Good Nutrition and PARKINSON'S DISEASE





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Introduction

Parkinson's disease (PD) is a neurological disorder which results from diminished levels of dopamine in the brain; resulting in tremors, rigidity, abnormal gait, and difficulty in motor function. In addition, patients with Parkinson's disease may experience constipation, delayed stomach emptying, drug-nutrient interactions, and weight loss. Good nutrition is important for everyone and plays a particularly critical role in Parkinson's disease (PD). In general, a healthy diet can increase energy, maximize the potential of medications, and promote overall well-being.

Parkinson's disease affects the autonomic nervous system, resulting in slowed movement of the GI tract. An individual may experience constipation and/or delayed gastric emptying. Gastric emptying may delay or decrease effectiveness of medications. With adequate intake of fluids and fiber, constipation may be prevented. Signs and symptoms of delayed gastric emptying should be observed when determining the timing of meals and medications.

Some individuals, particularly those who experience fluctuations of PD symptoms with their medications, may be very sensitive to the amount of protein in their diets. For these individuals the timing of medications and meals/snacks containing protein becomes important. With the right amount of protein consumed at the proper intervals throughout the day, that is 30-60 minutes after medications, both optimal absorption of medications and protein needs are met.

Parkinson's disease symptoms such as tremor and the medication side-effect of dyskinesia may increase one's caloric needs. When caloric needs are not met, the individual may experience unintentional weight loss and even malnutrition in prolonged circumstances of a low calorie intake.

You may have questions about certain vitamins and/or minerals and whether you could benefit from any supplements. Adequate intake of vitamins and minerals is important for many bodily functions. Although vitamin and mineral deficiencies are rare in the United States, many individuals do not meet the recommended daily allowance; however, each individual's diet varies greatly, so you should first consult your doctor or dietitian before taking any supplements.

This booklet is intended to introduce to patients and caregivers helpful nutrition information relevant to Parkinson's disease. Further information can be obtained from your doctor or dietitian.



Principles of Good Nutrition

1. Use the Food Guide Pyramid to structure your eating habits. Choose a wide variety of foods from all the food groups. At each meal try to consume a portion from at least three of the food groups.

2. Limit your total fat, saturated fat, and cholesterol. You can accomplish this by choosing lean meats, cheeses, and dairy products. Trim the visible fat off your meat. Grill, broil, or bake meat rather than frying. Choose 1 percent butterfat or less milk and milk products. Limit total fat to 30 percent of your daily calories.

3. Limit your salt or sodium. You can achieve this by choosing more fresh or frozen foods and limiting processed foods. Go easy on condiments such as olives, ketchup, mustard, pickles, and soy sauce. Read food labels and choose foods that have a sodium content of 5 percent or less of the daily value per serving. Eat plenty of fruits and vegetables, which are naturally low in salt. Please note that if you have hypotension, you may be asked to increase your salt intake under a doctor's supervision.

4. If you drink alcohol, do so only in moderation. Alcohol supplies moderate amounts of calories and few nutrients. Limit intake to one drink per day for women or two drinks per day for men. One drink is 12 oz of regular beer, 5 oz of wine, or 1.5 oz of distilled spirits.

5. Choose a diet high in fiber. A high-fiber diet may protect against many chronic diseases. You can accomplish this by selecting whole grains, minimally processed foods, fruits and vegetables.

The Macronutrients That Make Up Our Diet

Carbohydrates

What is the role of carbohydrates in the diet?

Carbohydrates are sugars and starches, and they are the main energy source for the body. One gram of carbohydrates provides 4 calories. They are found in fruits, breads and cereals, milk products, and vegetables. They are also found in most desserts, candy, and sweetened foods.

Are there "good" and "bad" carbohydrates?

