
Parkinson's Disease

- by Dr. James Meschino, DC, MS, ROHP

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Introduction

Parkinson's disease is a progressive disorder that involves nerves cells in the part of the brain known as the substantia nigra, which produces the brain chemical, dopamine. Dopamine is one of the brain chemicals (neurotransmitters) that helps direct and control body movement. In Parkinson's disease, the nerve cells that produce dopamine in the substantia nigra undergo progressive degeneration and are thus, unable to produce the desired amounts of dopamine. As a result, Parkinson's disease patients develop a number of symptoms related to abnormal movement patterns and loss of muscle control. The classic symptoms of Parkinson's disease are tremor (shaking), stiff muscles (rigidity), and slow movement patterns. In more advanced cases patients often demonstrate a stooped posture, a fixed facial expression, speech problems, and difficulty walking. Mental decline is also a common feature in more advanced cases. The tremor of Parkinson's disease is referred to as a resting tremor in that it is more severe at rest and may disappear or be greatly reduced with voluntary movement and when the person is completely relaxed or asleep.

Studies indicate that Parkinson's disease is not strongly related to genetic inheritance, according to studies on twins and the fact that only a small percentage of people with Parkinson's disease have a parent or sibling with the disease. ¹ The cause of Parkinson's disease is not known at this time, however recent studies suggest that the nerve cells in the substantia nigra lose their ability to produce required levels of the energy chemical known as ATP. ATP is the fuel that powers all of the metabolic reactions in the cells of the body and thus, a marked reduction in ATP energy is known to lead to progressive deterioration of cellular structure and function, and may lead to cell death. Studies demonstrate that in Parkinson's disease the decline in ATP energy appears to result from reduced synthesis of a chemical known as Coenzyme Q10 (CoQ10) in the part of the brain affected by Parkinson's disease. CoQ10 is required to help convert carbohydrate, fat, and protein into ATP energy during cellular metabolism. Our bodies usually make sufficient levels of CoQ10 for this purpose, but in Parkinson's disease (and in some other conditions such as congestive heart failure) the ability to synthesize optimal levels of CoQ10 has been shown to be markedly reduced. Studies also reveal that when given nutritional supplements that help boost cellular ATP levels and/or reduce free radical damage to brain cells, many Parkinson's cases show significant improvement. ² Unfortunately, this data has been largely ignored in the strict drug and surgical management of Parkinson's disease. However, as part of complementary management, patients with this condition should be made aware of the following nutrition and supplementation practices that have been shown to help better manage this condition, according to the available scientific and clinical studies.



Dietary Modifications

1. Protein at Dinner - Clinical trials show that the action of L-dopa (a drug that is commonly used to help the brain make more dopamine) can be greatly enhanced by consuming most of the day's protein intake at dinner, while restricting protein intake very substantially through the day. 3,4,5
2. Consume Fava Beans (*Vicia faba*) - The consumption of these beans has also been shown to increase the action of L-dopa. However, over-consumption may cause an L-dopa overdose. Thus, patients should speak to their doctor before adding substantial amounts of fava beans (broad beans) to their diet. 6
3. Low-Fat Diet (saturated and hydrogenated fat) - Saturated fat and hydrogenated fats are known to increase cholesterol levels, which in turn can clog the blood vessels within the brain and decrease the supply of vital nutrients to brain cells.7,8,9 As well, certain unsaturated fats and trans-fatty acids are easily converted into free radicals, which can accelerate damage to brain cells in many parts of the brain. Thus, it is best to consume only low-fat protein foods such as chicken, turkey and fish and low-fat dairy products (1% or non-fat milk or yogurt, only cheeses below 4% milk fat, no butter, margarine, ice cream, whipped cream, regular sour cream, etc.) 9 However, the consumption of omega-3-fats from fish and flaxseed oil is desirable, as DHA (docosahexaenoic acid), an omega-3-fat found in fish and made in the body from the ALA (alpha-linolenic acid) in flaxseed oil, is an important component of brain cell membranes and is associated with improved cognitive function and intelligence.10,11,12,13,14 To further help minimize free radical damage to brain cells and reduce brain cell inflammatory processes (which have been shown to result from the production of certain prostaglandin hormones - PG-2 series), it makes sense to use olive oil, and canola oil in place of corn oil, sunflower seed oil and safflower seed oil. Olive oil and canola oil are high in monounsaturated fat (oleic acid), which is not easily converted to free radicals and does not participate in the production of inflammatory prostaglandins.15
4. Fruits and Vegetables - Fruits and vegetables are an excellent source of dietary antioxidants, which have been shown to reduce free radical accumulation throughout the body. At least 5 fruit and vegetable servings per day should be consumed. Evidence exists to show that higher intakes of dietary antioxidants are associated with reduced incidence of some neurodegenerative diseases.16



