Image Awareness
Wellness Institute
Parkinson's Disease

1271 High Street, Auburn, CA 95603 • Phone (530) 823-7092 • order line (800) 359-6091
Hours: Tues. – Fri. 10 a.m. – 4 p.m. • E-mail: mail@imageawareness.com web: www.ImageAwareness.com

June 2019 **Volume 15: Issue 2**

Introduction

In 1817 James Parkinson was the first person to describe what he called "paralysis agitans" in his work *An Essay on the Shaking Palsy*. The condition was later named Parkinson's disease in honor of the discoverer by Jean-Martin Charcot, the founder of modern neurology who has been called the "the Napoleon of the neuroses." In his work, Parkinson described six cases of the disease.

The disease is caused by the die-off of specialized nerve cells in the region of the brain that controls movement. This region is called the substantia nigra because it has a black appearance.

Parkinson's is the second most common neurological disorder after Alzheimer's disease and is considered incurable.

Many famous people have been diagnosed with the condition including Alan Alda, Linda Ronstadt, Michael J. Fox, Muhammad Ali, Janet Reno, astronaut Michael Clifford, Neil Diamond, and George H.W. Bush.

Causes of Parkinson's

Parkinson's can be caused by physical trauma to the brain as in the case of Muhammad Ali or chemical injury to brain cells. Up to 70% of the brain cells involved in Parkinson's are often dead before a diagnosis is made.

The connection between Parkinson's and pesticides began in 1982. In 1982, Dr. J. William Langston was working as the Director of Neurology at the Santa Clara Valley Medical Center in San Jose,CA, which had recently become a Stanford teaching facility.

One morning in July he received a call from the chief resident who said: "Dr. Langston, you have to come down here, I've never seen anything like it,and no one is sure what this patient has."

Langston was annoyed with the interruption, but agreed to come immediately given the resident's sense of urgency. That day and that patient would change his career.

When Langston arrived, he found a patient suffering with what looked like catatonic schizophrenia. The patient was totally unresponsive yet appeared to be alert. Langston concluded the patient had a textbook case of advanced Parkinson's disease. The problem was the the disease came on overnight providing a first class medical mystery.

A quick search with some good luck and the help of the media found six similar cases. These people had no relation to one another, but all had used a new "synthetic heroin" that had been introduced to the streets in northern California. This designer drug produced a condition which "... exhibited virtually all of the motor features of typical Parkinson's disease, including tremor (very severe in one), and asymmetry of findings. They even exhibited non-motor aspects of the disease such as facial seborrhea and mild deficits in higher cognitive function (e.g., executive function)."

The designer drug is known by the abbreviation MPTP. Research revealed that the drug was toxic to the zona compacta of the substantia nigra (the black appearing tissue in the brain). Further research found that a metabolite of MPTP proved to have a chemical structure almost identical to paraquat, an herbicide used worldwide.

Research showed that MPTP was not toxic itself, but it had the ability to bypass the blood brain barrier. Once in the brain is was transformed into toxic MPP+. MPP+ was taken up by cells that take up dopamine. The MPP+ then proceeds to damage or destroy the mitochondria in these dopamine responsive brain cells.Parkinson victims are known to

be deficient in dopamine receptors.

Two common agrochemicals have been associated with increased risk of Parkinson's, paraquat and maneb. Paraquat is used on crops while they are growning, while maneb is used after harvesting of crops to prevent spoilage. Rotenone, considered an organic pesticide because it is found in legumes, has also been found to increase the risk of Parkinson's disease. Cumulative exposure to these chemicals and others that do similar damage can lead to cumulative damage which results in Parkinson's disease.

In 2018, the University of Guelph researchers found that exposing neurons to agrochemicals prevented energy-producing mitochondria from moving to where they are needed within the cell. This resulted in depleting the neurons of energy and contributing to cell death.

Researchers found that a mutation in a gene called synuclein dramatically increased susceptibility to these pesticides. The mutation is common in those with Parkinson's. An individual with this gene mutation is susceptible to damage from chemical exposures at doses below the EPA reported lowest observed effect level. Aljpha-synuclein is a major constituent of the Lewy bodies which are the hallmark of Parkinson's disease.