Complex carbohydrates are considered to be the "good" carbohydrates. These are found in foods that are less refined and closer to their natural state. Good sources include foods made with whole grains, brown rice, and fresh fruits and vegetables. Because these foods are less refined, they are usually good sources of vitamins, minerals, and fiber, also. They are broken down slowly in the digestive tract, and gradually enter the bloodstream. By comparison, the more refined, or simple carbohydrates are broken down quickly and can cause a rapid rise in your blood sugar, which can be followed by a drop in blood sugar.

Are there special considerations for Parkinson's disease?

Dietary carbohydrates play a role in the absorption of Levodopa by triggering a release of insulin which lowers the blood levels of large neutral amino acids. Lower levels of large neutral amino acids in the blood may enhance the delivery of Levodopa to the brain (see the protein section). It is recommended that 55 to 60 percent of the calories in your diet come from carbohydrates.



Proteins

What is the role of proteins in the diet?

Proteins are combinations of amino acids that build, repair, and maintain all of your body's tissues. Dietary proteins are broken down into amino acids in the stomach and intestine and then absorbed into the blood, where they become the "building blocks" for new proteins. Your body makes nonessential amino acids, while others are considered "essential" because your body cannot make them. Essential amino acids need to be obtained through the diet. Eating a variety of foods, including good sources of protein in amounts to meet your needs, will give you the full variety of amino acids.

If you don't consume enough carbohydrates and fats, tissue proteins can be broken down into amino acids and used by the body for energy instead of maintenance. When you consume more protein than you need, the protein is broken down and stored as body fat. Protein provides 4 calories per gram.

Where are proteins found?

Good sources of protein include foods from animal and plant sources. Animal sources include meat, poultry, fish, eggs, milk, and cheese. Plant sources include legumes (lentils, dry beans and peas), seeds, nuts, breads, and cereals.

How much protein do we need?

The average American diet is much higher in protein than is actually needed. The recommended daily allowance for protein is 0.8 grams per kilogram of body weight. This would be 62 grams of protein for a 77 kilogram (170 pound) man, and 52 grams of protein for a 65 kilogram (143 pound) woman.

Calculating protein requirements: 1 pound = 0.45 kilogram weight in pounds divided by 2.2 = weight in kilograms (kg) weight in kg multiplied by 0.8 = protein needs in grams (g) Example: (170 pounds)/(2.2) = 77 kg 77kg x 0.8g = 62g 62 grams of protein are needed daily.

For optimum health, all people with Parkinson's disease need a minimum of 0.8g protein per kg body weight per day. Protein deficiency, caused by restricting your protein intake to less than what your body needs, can result in weight loss, muscle wasting, slow wound healing, skin and blood changes, and reduced resistance to disease. In addition, it should be noted that the RDA is calculated for healthy people, and it may need to be modified in illness, although higher amounts of protein have been found to interfere with Sinemet[®] in some people with Parkinson's disease. (See the recommendations in the section "7:1" diet.)

Fats

What is the role of fats in the diet?

Fats are complex substances made up of combinations of fatty acids. Like proteins and carbohydrates, fats supply energy in the form of calories. They are a concentrated source of energy, providing 9 calories per gram.

Although a diet high in fat has been linked to many chronic health problems, such as heart disease, some types of cancer, and obesity, fats have some positive health benefits.

In the first place, fats help to support the work of other nutrients in your body. The fat-soluble vitamins A, D, E and K wouldn't be effective without dietary fats to dissolve them and provide transport in the bloodstream.

Are fats necessary for health?

Linoleic acid and alpha-linolenic acid are fatty acids (the "building blocks" of fat) that are considered essential because they can't be made by the body and have to be obtained through the diet. Alpha-linolenic acid converts to omega-3 fatty acids, which help to keep your brain and nervous system healthy. Linoleic acid is an omega-6 fatty acid. Both may promote heart health by lowering total and LDL cholesterol.

Both of these essential fatty acids are easily available to the body in a varied diet. Fatty fish, soy, flaxseed, canola, nuts, and seeds are good sources of omega-3 fatty acids. Soy, corn, and safflower oil are good sources of omega-6 fatty acids.