Supplements of Importance

1. Coenzyme Q10 – A breakthrough study in the Archives of Neurology (October, 2002) showed that when early-stage Parkinson's disease patients were supplemented with either 300, 600, or 1,200 mg of CoQ10 per day for 16 months they showed significantly less impairment than did the group given the placebo. Patients given the highest dosage also appeared to achieve the best results. The side effects were infrequent and included mild back pain, headaches, and dizziness. Researchers noted that the administration of CoQ10 in Parkinson's disease addresses an important underlying cause of this condition in that Parkinson's disease patients have been shown to have a defect in the ability to produce adequate amounts of CoQ10 in the region of the brain affected by this disease. Studies demonstrate that CoQ10 supplementation can increase brain levels of this vital nutrient, permitting brain cells to generate the ATP energy required to synthesize dopamine and sustain normal biological function. Further, CoQ10 is an important fat-soluble antioxidant that helps protect the energy factories (mitochondria) in brain cells from free radical damage. This may also aid the ability of brain cells to synthesize desired amounts of ATP energy and slow degenerative processes that have been linked to a number of neurodegenerative conditions.¹⁷
2. NADH (Nicotinamide Adenine Dinucleotide) – Like CoQ10, NADH is a coenzyme that the body produces to help convert carbohydrate, protein and fat into the ATP energy that powers the biological machinery of the body. In brain cells, ATP energy is often required to synthesize neurotransmitters such as dopamine, and is vital to brain cell survival and function. Some preliminary evidence, involving 885 patients with Parkinson's disease, showed that supplementation with NADH can improve symptoms of Parkinson's disease in approximately 80% of cases in the early stages of this condition.¹⁸ However, a second study did not confirm these findings.¹⁹ Nevertheless, NADH is very non-toxic, is not contraindicated with any other medication or supplements, and may be considered in the complementary management of this condition, at a daily dosage of 5 mg, twice per day.¹⁸
3. Antioxidants (Vitamin E and Vitamin C) – The discovery that free radicals contribute to the progression and, possibly, the cause of Parkinson's disease and other neurodegenerative diseases, led to a 10-year study whereby early-stage Parkinson's disease patients were given 750 mg of Vitamin C and 800 IU of Vitamin E, four times per day (totaling 3,000 mg of Vitamin C and 3,200 IU of Vitamin E per day). Patients following this protocol were able to significantly delay the need for drug therapy, by an average of two and half years, compared with those not taking these antioxidant vitamins.²⁰
4. Phosphatidylserine – Patients treated with the drug L-dopa have been shown to have reduced levels of the phospholipid phosphatidylserine, which is a vital component of the nerve cell membrane and can be used to boost levels of the memory brain chemical (neurotransmitter) known as acetylcholine.²¹ In one trial, supplementation with phosphatidylserine (100 mg, three times per day) improved the mood and mental function in Parkinson's disease patients.²²
5. Flaxseed Oil – Flaxseed oil is a rich source of alpha-linolenic acid (an omega-3 fat) that the body can convert into EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). DHA is linked to improved brain function and intelligence, and omega-3-fats have been shown to reduce the synthesis of inflammatory prostaglandin hormones which have been implicated in various neurodegenerative conditions.²³
6. Vitamin D – Vitamin D deficiency is common in Parkinson's disease patients due to the fact that many of these patients get insufficient sun light exposure. Upon exposure to direct sunlight (not through a window), 7-dehydrocholesterol under the skin is converted to cholecalciferol (Vitamin D). Low blood levels of Vitamin D, which is often seen in Parkinson's disease, is associated with osteoporosis and a higher incidence of hip fractures in these patients. ^{24,25}
7. Vitamins B3 and B6 – A daily dosage of up to 50 mg of Vitamins B3 and B6 may help improve the synthesis of dopamine and other neurotransmitters in the brain. However, experts warn against exceeding this dosage from supplements, as higher dosages may be counter-productive. ^{25,26,27}



Supplement Considerations

1. Coenzyme Q10: 300-1,200 mg per day, taken in divided doses with meals
2. NADH: 5 mg, twice per day, 30 minutes prior to meal
3. Vitamin C: 500 mg, four times daily with food
4. Vitamin E: 600 IU, four times daily with meals (not to be taken in dosages above 400 IU in patients taking anti-clotting medications, such as warfarin, coumadin, plavix and possibly aspirin, as it may lead to a bleeding disorder)
5. Phosphatidylserine: 100 mg, three times per day until mood and cognitive function improve, followed by a maintenance dosage of 100 mg, one to three times daily based upon patient response. (Take with meals)
6. High Potency Multi-Vitamin: (e.g. Nutra Therapeutics Multi-Vitamin and Mineral or a comparable product), containing additional antioxidant support: (Vitamin C - 1,000 mg; Vitamin E - 400 IU; Beta-carotene - 10,000 IU; Vitamin A - 2,500 IU; Bioflavonoid complex - 50 mg; lycopene - 6 mg; lutein - 6 mg), a B-50 complex, 400 IU of Vitamin D, 500 mg of elemental calcium, and all necessary vitamins and minerals from A to zinc at health-promotion levels.
7. Flaxseed Oil: 2,000-4,000 mg per day, taken in capsule form with food.

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