There may be a wide variety of chemicals which have the ability to alter the alpha synuclein protein which contributes to Parkinson's. Genetic studies have found a mutation in the alpha-synuclein gene in families with Parkinson's.

The lesson of this history of Parkinson's is that commonly used herbicides and pesticides can seriously damage some people. Do everything possible to avoid acute or chronic exposure to toxic chemicals.

References:

Langston, J. W. The MPTP Story, *J Parkinsons Dis*. 2017;7(s1):S11-S19.

Langston, J. William, et al., . Rotenone, Paraquat and Parkinson's Disease. *Environmental Health Perspectives*, 2011, 119 (6): 866–72.

Morgan G. Stykel, et al., Nitration of microtubules blocks axonal mitochondrial transport in a human pluripotent stem cell model of Parkinson's disease. *The FASEB Journal*, 2018; fj.201700759RR DOI: 10.1096/fj.201700759RR

Polymeropoulos, Mihael H., et al, Mutation in the α-synuclein gene identified in families with Parkinson's disease, *Science* 27 Jun 1997; 276(5321): 2045-2047. DOI: 10.1126/science.276.5321.2045

Parkinson's graphic: Public Domain, https://commons.wikimedia.org/w/index.php?curid=892833

https://commons.wikimedia.org/wiki/File:Pesticide_spraying_in_spring.jpg

Biomagnification

How has the American food supply become so contaminated that its toxic substances are contributing to dementia, Alzheimer's and Parkinson's? The answer is biomagnification of toxins throughout the food chain.

Biomagnification begins with the growing of food crops. Conventionally grown foods are doused with pesticides and herbicides. Susceptible individuals can be negatively impacted by even these levels of contamination. For example, the Environmental Working Group tests food yearly and releases the results of the "Dirty Dozen" most contaminated foods. Eating large quantities of these foods could detrimentally affect some individuals. An additional burden can be added if pesticides or herbicides are sprayed in work, school, or home environments.

Despite the fact that genetically modified foods are promoted as being safer, they often contain higher residues of pesticides or herbicides than conventionally grown produce. Many of these foods are engineered to survive repeated applications of herbicides or to incorporate pesticides into each cell of the plant.

Pesticide drenched foods are often fed to farm animals. The fat-loving toxins in these foods concentrate in the fat of the animals. Cattle, for example, are often fed corn although the normal food of a cow is grass. The corn is often genetically modified. The contaminants in the corn concentrate not only in the meat of the animal, but also find their way into the milk, cheese, and ice cream products of the cow. Similarly, the eggs of chickens can be contaminated.

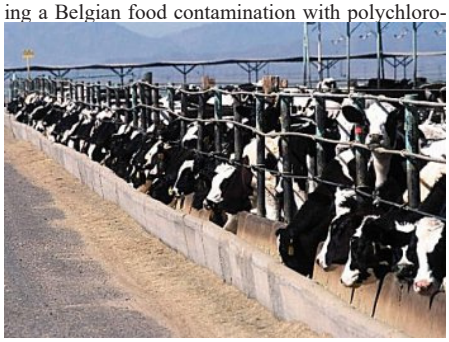
It gets worse. Farm animals are fed millions of tons of byproducts of the slaughterhouse. This made news when mad cow disease was discovered, but the little secret is that farm animals are still being fed the waste products of the slaughterhouse. Waste products of farmed fish are also fed to animals.

Genetic susceptibility to neurologic damage from pesticides varies greatly among individuals. Some people just happen to act like the proverbial canary in the coal mine

Giasson and Lee write, "Although genetic factors certainly contribute to vulnerability, the most important risk factor for PD is age, consistent with the idea that chronic exposure to low levels of noxious substances over time may drive a molecular chain of events that eventually leads to PD. Chronic effects may also be compounded by episodes of acute neuronal death, perhaps as a result of transient toxin exposure."

References:

Schepens, Paul J.C., Surprising findings following a Belgian food contamination with polychloro-



biphenyls and dioxins, *Environmental Health Perspectives*, February 2001;109(2):101-103.

Dorea, Jose, Vegetarian diets and exposure to organochlorine pollutants, lead, and mercury, *Am J Clin Nutr* 2004;80:237–8.