Are there "good" and "bad" types of fat?

Foods are not made up of a single type of fat, but we are concerned with the type that makes up the largest percentage of the fat content.

Polyunsaturated and monounsaturated fats are considered "good fats." Rich sources of monounsaturated fats are canola, nut and olive oils. They help to lower total and LDL cholesterol (the "bad" cholesterol), and may raise HDL (the "good" cholesterol) levels. Polyunsaturated fats are found in corn, safflower, soybean, sesame, and sunflower oils, and are the predominant fat found in seafood. They also assist in lowering total and LDL cholesterol, along with lowering HDL.

Saturated fats are usually referred to as "bad fats." They are found mainly in animal-based foods like meat, poultry, whole milk, and butter, and in palm and coconut oil. They can raise total and LDL cholesterol levels by triggering the liver to increase production of cholesterol.

Trans fatty acids are also considered to be "bad fats." They are found mainly in hydrogenated fats (vegetable oils that have been processed to become solid at room temperature). They act like saturated fats in the body.

Are there "good" and "bad" types of cholesterol?

Cholesterol is not actually a fat, but a fat-like substance. It's found in every cell in in the body, and it's found in some hormones. Only found in foods of animal origin, cholesterol is sometimes

confused with saturated fat because they often appear together. Dietary cholesterol is found in food, and serum cholesterol is found in your bloodstream. The cholesterol circulating in your body comes from two sources. It is produced in the liver, and it comes from foods in your diet that contain cholesterol. A diet high in cholesterol can negatively affect serum cholesterol levels in some people, but the amount and type of fat in your diet has a much greater effect on your health.

The terms "good" and "bad" cholesterol refer to the cholesterol carried in your bloodstream. HDL (high-density lipoprotein) is known also as "good" cholesterol. High HDL levels decrease heart-disease risk, while LDL (low-density lipoprotein) levels, if high, increase the risk of heart disease.

What are the recommendations for fat use in Parkinson's disease?

Fat intake should be no more than 30 percent of your total calories, with an emphasis on fewer saturated fats. Fat takes longer to leave the stomach than carbohydrate or protein; therefore, it's best to avoid large, high-fat meals if you're taking Sinemet because it can decrease the effectiveness of the medication by delaying gastric emptying.



Fiber

What is fiber, and what is its role in the diet?

Fiber is the indigestible part of a food of plant origin. It can't be used by the body for energy, but is still necessary for good health by helping to promote regular bowel movements.

Are there different types of fiber?

Dietary fiber can be soluble or insoluble. Both types of fiber have significant health benefits, but they work in different ways.

Insoluble fiber helps to prevent constipation by adding bulk and softness to stools. Adequate fluid intake is necessary, since insoluble fiber works by absorbing fluid. Good sources of insoluble fiber are whole wheat products including wheat bran, vegetables, fruit, flaxseeds, and legumes.

Soluble fiber helps to lower blood cholesterol levels, and regulate blood sugars. Good sources of soluble fiber are legumes, oats and oat bran, barley, flaxseeds, and many fruits and vegetables.

What is the role of fiber in Parkinson's disease?

Constipation is a common problem in Parkinson's disease. It can be caused by medications, decreased fluid intake, or the condition itself. The nerves controlling the gastrointestinal tract can be affected by PD, causing increased intestinal content transit time. Dietary fiber is very important in the management of constipation. To ensure adequate fiber intake, try to eat at least five servings of fruits and vegetables each day, and choose whole grains over refined foods. In addition, try to drink 6 to 8 cups of fluid each day, preferably noncaffeinated.

Vitamins

Vitamins are organic compounds necessary for life, although they do not, independently, provide energy. Vitamins are essential to many bodily functions, including growth, metabolism, blood clotting, preventing diseases, body growth and maintenance, immune function, and many more. Although vitamin deficiencies are rarer in the United States than in many developing countries, it is still important to eat a wide range of foods to meet the recommended daily allowance for each vitamin.

