



Parkinson's Disease and Other Diet-induced Tremors

James Parkinson originally described a condition of "shaking palsy" in 1817, which subsequently became known as Parkinson's disease (PD). This condition has become the second most common neurodegenerative disease (after Alzheimer's disease), affecting approximately 1% of the population of the US over 65 years of age. People severely affected with PD characteristically have a tremor seen in their hands and head at rest, stiffness, weakness, slow movements, and postural instability. They take small steps when walking and have speech and swallowing disturbances. With time, disease progression often results in loss of mental function (dementia).

PD results from damage to an area of the brain called the substantia nigra (named because of its dark color). The substantia nigra produces large amounts of the neurotransmitter dopamine. Dopamine deficiency is the hallmark feature in PD. Insufficient production of this neurotransmitter substance negatively affects the nerves and muscles controlling movement and coordination, resulting in the major symptoms characteristic of PD.

Famous people alive today with this disabling condition include actor Michael J. Fox and prize-fighter Muhammad Ali. Mr. Fox's condition began at age 29 and has lasted for 19 years. He is an exception since most patients do not show signs of PD until after the age of 50.



Michael J. Fox Talks to Sanjay Gupta on CNN About His Parkinson's Disease

Mr. Fox has raised \$214M for his [foundation](#) for PD. Even though he has been reported to have an interest in vegetarian diets, his foundation has focused on stem cell research, which has been, and will likely continue to be, a dead-end path. Instead, as with most other chronic diseases, his focus should be on the highly likely dietary causes of PD. Correcting the cause will at the very least lead to avenues for prevention.

The Western Diet Causes Parkinson's Disease

The strongest contact we have with our environment is our food. Therefore, observing variations in incidence of diseases across populations should immediately lead researchers to focus their attention on the foods people eat. The incidence of PD is relatively high throughout Europe and North America.¹ In contrast, rural Africans, Chinese, and Japanese, whose diets tend to be vegan or quasi-vegan, have substantially lower rates.¹ The observation that incidence of PD is similar in African-Americans and in whites, all of whom eat the Western diet, further indicates that environmental factors, not race or genetics, are responsible for PD.²

Specific foods have been targeted. For example, the consumption of milk in midlife was found to be associated with subsequent development of PD.³ Men who consume more than two glasses of milk have twice the incidence of PD as men who do not drink cow's milk. The American Cancer Society's Cancer Prevention Study II Nutrition Cohort study has found almost twice the incidence of PD in the highest consumers of milk.⁴

Three Possible Mechanisms for Diet-caused Brain Damage

After accepting the possibility that PD is due, at least in part, to what we eat, then the next logical question is: how is this damage mediated? There are three common ways our diet could kill the dopamine-producing cells of the substantia nigra:

Autoimmune Reactions

One probable [mechanism](#) begins with the destruction of the blood brain barrier by dietary components, especially the fats. Once this barrier becomes ineffective (permeable) then immune cells (antibodies) produced outside of the nervous system can enter the cerebrospinal fluid and attack the brain's cells. Dairy proteins are notorious for causing this kind of reaction, known as molecular mimicry. In susceptible people, cow's milk protein may enter the bloodstream from the intestine.^{5,6} The body recognizes this as a foreign protein, like a virus or bacteria, and makes antibodies against it. Unfortunately, these antibodies are not specific only to the cow's milk protein; they find similar proteins in the nervous system.

2) *Vascular Disease*

The compromise of the blood supply to the brain caused by vascular closures leads to the death of brain tissues. The mechanisms are the same as those that lead to heart attacks and common strokes. One proposed link between PD and atherosclerosis is iron, a nutrient associated with meat consumption.⁷

3) *Environmental Chemicals*

Most pesticides work by interfering with the nervous system of insects, so findings of brain damage in people exposed to pesticides and other environmental chemicals should be no surprise.⁸⁻¹⁰ Convincing examples of this toxicity to the brain are seen in people who work with toxic chemicals; for example, sheep farmers who were exposed to organophosphate pesticides (in the course of dipping sheep to rid them of infestations) performed significantly worse than non-exposed farmers in tests to assess sustained attention and speed of information processing.¹¹

Studies show that exposure to pesticides and insecticides causes Parkinson's disease in humans by damaging the brain's cells of genetically susceptible people.¹²⁻¹⁵ An insecticide, dieldrin, is among the most likely culprits.¹⁶ Patients with PD have a reduced capacity for detoxification of these toxic compounds. Enzyme systems that metabolize these brain-damaging chemicals are a result of genetic traits. The concentrations of dieldrin compounds in the substantia nigra were significantly higher in PD tissues.¹⁴

Pesticides Bio-accumulate in Animals

The highest levels of pesticides are found in foods high on the food chain—meaning animal foods. Estimates are that 89% to 99% of the chemical intake into our body is from our food, and most of this is from foods high on the food chain: meat, poultry, eggs, fish, and dairy products.^{18,19} Fish and other marine life are especially important sources of brain-damaging chemicals like polychlorinated biphenyls (PCBs) and methylmercury (MeHg).²⁰

The scenario looks like this: Low concentrations of environmental chemicals are present in sea vegetables and in seawater. Fish consume these poisons; concentrate them in their own body fat; cows eat fishmeal, and concentrate these noxious wastes even more into their fat; then chickens eat dead cow remnants and the toxins become packed further into their flesh. Finally people get the strongest doses, as they are at the top end of the food chain. Even worse are the consequences for little people—the greatest concentrations of tissues damaging contaminants are delivered to babies nursing from pollutant-overloaded mothers. Understand that this accumulation is lifelong, and therefore, what you do as a child may come to haunt you as an adult in the form of birth defects for your children, cancer, and brain damage. Fortunately, eating a clean diet prevents exposure and helps these chemicals to leave the body.