Langston, J. W. The MPTP Story, *J Parkinsons Dis*. 2017;7(s1):S11-S19.

Giasson, Benoit I., and Lee, Virginia M.Y., A new link between pesticides and Parkinson's disease, *Nature Neuroscience*, December 2000; 3(12): 1227 - 1228.

Cattle Feeding: By Original uploader was SlimVirgin at en.wikipedia - U.S. Environmental Protection Agency, Region 7 Office, Kansas City, KS. "What is a CAFO?", Public Domain, https://commons.wikimedia.org/w/index.php?curid=4175140

Flavonoids & Polyphenols

Numerous studies have linked pesticides to Parkinson's disease. Misfolded proteins in the brain have been linked to Alzheimer's and Parkinson's. In Alzheimer's the misfolded proteins are tau and beta amyloid. In Parkinson's it is the protein alpha synuclein .

In order to treat these conditions a compound must be able to transit the blood-brain barrier. One class of compounds has been shown to benefit these misfolded proteins in both Alzheimer's and Parkinsons. These are the polyphenol compounds. Polyphenol is a general term that includes flavonoids and similar substances.

A mouse study by Hartman published in 2006 found that pomegranate juice reduced the accumulation of beta-amyloid in an Alzheimer's model by 50%.

One ounce of NeoLife Tre provides the equivalent of 20 ounces of pomegranate juice without the sugars. This particular supplement is designed to be able to bypass the blood-brain barrier and provide antioxidant and anti-inflammatory activity in the brain.

Polyphenol compounds appear to have the same kind of benefit in studies related to Parkinson's as they do in the Alzheimer's model. Meng and associates write, "A variety of flavonoids inhibited alpha-synuclein fibrillation, and most of the strong inhibitory flavonoids were also found to disaggregate preformed fibrils." In other words, these flavonoids not only stopped the progression of nerve damage, but also had the potential to reverse it.

In 2014 Strathearn and associates found that berries like black currant and blueberries rich in polyphenols were particularly effective in protecting neurons in models of Parkinson's. These substances had the ability to minimize damage induced by the pesticide rotenone, a broad spectrum pesticide used as a model for Parkinson's.

References:

Langston, J. W. The MPTP Story, *J Parkinsons Dis*. 2017;7(s1):S11-S19.

Chorfa, Areski, et al., A variety of pesticides trigger in vitro α-synuclein accumulation, a key event in Parkinson's disease, *Arch Toxicol*, Oct. 19, 2014, DOI 10.1007/s00204-014-1388-2

Lee SJ, Lim HS, Masliah E, Lee HJ. Protein aggregate spreading in neurodegenerative diseases: problems and perspectives. *Neurosci Res*. 2011;70(4):339-48.

Hartman, Richard E., et al., Pomegranate juice decreases amyloid load and improves behavior in a mouse model of Alzheimer's disease, *Neurobiology of Disease,* 24 (2006) 506–515.

Meng, Xiaoyun, et al., Effects of various flavonoids on the alpha-synuclein fibrillation process, *Parkinson's Disease*, Volume 2010, Article ID 650794, 16 pages, http://dx.doi.org/10.4061/2010/650794

Meng, Xiaoyun, Molecular mechanisms underlying the flavonoid-induced inhibition of α-synuclein fibrillation, *Biochemistry*, 2009, 48 (34), pp 8206–8224.

Ma, Ji, et al., Interactions of Flavonoids with Biomacromolecules, *Current Organic Chemistry*, 2011, 15, 2627-2640.

Strathearn, K.E., et al. Neuroprotective effects of anthocyanin- and proanthocyanidin-rich extracts in cellular models of Parkinson's disease. *Brain Res*. 2014;1555:60-77.

By jchatoff from venice beach, usa - berries, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=6218166

CoQ10

A number of studies have suggested that Coenzyme Q10 is protective against the development of Parkinson's. Since the progression of the disease is associated with damage to the mitochondria where energy is produced in the cell this makes sense. CoQ10 provides protection from oxidative damage as energy is produced in the mitochondria.