Vitamin D

What is the role of Vitamin D in the diet?

Vitamin D promotes the absorption of two minerals - calcium and phosphorus - and regulates the calcium levels in the blood. It also helps in depositing these minerals in your bones and teeth, making them stronger. Fortified foods such as milk and specially fortified orange juice are common sources of Vitamin D. Milk products such as cheese and ice cream are generally not fortified with Vitamin D. Sunshine is a significant source of Vitamin D because your body makes Vitamin D from UV light touching your skin.

What are the dietary recommendations for Vitamin D?

The RDA for adults is 400 IU per day, and 600 IU by the age of 70. The increased amount for older adults is due to the fact that as we age, our skin isn't able to produce as much Vitamin D. If you do not go outdoors, you cover up, or use a sunscreen, you need to pay special attention to getting Vitamin D from fortified foods or consider taking a supplement. One cup of Vitamin D fortified milk contains 100 IU.



Vitamin C & E

Vitamin C, or ascorbic acid, and Vitamin E have antioxidant properties and were once speculated to be protective against the progression of PD. Theoretically, free radicals are produced by metabolic processes in the brain and they can damage nerve cells, including dopaminogenic cells. Antioxidants are known to break down free radicals or prevent their formation. Studies, however, do not show any significant benefit of consuming more than the recommended dietary allowance (RDA) for Vitamin C and E for people with PD.

Vitamin C is important for wound healing, absorption of iron, increasing resistance to infection, and the synthesis of neurotransmitters. Good sources of Vitamin C are citrus fruits, broccoli, brussel sprouts, green peppers, strawberries, cauliflower, cabbage, tomato, cantaloupe, and spinach. The RDA for Vitamin C for an adult is 60mg per day. This is equal to approximately 1/2 cup of orange juice or 1 cup of cantaloupe.

Along with its powerful antioxidant capabilities, Vitamin E is also important in energy and cell metabolism. The RDA for Vitamin E for adult males is 10mg and 8mg for females. This is equal to approximately 1.5 oz. almonds or 3 tablespoons of corn oil. Other good sources of Vitamin E are vegetable oils, wheat germ, spinach, collards, nuts, and dried beans.

As you may have noticed both Vitamin C and E are easily consumed in the diet in the recommended amounts per day; therefore, supplementation in mega doses is not warranted. Depending on your individual diet, a multi-vitamin formulation or supplement may be beneficial. Please consult your doctor or dietitian for further information.



Minerals

Minerals are inorganic substances essential to life. Along with vitamins and water, minerals help regulate the various body processes such as circulation, respiration, digestion, and elimination. Minerals are found in water and in natural foods but are used to fortify some processed foods. Mineral toxicity is possible but unlikely if you are not taking megadoses of a mineral over a period of time. Mineral deficiencies are also possible but not common if you are eating a wide variety of foods from all five food groups.

Calcium

What is the role of calcium in nutrition?

Calcium builds bones, and helps them to remain strong, by slowing the rate of bone loss as you age. It also assists in muscle contraction, promotes normal nerve function, and helps your blood clot if you're bleeding. Milk and milk products such as yogurt and cheese are excellent sources of calcium. In addition, some dark green leafy vegetables (kale, broccoli, bok choy), canned salmon and sardines with bones, calcium-fortified soy milk and orange juice, and tofu made with calcium sulfate are good sources.

What are the dietary recommendations for calcium intake?

The RDA for adults is 800 IU until age 50, when it is increased to 1200 IU. People with Parkinson's disease have an increased risk of bone loss, and should be sure their diet isn't deficient in calcium. If you find it hard to get enough calcium in your diet, you may want to consider a supplement. Calcium carbonate is the most commonly used supplement; however, it reduces stomach acid, which can interfere with nutrient absorption. It can also be constipating for some people. Calcium citrate is a better choice; it doesn't affect stomach acidity, and it isn't constipating.

