People with Parkinson's show altered iron levels in their brains

We have discussed in previous newsletter articles about the negative health effects of iron accumulation in the body, and how some researchers believe it may be a significant factor associated with the aging process. (in fact regularly donating blood can function as a very powerful anti-aging practice)

In this issue of our newsletter, we highlight an article from Medical Express which discusses research which suggests that individuals with Parkinson’s show altered iron levels in their brains.

There was also an excellent article on this topic published by the Life Extension Foundation in 2012:

Excess Iron and Brain Degeneration: The Little-Known Link

From this article:

“Unbound iron from age-related overload reacts volatilley with water and oxygen to produce highly reactive oxygen species or free radicals.19,41,42

These in turn damage cell membranes, DNA, mitochondria, and multiple tissues and organs”.4,73

“But it wasn’t only neurodegenerative diseases for which excessive iron accumulation was a risk. The UCLA researchers studied a group of healthy older adults, comparing memory and information-processing speed according to their brain iron levels. Those with the highest accumulations of iron in their brain grey matter had the poorest performance, especially among men”.16

“These findings led to a compelling study published in late 2011 demonstrating for the first time that limiting your body’s lifetime exposure to iron can in turn limit your risk of neurodegenerative brain disorders”.

So the key takeaway here:

Limiting iron accumulation as we age lessens our risk of developing neurodegenerative brain disorders
THE LINK BETWEEN EXCESS IRON AND BRAIN DEGENERATION

- Accumulation of iron in bodily tissues is an inevitable consequence of aging.
- Pathologic age-related iron overload damages cells and tissues and is a causative factor in numerous degenerative diseases, including liver fibrosis, cardiovascular disease, and cancer.
- Few doctors inform their patients of the dangers of high total-body iron distributions, nor do they test for total-body iron status.
- Excessive iron accumulations are found in affected brain areas of people with Alzheimer’s, Parkinson’s, and other neurodegenerative diseases.
- Even in normal older adults, people with higher brain iron accumulations perform more poorly on cognitive tests than do those with lower brain iron concentrations.
- A breakthrough UCLA study demonstrates that limiting lifetime exposure to iron can reduce brain iron accumulations.
- A number of nutrients can help reduce your body’s total exposure to iron through chelation (binding to free iron atoms) and antioxidant activity, including quercetin, curcumin, R-lipoic acid, and silymarin.

Phytochemicals which have been shown to chelate iron include:

- Phytic Acid (Inositol Hexaphosphate – IP6)
- Baicalin and Baicalein (active ingredients in Chinese Skullcap – Scutellaria baicalensis)
- Curcumin
- EGCG (Epigallocatechin gallate – a bioactive ingredient in green tea)
- Quercetin#
- Theaflavin (a bioactive ingredient in black tea)
- Genistein (an isoflavone that is described as an angiogenesis inhibitor and a phytoestrogen)
- Cranberry and Pomegranate*
- Milk Thistle (Silymarin and Silibinin)
- Lipoic Acid and Carnitine+

#Quercetin, a flavonoid found in berries and other plants, chelates iron atoms as powerfully as the prescription drugs used in managing severe cases of iron overdose.22,23

*Cranberry and pomegranate extracts rich in polyphenols have now been shown to have potent iron-chelating capabilities, in some cases completely suppressing iron-catalyzed oxidant reactions.22,29
A form of carnitine called \textit{L-propionyl carnitine} is known to improve heart muscle recovery after a heart attack. It acts as an energy source for heart muscles, and also as an anti-free radical agent in damaged heart tissue; the latter effect has now been shown to be the result of iron chelation.\textsuperscript{65} Another form, \textit{acetyl-L-carnitine}, exhibits powerful antioxidant effects that reverse the impact of iron-induced oxidative stress in human cells.\textsuperscript{67}

\textit{Lipoic acid} chelates iron in \textit{lysosomes}, cellular components that are a site of iron storage, effectively preventing iron-induced oxidative damage.\textsuperscript{68,69} This nutrient also reduces iron uptake by cells in the lens of the eye, suggesting a potential role in preventing cataract formation.\textsuperscript{70}

Biotics offers a very effective oral chelation formulation in addition to some formulations including the documented iron chelating compounds:

\textbf{CHELA-ZYME - Chelates Metals}

Chela-Zyme’s efficacy is based upon the porphyrin ring structure of mulberry, beet and spinach.

