.3 g fiber, 223 mg sodium

Mock Tuna Salad Spread
Makes 6 – 1/4 cup servings

Ingredients:
- 1, 15-ounce can garbanzo beans (chickpeas), drained and rinsed
- 1 stalk celery, finely chopped
- 1/4 cup onion, finely chopped
- 2 tablespoons sweet pickle relish
- 1/4 cup fat-free vegan mayonnaise, or tofu mayonnaise (see recipe class 1)
- 1 tablespoon lemon juice (optional)
- 1 teaspoon mustard of choice (optional)

Directions: Coarsely chop beans in a food processor, or mash beans with a masher. Do not over process to a smooth consistency. You want it to have some texture. Place beans in a bowl with remaining ingredients. Mix well and chill.

Per serving: 85 calories, 3 g protein, 17 g carbohydrate, 0.9 g total fat, 10% calories from fat, 3 g fiber, 255 mg sodium

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Green Glamour Smoothie
Makes 2 servings

Ingredients:
- 1 ripe banana, fresh or frozen
- 1 cup sliced strawberries, fresh or frozen
- 1/2 cup blueberries, fresh or frozen
- 1/2 cup blackberries, fresh or frozen
- 1 cup packed kale leaves
- 1 cup low-fat soy milk (8th Continent)

Directions: Combine the ingredients in a blender. Start your blender on the lowest setting and slowly increase the setting as your smoothie starts to puree. Blend for about 2 minutes until everything is smooth.

Per serving: 157 calories, 6 g protein, 33 g carbohydrate, 2 g total fat, 10.6% calories from fat, 7 g fiber, 75 mg sodium

Black Bean Brownies
Makes 24 servings

A wonderful, occasional indulgence that is high in fiber and protein.

Ingredients:
- 1½ cups whole wheat flour
- 1 tsp salt
- 1 tsp baking powder
- 2¼ cups raw sugar
- 1¼ cup cocoa
- 1½ cups chopped hazelnuts or walnuts
- 1-15 oz can black beans, rinsed and refilled with new water
- 1 tsp vanilla
- 1 cup of water
- optional: ½ cup of vegan bittersweet dark chocolate pieces

Preheat the oven to 350 degrees. Mix together the flour, sugar, salt and baking powder. Add the cocoa and the nuts and chocolate chips (if desired). Stir to combine all the dry ingredients.

Drain a can of black beans and rinse thoroughly until the water runs clear. Return the black beans back to the can and fill with water. Puree the beans and water. Add the puree to the dry mix along with the vanilla and extra cup of water. Stir to combine.

Pour the batter into a greased 9×13 pan. Bake for 25-30 minutes, rotating the pan around halfway through. When the brownies are finished they should be firm in the center and the edges will be slightly puffy and starting to pull away from the sides. Do not over bake. .

Let brownies cool completely then use a 2×2 in cookie cutter to cut into 24 squares.

Once cooled, frost brownies with following topping if desired.

Optional Topping:
- 1 ripe avocado
- ½ cup water
- 4 tablespoons unsweetened cocoa powder
- 5 medjool dates
- ¼ cup powdered sugar.
- 1 tsp vanilla extract

Blend topping ingredients in a high powered blender. Frost brownies when cool.

Per serving: 202 calories, 35 g carbohydrates, 7 g total fat, 27% calories from fat, 6 g protein , 5 g fiber, 112 mg sodium

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Broccoli Salad
Makes 4 servings

This colorful salad, dressed with a creamy sweet-and-sour dressing, is a delicious way to eat broccoli. Remember, consuming cruciferous vegetables daily may significantly lower breast cancer risk and increase survival.

Ingredients:
- 2 medium broccoli stalks
- 2 or 3 green onions, chopped
- ½ cup grated carrots
- ½ cup golden raisins
- ¼ cup dried cranberries
- 3 tablespoons vegan mayo (Just Mayo)
- ¼ cup seasoned rice vinegar
- 1 tablespoon raw or turbinado sugar
- ¼ teaspoon black pepper

Directions: Cut broccoli florets into bite-size pieces. Peel stems and cut into bite-size pieces. Transfer to a salad bowl and add green onions, carrots, raisins, and cranberries. In a small bowl, mix together mayonnaise substitute, vinegar, sugar, and black pepper. Pour over broccoli and toss to mix. Let stand about 30 minutes before serving to allow flavors to blend.

Per serving: 166 calories, 3.7 g protein, 23.9 g sugar, 3.1 g total fat, 34.1 g carbohydrates, 16.5% calories from fat, 4.0 g fiber, 129 mg sodium

Sweet-and-Sour Vegetable Stew
Makes about 8 1-cup servings

Ingredients:

- 1/2 cup water
- 1 onion, chopped
- 1 jewel or garnet yam, peeled, cut into 1/2-inch cubes (about 2 cups)
- 1 large carrot, chopped
- 1 cup celery, sliced
- 1 cup chopped roasted red peppers (packed in water)
- 1/2 cup chopped fresh cilantro
- 1 tablespoon minced jalapeno pepper, or ½ teaspoon crushed red pepper
- 1 teaspoon minced fresh ginger, or 1/4 teaspoon ground ginger
- 1 teaspoon curry powder
- 1/4 teaspoon cinnamon
- 1/4 teaspoon ground coriander
- 1 15-ounce can diced tomatoes, undrained, or 1 ½ cups freshly chopped
- 1 15-ounce can garbanzo beans (chickpeas), undrained, or 1 1/2 cups cooked garbanzo beans with 1/2 cup of additional water or vegetable broth
- 1 8-ounce can juice-packed crushed pineapple, or 1 cup fresh pineapple, crushed (including juice)

Directions:
Heat water in a large pot. Add onion, yam, carrot, and celery. Cook over medium heat, stirring often, until vegetables begin to soften, about 7 minutes. Add remaining ingredients, cover, and continue to cook, stirring occasionally, until vegetables are tender, 15 to 20 minutes.

Per serving: 121 calories, 1.2 g fat, 4.8 g protein, 24.7 g carbohydrate, 4.7 g fiber, 9.1% calories from fat,145 mg sodium, 62 mg calcium, 53.6 mg vitamin C, 3517 mcg beta-carotene, 0 mg cholesterol

Quinoa
Makes 3 1-cup servings

Quinoa ("keen-wah") has a light, fluffy texture and may be eaten plain or used as a pilaf or as an addition to soups and stews. The dry grain is coated with a bitter-tasting substance called saponin. Quinoa must be washed thoroughly before cooking to remove this bitter coating. The easiest way to wash it is to place it in a strainer and rinse it with cool water until the water runs clear.

Ingredients:

- 1 cup dry quinoa
- 1 cup boiling water
- 1 teaspoon salt (optional)

Directions:
Rinse quinoa thoroughly in a fine sieve, and then add it and salt (optional) to boiling water in a saucepan. Reduce to a simmer, then cover loosely and cook until quinoa is tender and fluffy, about 15 minutes.

Per serving: 212 calories, 3.3g fat, 0.4 g, 14% calories from fat, 7.4 g protein, 39 g carbohydrate, 3.5 g sugar, 3.3 g fiber, 17 mg sodium, 39 mg calcium, 5.2 mg iron