A Starch-based Diet Helps People with Parkinson's Disease

Prevention of further progression of this form of neurologic deterioration would be expected from removal of the dietary causes.²¹ However, once the brain tissue is lost it should not be expected to regenerate. Prevention is key.

Dopamine production in the brain is reduced by poor food choices and enhanced when the diet is high in carbohydrates (starches) and low in animal proteins. Carbohydrate increases dopamine production in the brain by allowing easier passage of the dopamine precursor, tyrosine, through the blood-brain barrier into the fluids surrounding the nervous system (the cerebrospinal fluids).^{22,23} Meats, poultry, eggs, and dairy foods are high in heavy neutral amino acids that block the entry of the dopamine precursor, tyrosine, into the brain.

One case report has suggested a low-animal-food diet is beneficial for people who have already developed PD.²⁴ A 75-year-old man with PD for eight years changed to a quasi-vegan diet for two years. During this time his PD did not appear to have advanced, his dosage of PD medications (levodopa) did not increase, and his quality of life was reported to have improved—an atypical course for this disease.

A healthy diet can also be expected to result in loss of excess body fat, which will allow for improved mobility. People with PD often suffer with constipation, which is relieved by dietary fiber found in plant foods and by removal of dairy proteins, which paralyze the bowels.²⁵ Consider the total picture: Someone with PD needs to be as healthy as possible, and they especially need to avoid the problems, like obesity, type-2 diabetes, vascular insufficiency, arthritis, and bowel dysfunctions, known to be caused by the Western diet. You should not expect the brain tissues that have been lost to grow back; nor lost

functions to return. Slowing or stopping progression of the PD is your realistic goal.

A Low-animal-protein, Starch-based Diet Improves the Effectiveness of Medication

Dopamine deficiency is the hallmark feature in PD. Unfortunately, dopamine in the brain cannot be replaced by taking a dopamine pill because this natural chemical does not cross the blood-brain barrier to replenish cerebrospinal fluid. The discovery in 1968 of an isomer of dopamine, levodopa (L-dopa), was a major revolution in the management of PD, which still lasts today. L-dopa readily crosses the blood-brain barrier and then is converted into dopamine once it enters the nervous system. The medication is so specific that a "levodopa challenge test" can confirm a diagnosis of Parkinson's disease. If a patient's symptoms improve, then they are likely to have Parkinson's, ruling out other neurological diseases.

L-dopa and dietary proteins use the same transportation system in the intestine and the blood-brain barrier, competing for access to the blood and cerebrospinal fluid.²⁶ Therefore, a high protein diet, based on meats, dairy products, eggs, and fish results in a competition that reduces the effectiveness of the drug. Levodopa is often sold in combination with another medication, carbidopa, which slows the breakdown of levodopa. Examples include Sinemet, Parcopa, Atamet, and Stalevo. The effectiveness of L-dopa tends to decrease after four to five years of usage.

Patients are often advised to avoid protein (meat, poultry, fish and eggs) during the day and limit these foods to the evening meal in order to improve the effectiveness of their medication. However, eating these animal foods at the evening meal means the patient cannot move all night long— being able to turn over in bed, get up to use the bathroom, or adjust their bedclothes. The incorrect belief that animal foods are the only reliable source of "good" protein leads to this kind of mismanagement of people with PD. The truth is a starch-based [diet](#) (low in competing heavy neutral amino acids) provides all necessary proteins and amino acids and should be the diet of people with (and without) PD throughout each day and night.

Essential Tremors from Meat-Eating

Essential tremor (ET), a type of involuntary shaking with no known cause, is among the most prevalent neurological diseases, affecting 4.0% of individuals aged 40 years and older, and 6.3% of individuals 60 years and older. The tremor is most commonly in the hands, but may affect the head, eyelids, vocal cords, and any other muscles. Harmane is a potent, tremor-producing beta-carboline alkaloid found in high concentrations in muscle foods (beef, chicken and pork); cooking of these meats leads to further increases in concentrations.²⁷ Thus the amount of harmane in cooked meat is a function of cooking temperature and time. Pan-frying and grill/barbequing produce the highest concentrations. Elevated harmane in the blood is also due in part to a hereditarily reduced capacity to metabolize it into inactive substances.²⁷ You should not expect the brain tissues that have been lost to grow back; nor lost functions to return. Slowing or stopping progression of the tremors is your realistic goal.

Medications, such as beta-blockers (propranolol), tranquilizers (clonazepam) and antiseizure drugs (primidone), are recommended for treatment, but are of little benefit with significant side effects.

Detoxifying the Body with Starches

Eliminate foods high on the food chain (meats and dairy products) from your diet and replace them with foods low on the food chain (starches, vegetables, and fruits—preferably organically grown) in order to clean your body. The human body has detoxification systems that have evolved over 300 million years to protect animals from the natural toxins found in plants. These same systems will also rid your body of synthetic pollutants. These natural detoxifying compounds are found in plants, and they are also potent inhibitors of chemically induced cancer.²⁸⁻³¹ In addition, the energy required for the detoxifying processes is most effectively provided by clean-burning carbohydrates found in plants (meat, fish, poultry and vegetable oils have no carbohydrate and cheese has only miniscule amounts). Not surprisingly, malnutrition from under- and over-nutrition (such as when people eat the American diet) almost invariably leads to a reduced capacity to deactivate these pollutants and therefore increases their toxicity.³¹

Losing weight on any “diet” releases stored pollutants as the body fat is dissolved.³²⁻³⁴ This is good, especially when the diet you are using to cause the weight loss is low in pollutants and full of detoxifying substances. In no time at all consuming a healthy diet will clean your body of brain-damaging chemicals and restore the tissues in order to prevent PD and systemic damage.

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