Seet and associates tested varying levels of CoQ10 between 400 mg and 2400 mg a day. It was noted that these doses brought down markers of oxidative damage at a dosage range of 400-1200 mg. It was noted that at 2400 mg oxidative damage increased. Research has not defined an optimal level of intake for the nutrient in Parkinson's.

References:

Cleren C, Yang L, et al, Therapeutic effects of coenzyme Q(10) (Q(10)) and reduced CoQ(10) in the MPTP model of Parkinsonism, *J Neurochem*, 2007 Dec 8; [Epub ahead of print].

Seet, R.C., et al., Does high-dose coenzyme Q10 improve oxidative damage and clinical outcomes in Parkinson's disease? *Antioxid Redox Signal*. 2014 Jul 10;21(2):211-7. doi: 10.1089/ars.2013.5801

The Nicotine Effect

Dozens of studies have shown that smoking reduces the risk of Parkinson's. The protective factor appears to be the nicotine. Even secondhand smoke appears to be protective.

Most people are not going to take up smoking with the risks this entails to prevent Parkinson's. Fortunately, there is a means of getting a small amount of nicotine from some

IMAGE AWARENESS
WELLNESS INSTITUTE
1271 High Street, Auburn, CA 95603
Phone (530) 823-7092 order line (800) 359-6091
E-mail: mail@imageawareness.com
Visit our website! www.ImageAwareness.com

teas and from nightshade plants like peppers and tomatoes. Nicotine is a natural protective agent produced by these plants to ward off insects. Peppers have the highest nicotine content although some teas have more nicotine than nightshade plants. The protective effect of nicotine can be obtained from consuming these foods.

The benefit of foods containing nicotine is only observed in those who do not smoke which makes sense if nicotine is the protective factor.

References:

Quik, Maryka, et al., Chronic oral nicotine treatment protects against striatal degeneration in MPTP-treated primates, *Journal of Neurochemistry,* 2006, 98, 1866–1875.

Siegmund, Barbara, et al., Determination of the nicotine content of various edible nightshades (Solanaceae) and their products and estimation of the associated dietary nicotine intake, *J. Agric. Food Chem*., 1999, 47 (8), pp 3113–3120.

Picture of peppers: By Michelet-□□□ (talk) - Michelet-□□□ (talk), Public Domain, https://commons.wikimedia.org/w/index.php?curid=42555550

B Vitamins

Researchers have suggested that supplementation with B vitamins might protect neurons from toxin induced damage. The researchers concluded, "These results suggest that administration of high doses of B vitamins sufficient to elevate mitochondrial enzyme cofactors may be effective in preventing PD by reducing oxidative stress and improving mitochondrial function."

This paper reminded me of the story of Earl Pearson who suffered with heart disease, Parkinson's, and emphysema. His physician suggested high dose vitamin E and B complex. Over the next five years all of these conditions improved. He never had another heart attack (he had suffered two), his breathing improved to such an extent his physicians suggested he might have been misdiagnosed, and the Parkinson's symptoms improved. He had a relapse on the Parkinson's when he discontinued his vitamins and recovered again after beginning the supplements again, although the recovery was slow.

References

Jia, Haiqun, et al., Synergistic anti-Parkinsonism activity of high doses of B vitamins in a chronic cellular model, *Neurobiology of Aging, 2010;* 31: 636–646..

Dairy Intake

A recent study found an associationn between consumption of low-fat dairy products and Parkinson's. Dairy with the fat as found in nature did not appear to increase the risk for Parkinson's.

References

Hughes KC, Gao X, Kim IY, et al. Intake of dairy foods and risk of Parkinson's disease, Neurology 2017;89:46-52.

Web Resources

www.imageawareness.com

www.yourbodyssignlanguage.com

www.jimmcafee.com

Disclaimer

This publication contains the opinions and ideas of its author. It is intended to provide helpful and informative material on the subjects addressed in the publication. It is provided with the understanding that the author and publisher are not engaged in rendering medical, health, or any other kind of personal professional services in this newsletter. The reader should consult his or her medical, health or other competent professional before adopting any of the suggestions in this newsletter or drawing inferences from it.

The author and publisher specifically disclaim all responsibility for any liability, loss, or risk, personal or otherwise, which is incurred as a consequence, directly or indirectly, of use and application of any of the contents of this newsletter.