We have previously written a newsletter article on this topic:

\textbf{Why the Porphyrin Ring Structure is Such an Effective Oral Heavy Metals Chelating Compound}

\textbf{Categories:} Metals-Detoxification, Vegetarian

\textbf{Description:} "Oral" Metals Detoxification with the addition of Alpha Lipoic Acid.

\textbf{Indications:} To detoxify up to 12 heavy metals, for oral chelation and removal of atherosclerotic plaque, one of the most cost effective agents available, Chela-Zyme displays a powerful chelating mechanism by utilizing the porphyrin ring around spinach, beet and mulberry there by covalently binding to toxic metals, rendering them inert and disposing metals through the large intestine. It is utilized as a "provocative" agent for 7 days with a Doctor's Data toxic metals "fecal" test followup. (See "Clinician's Resources" for detailed information.

Additional Information (source Wikipedia): Because chlorophyll does not dissolve in water, food sources of chlorophyll do not bind to mutagenic substances to a significant extent. Chlorophyllin, being water-soluble, can significantly bind to environmental mutagens such as the polycyclic aromatic hydrocarbons benzo[a]pyrene\textsuperscript{3} and dibenzo{a,i}pyrene.\textsuperscript{1} Chlorophyllin binds to mutagens twenty times better than resveratrol and thousands of times better than xanthines.\textsuperscript{4}

\textbf{Ingredients:} Each tablet supplies:

Vitamin C (as ascorbic acid) 120 mg
Spinach (Spinicia oleracea) 150 mg
Mulberry extract (Copper sodium chlorophyllin) 8 mg
Beet (Betavulgaris-leaf) 6 mg
RS(DL) - alpha Lipoic Acid 25 mg
NMI: Pea Starch, Sodium carboxymethyl cellulose, magnesium Stearate, steric acid

**Suggestion:** 6 tablets two times daily on an empty stomach or as directed.
Add Intenzyme Forte with inflammation.
Add ADP if Dysbiosis is present
Use with Multi-Mins™ Iron & Copper Free in long-term chelation.

You can access actual Doctor’s Data post provocative metals panels in the log in Resources section of the Biotics Canada website if you wish to review how effective this formulation is for chelating a range of metals.

**EGCG-200 mg (GREEN TEA EXTRACT)**

**Lipoic Acid Plus**

**Acetyl-L-Carnitine**

**KappArest**

In my experience, some Practitioners may lack confidence in managing metals chelation and feel if they do not get IV Chelation certification then they need to refer patients out who may need it (and arguably every patient that comes to see us needs metals chelation to some degree).

Managing metals detox with oral chelation is not difficult: once you understand the process and protocols, and we can help you with this: in the Resources section of the Biotics Canada website is a copy of the “Advanced Detox” presentation which reviews oral heavy metals chelation information and protocols – and we are glad to set up a personal orientation for you on this material: if you are interested, contact myself or the Biotics Head Office.

Following is the article from Medical Express.

Regards,

Rob Lamberton

*Robert Lamberton Consulting*
Functional Medicine Consultant
Nutritional Therapy Practitioner (NTP)
Certified Light/Darkfield Microscopy Nutritionist
Product Formulator of Professional Nutraceutical Products
Author of the Biotics Research Educational Newsletter for Doctors

Contributing Writer / Advisory Board Member:

Nutricula: The Science of Longevity Journal
Healthy Organic Woman Magazine

Twitter: rob_lamberton  Skype: larch60 Facebook: rlamberton

LinkedIn ID

Email: rob@cuttingedgenaturals.com

Phone: 778-227-4952

Copyright © 2016 R. V. Lamberton & Associates, All rights reserved.
DZNE researchers have found altered iron levels in the brains of people with Parkinson’s. With excess iron in some areas and decreased iron content in others. For example, iron concentration in the “substantia nigra” – a brain area involved in movement disorders – is increased, while other brain areas have a decreased iron content.

Iron occurs naturally in the human body. However, in people with Parkinson's disease it distributes in an unusual way over the brain. This is the result of a study by the DZNE that has been published in the journal *Brain*. Researchers headed by Professor Peter Nestor applied a special type of magnetic resonance imaging (MRI) allowing them to map iron levels in the entire brain—it is the first time this is done in Parkinson's disease.

This approach could improve the diagnosis of Parkinson's and shine new light on the involved disease mechanisms.