Excellent sources of calcium: (approximately 300mg per serving)

> 1 cup of low fat milk 1 cup of yogurt 1 1/2 ounce of hard cheese

 $1 \frac{1}{4}$ cup cottage cheese

- 1 to 2 cups of cooked dark green, leafy vegetables
- 2 cups of cooked broccoli





<u>Iron</u>



What is the role of iron in the diet?

Iron forms part of hemoglobin, the molecule that enables your red blood cells to transport oxygen throughout the body. It also helps the immune and central nervous systems and aids in energy production.

What are the dietary recommendations for iron?

The body is very efficient at storing and reusing iron, and stored levels tend to increase with age; however, iron deficiency can be a problem for younger women because of blood loss from menstruation and for older people because of a poor diet. A suspected deficiency should always be evaluated by your healthcare provider before taking supplements because excess iron can be harmful. The RDA for iron for adult women is 10 mg and 15 mg for adult men. Meat, poultry, and fish are excellent sources of iron. Fortified grain products, like cereals and breads, legumes (especially soybeans), nuts, and vegetables also provide iron in the diet. Foods that are high in Vitamin C, such as strawberries, broccoli, or citrus fruits, enhance iron absorption.

Are there special considerations for people with Parkinson's disease?

Iron supplements can interfere with Levodopa absorption, so they should be taken separately, although the small amount of iron in a standard multivitamin preparation shouldn't be a problem.



Coenzyme Q10



What is Coenzyme Q10?

Coenzyme Q10, or ubiquinone, or CoQ10 for short, is a naturally occurring compound produced in the heart, liver, kidneys, and pancreas. CoQ10 is used by the body for energy production and as a powerful anti-oxidant. The amount of CoQ10 produced by the body declines with age, heart disease, and with some medications -i.e., statins, some diabetes drugs, and perhaps **coumadin. CoQ10 is present in food in small amounts, primarily in organ meat, chicken, beef, soy oil, sardines, mackerel, and peanuts.** Because CoQ10 is only in food in scarce amounts, it is commonly consumed in an oral supplement form.

Is there a link between CoQ10 and PD?

Oral CoQ10 supplementation has been used to treat heart failure because of its role in energy production. It may also be beneficial in treating a number of other diseases as well as Parkinson's disease due to its antioxidant effects. A theory is that it protects cells from damage caused by PD. Research suggests a positive trend for CoQ10 and the slowing of the progression of the disease with little side effects. To date, studies have demonstrated that a dose of 1,200 mg per day may have the most benefit in PD patients; however, CoQ10 recommendations are premature at this time and further research is warranted. Should you be taking any supplements? Please consult your doctor beforehand.



Malnutrition in Parkinson's Disease

Are you at an increased risk?

As we age and become elderly, we are all at an increased risk for malnutrition. With age, our sensitivity to the four basic tastes of sweet, sour, salty, and bitter decreases. It is common to be on medication which may cause anorexia. Poor oral health may make it difficult or painful to eat. Chronic disease and motility problems may also increase the risk of malnutrition. Depression or loneliness are common causes of a decrease in appetite. Other socioeconomic influences affecting food choices and malnutrition include income, education, age, gender, daily schedule, and access to food stores.

Malnutrition in PD

Since PD is seen more often in the elderly, it poses an even greater risk for the development of malnutrition. PD may cause difficulty chewing and swallowing, bradykinesia (slowness in movement), dyskinesia (involuntary movements) and increased calorie needs all of which may cause weight loss and/or malnutrition. Antiparkinsonism medications can also cause nausea, vomiting, loss of appetite, constipation, hallucinations, and confusion. Nausea and loss of appetite usually subside a few weeks after starting medication, but not always completely. Malnutrition occurs when long-term eating habits are inadequate.

How do I know if I am malnourished?

Body weight is a good indicator of nutritional status. A weight loss classified as significant is a sign of undernutrition and should be evaluated. Please refer to the calculation and chart below to determine if your weight loss is classified as significant.