Parkinson's is a neurodegenerative disease characterized by movement disorders and potentially dementia at a later stage. Pathological hallmarks include damage to neurons and the presence of a protein called "alpha-synuclein". However, the underlying disease mechanisms are far from being fully understood. "As yet we don't know the causes for Parkinson's. However, iron-mediated oxidative stress has been proposed as a potential pathomechanism," says Julio Acosta-Cabronero, a postdoc researcher at Nestor's lab at the DZNE's Magdeburg site and leading author of the present publication. "For this reason, we looked for ways of mapping iron levels in the whole brain. This has not been done before in Parkinson's. To date, iron analysis was limited to specific regions."

Iron is indispensable for the human metabolism. It manifests e. g. in red blood cells, enzymes and particular proteins that serve as an iron deposit. However, iron is also potentially harmful...
as it is able to trigger production of reactive molecular species that may cause "oxidative stress" and ultimately damage to neurons.

**Mapping magnetic properties**

For the current study, the DZNE researchers teamed up with colleagues from the University Magdeburg’s neurology department. Together, they examined the brains of 25 persons with Parkinson's and 50 healthy subjects by using a special MRI technique called QSM, which is the acronym for "quantitative susceptibility mapping".

QSM is a quite recent development. As with conventional MRI, it is non-invasive and relies on a combination of magnetic fields, electromagnetic waves and analysis software to generate pictures of the insides of the **human body**. However, QSM benefits from raw data usually discarded in conventional MRI. As a consequence, QSM can probe a magnetic parameter indicating metallic presence. "QSM shows how magnetic susceptibility varies across the brain. In our study, this is mainly caused by local variations in iron concentration. The bottom line is that we are mapping the spatial distribution of iron in the brain," Acosta-Cabronero explains.

"MRI in neurodegenerative diseases has mostly focused on measuring the degeneration itself, meanwhile we know extremely little about its causes. We hope that by probing with new approaches such as whole-brain QSM, we may be able to get clues to the mechanisms of disease," Peter Nestor says.

By matching the brain scans of patients and healthy controls, the researchers were able to identify pathological changes. "In Parkinson's patients we found excess iron, as expected from previous studies, in the substantia nigra but also in extensive areas of the neocortex," Nestor says.

In contrast, standard MRI showed no significant differences between people affected by Parkinson's and healthy study participants. In addition, QSM revealed anomalies also in areas that until now have attracted little interest in Parkinson's. "There is a region in the lower brain called dentate nucleus, which is normally iron rich. Yet, our whole-brain approach indicated decreased iron content in this area in Parkinson's patients - extremely so in some individuals - highlighting how this method can open new avenues of investigation in Parkinson's disease," Nestor says.

**Potential biomarkers**

This approach, the neuroscientist believes, might also be suitable for clinical routine: "QSM relies on measurement data that standard MRI does not make use of. However, most clinical scanners would in principle be able to acquire and save this information for further processing. Therefore, whole-brain maps that reflect the landscape of magnetic susceptibility could
potentially serve as biomarkers for disease. In other words: QSM might help to improve the diagnosis of Parkinson's and related disorders."

**Explore further:** [Accelerated MRI brain mapping technique to improve neurodegenerative diagnosis](#)


**Journal reference:** *Brain*

**References**

**Original Publication**


The German Center for Neurodegenerative Diseases (DZNE) investigates the causes of diseases of the nervous system and develops strategies for prevention, treatment and care. It is an institution within the Helmholtz Association of German Research Centres with nine sites across Germany (Berlin, Bonn, Dresden, Göttingen, Magdeburg, Munich, Rostock/Greifswald, Tübingen and Witten). The DZNE cooperates closely with universities, their clinics and other research facilities.


**Life Extension Magazine**

**Excess Iron and Brain Degeneration: The Little-Known Link**

[Future Med Chem](http://www.future-medchem.com). Author manuscript; available in PMC 2013 Nov 8.

Published in final edited form as:

[Future Med Chem. 2009 Dec; 1(9): 1.4155/fmc.09.121.](http://dx.doi.org/10.4155/fmc.09.121)

doi: [10.4155/fmc.09.121](http://dx.doi.org/10.4155/fmc.09.121)

PMCID: PMC3821171

NIHMSID: NIHMS472518

**Synthetic and natural iron chelators: therapeutic potential and clinical use**

[Heather C Hatcher, 1 Ravi N Singh, 1 Frank M Torti, 1,3 and Suzy V Torti](http://www.future-medchem.com) 1,2,3,†