- Calculation of Percent Weight Change % weight change = (<u>usual weight – current weight</u>) X100 usual weight
- 2. Assessment of Weight Change.

TIME FRAME	SIGNIFICANT WT LOSS
1 WEEK	Greater than or equal to 1-2%
1 MONTH	Greater than or equal to 5%
3 MONTHS	Greater than or equal to 7.5%
6 MONTHS	Greater than or equal to 10%

How can I avoid unintentional weight loss?

If you have difficulty chewing or swallowing, take your time while eating. Eat five to six smaller meals per day rather than two or three large meals. A heating tray may be useful to keep food warm longer. Choose calorie-dense, nutritious foods. A milk shake or supplement shake may be useful between meals to help meet calorie needs. There are support groups and services available for seniors. Most importantly, consult with your doctor and dietitian if you have concerns about weight loss or gain.

Medications in Parkinson's Disease

The primary drug used in the treatment of Parkinson's disease is Levodopa. There are several diet components that interfere with the absorption and thus, ultimately, with the effectiveness of this medication.

Protein and Levodopa interaction

Compounds called amino acids make up dietary protein. Levodopa is structurally similar to certain amino acids (large neutral amino acids, or LNAAs), and they compete for the same transport system across the blood-brain barrier. Levodopa must arrive at its destination in the brain to be converted to dopamine, and this competition can decrease the amount of Levodopa reaching the brain. Some people with Parkinson's disease are not affected by protein in the diet, but others notice a reduced effectiveness of Levodopa when it is taken too close to meals. Also, some people find that the proteins in milk and milk products block the Levodopa absorption to a greater extent than other proteins.

Gastric Emptying

Before it can reach the transport mechanism at the blood-brain barrier, Levodopa must reach the small intestine for absorption. Food in the stomach can slow the progress of the Levodopa by delaying the emptying of stomach contents into the small intestine. The longer Levodopa remains in the stomach, the more vulnerable it is to enzymes that prematurely convert it to dopamine, which is ineffective if not produced in the brain. Once in the small intestine, the Levodopa must compete with any LNAAs present for absorption into the bloodstream. Also, Levodopa has a very short plasma half-life, which means that it will start to disappear from the blood in 60 to 90 minutes. Therefore, it needs to reach the brain before this occurs.

Parkinson's disease can affect the nerves of the GI tract causing delayed gastric emptying. If you experience symptoms of bloating, delayed uptake of medications, quick fulfillment after eating, or gastroesophageal reflux, consult your doctor or dietitian for helpful hints and/or medication changes.

Timing of Medication

For the reasons previously mentioned, Levodopa should be taken at least 30 minutes prior to meals, except in cases where the drug produces nausea, or if there is an excess of dyskinesia after taking Levodopa. For nausea, which is common during the early adjustment to Levodopa, it should be taken with a light, low-protein snack. For dyskinesia, take with a small, high-protein snack.

If fluctuations, or on/off effects are still a problem, the amount and distribution of protein in the diet should be taken into account, as in the 7:1 diet on the next page.

The 7:1 Carbohydrate to Protein Diet

What is the 7:1 diet, and how is it planned?

The 7:1 diet balances carbohydrate and protein, allowing for 7 parts carbohydrate for 1 part protein. Each meal and snack is planned in this ratio for best results. The total grams of protein to be eaten at each meal are calculated. This can be done by reading the food labels or consulting lists of protein content of foods. Based on the amount of protein at each meal, the grams of carbohydrate that should be eaten are calculated. For example, if 10 grams of protein is included at breakfast, 7 times that amount (7x10) or 70 grams of carbohydrate should be included at breakfast as well.

Planning the 7:1 diet

Determine protein need (0.8g x wt. in kgs) Example: 170 pound male (170 divided by 2.2 = 77kg) x 0.8g = 62g protein (248 calories from protein)

Multiply by 7 Example: 7 x 62g protein = 434g carbohydrate x 4 calories per gram = 1736 calories 1736 (calories from carbohydrate) + 248 (calories from protein) + additional calories from fat (400) = 2384 calories

Use the exchange list for protein and carbohydrate contents (available from American Diabetes Association). Carbohydrate counting and food labels are also useful.

What are the advantages of the 7:1 diet?

Balancing carbohydrates and proteins in this ratio results in the most stable blood levels of LNAAs, which allows for a consistent, predictable and optimal response to Levodopa.

This is preferable to the Protein Redistribution Diet (PRD), which was previously used to manage blood levels of LNAAs. In the PRD, daytime protein is severely restricted, and the remaining protein allowance is consumed at dinner. It is very difficult to follow, and it is necessary to buy expensive low-protein products. In addition, the high-protein dinner would interact with the Levodopa in the evening, resulting in poor control of symptoms at night.

The 7:1 diet, on the other hand, allows for normal daytime eating and more flexibility in meal planning. Dinner is probably the most difficult meal to plan because the average American dinner is high in protein. An alternative is to try to shift your normal diet closer to the 7:1 diet, for example, 5:1, and see if that makes a difference. Any major dietary modifications should be discussed with your doctor, and a registered dietitian should be consulted to evaluate your dietary needs to create an individualized meal plan.

How Can I Follow A Protein-Carbohydrate 7:1 Ratio Diet Without Giving Up Taste?

Here are some tips to extending the protein in your diet and limiting drug-nutrient interaction without diminishing the taste.

Sandwiches:

- Use thinly sliced cold cuts.
- Fill out sandwiches with more vegetables such as lettuce, tomatoes, cucumbers, onions, peppers, pickles, alfalfa sprouts, etc.
- Add pickles, onions, and/or celery to turkey salad, chicken salad, and egg salad sandwiches.

Soups:

- Choose more vegetable soups instead of soups with meat.
- Choose more clear soups instead of cream-based soups.
- Add water instead of milk to condensed soups
- Add rice, pasta, or vegetables to soups to make them more filing.

Main Dishes:

- Make vegetables and grains 3/4 of your plate and limit meat to 1/4.
- Use stronger tasting cheeses such as sharp cheddar, feta, and parmesan to your meal. Less will go farther.
- When making stir fry and pasta dishes, add more vegetables and cut meat in small pieces and mix in.
- For casseroles, decrease the amount of meat and increase the starch (pasta or rice).

Calorie Boosters:

It is important to maintain a normal body weight. It is not uncommon to lose weight with Parkinson's disease. Here are some tips to boost your calorie intake.

- Increase the healthy or "good" fats such as vegetable, canola, olive, corn, cottonseed, safflower, and soybean oils.
- Use dressing or spreads on sandwiches.
- Use sweeteners such as sugar, honey, jam or jelly.
- Snack on dried fruit and canned fruit in heavy syrup.



Source: http://www.kidney.org/atozltem.cfm?id=89

Recipes for a Protein-Carbohydrate 7:1 Ratio Diet

Turkey Salad

11/2 cups chopped cooked turkey breast without skin
1 cup diced celery
3 cups raw red delicious apples with skin
1/4 cup coarsely chopped pecans
3 tbs. regular mayonnaise

Cranberry French Dressing

1/2 cup jellied cranberry sauce
1/8 tsp. paprika
1/8 tsp. dry mustard
1/8 tsp. pepper
1 tbs. vinegar
2 tbs. vegetable oil



Directions:

Combine the turkey salad ingredients in a large bowl. Stir well. Cover and chill thoroughly. Serve with Cranberry French Dressing.

Dressing: combine first four dressing ingredients in small bowl, stirring with a wire whisk until smooth. Gradually add the vinegar to the cranberry mixture, alternately with oil, beginning and ending with vinegar. Stir well with each addition.

Eat plain or in a sandwich.

Yield: $12^{1/2}$ -cup servings with 1 tbs. dressing on each serving. 1 serving = 4.5g protein

Source: http://www.kidney.org/atozltem.cfm?id=89

Stuffed Peppers

Ingredients:

- 6 oz. macaroni
- 2 tbs. vegetable oil
- 1 onion, chopped
- 1 clove garlic, crushed
- 1 oz. mushrooms
- 1 stick celery, chopped
- 1 carrot, grated
- 1 zucchini, chopped
- 1 tbs. tomato puree
- 1 slice bread, crumbed
- 2 whole green peppers



Directions:

Pre-heat oven to 190 degrees F,

Cook the macaroni as directed on the package. Drain. Heat the oil in a pan and gently fry onion and garlic. Add the mushrooms, celery, carrot, and zucchini and fry for a few minutes until soft. Add the tomato puree and breadcrumbs. Combine the cooked pasta with the vegetables. Season. Cut the top off the peppers. Remove the core and seeds. Stuff with the filling and place in a heatproof dish with a little water. Bake in a pre-heated oven for approximately 20 minutes.

Microwave oven:

These peppers can also be cooked in a microwave oven on medium/high for 12-15 minutes.

Yield: 2 servings, 1 serving = 4g protein

Source:http://www.shsweb.co.uk/metabolic/pkubook/p21.html

Pasta Salad

Ingredients:

- 1 cup cooked macaroni pasta
- 1 small stalk (1/2 cup) broccoli, cut into 1 inch florets
- 1 small stalk (1/2 cup) cauliflower, cut into 1 inch florets
- 1 celery stalk, diced fine
- 1 tbs. black olives slices
- 1/2 cup sweet pepper, sliced
- 1/2 cup chopped tomatoes
- 1 tbs. freshly chopped flat-leaf parsley
- 2 tbs. olive oil
- 1 garlic clove, crushed
- A pinch of ground black pepper
- 1 tsp. balsamic vinegar or wine vinegar

Directions:

Cook the pasta as directed on the box (approximately 6-7 minutes). Drain and rinse pasta in water and add 1 tbs. of oil to coat the pasta. Heat the remaining oil in a pan and add all prepared vegetables, except parsley, at once. Cook quickly for 4 minutes so the vegetables retain crunchiness. Add pepper, salt, parsley and the pasta and cook for 1 more minute. Turn off the heat and add the vinegar and combine again. Serve hot.

Yield: 4 1-cup servings 1 serving = 1.4g protein

Source: http://www.lowprotein.com

Easy Black Bean Quesadillas

12 6-inch corn tortillas
1 15-ounce can black beans, drained and rinsed
1/2 tsp. chili powder, or to taste
1 4-ounce can chopped green chilies
4 ounces Monterey Jack cheese, shredded

optional: chopped tomatoes salsa chopped peppers

Preheat oven to 425 degrees F.

Mash beans lightly, adding chili powder. Combine well. Spread 2 heaping tablespoons on each of 6 tortillas. Top with chilies, and sprinkle with cheese. Top each prepared tortilla with another one; press down lightly. Bake for approximately 10 minutes, or until tortilla starts to crisp, and cheese melts. Top with salsa, peppers, and/or tomatoes if desired.

Makes 6 servings. 1 serving = 10g protein

Baked Stuffed Squash

1/2 pound sweet turkey sausage, preferably bulk
1 cup chopped apples
1/2 cup chopped onion
1/2 tsp. ground sage
1/2 tsp. ground black pepper
2 medium-size acorn squash

Preheat oven to 375 degrees F. In a bowl, mix together sausage meat (take out of casing if not bulk), apples, onion, sage, and pepper. Cut squash in half lengthwise; scoop out seeds and stringy portion. Fill squash with sausage mixture. Place in baking dish with a couple of table-spoons of water in the bottom; cover, and bake 50 to 60 minutes.

Yield: 4 servings. 1 serving = 1g protein

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Call 800-223-2732 or visit <u>www.apdaparkinson.org</u> for the location and contact information for the APDA Information & Referral Center serving your area.



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