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FUNCTIONAL MEDICINE PSYCHIATRY & DEMENTIA

WALNUT CREEK, CA

DEMENTIA DEMYSTIFIED: A Functional Medicine Approach to Dementia and Neurodegenerative Disorders

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- ▶ Functional Medicine Psychiatry and Dementia
 - ▶ Walnut Creek, CA
 - ▶ www.BayAreaWellness.net
 - ▶ www.DementiaDemystified.com

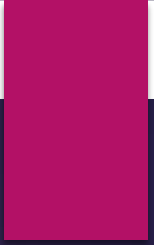


Functional Medicine

NEW PARADIGM FOR MEDICINE

DISCOVER THE ROOT CAUSES OF ILLNESS

ASKS WHY – WHY DOES THE PERSON HAVE THIS DISEASE? WHAT HAS CAUSED IT?



**Alzheimer's Disease is a neurodegenerative disorder
– but not a mysterious, untreatable brain disorder.**

**It is a reversible multisystem illness that occurs due
to toxins and Infections and inflammation and lack
of hormones and other diet and lifestyle factors.**

It has a strong auto-immune component as well.



There are reasons Neurodegeneration happens.

When we find and address all of the driving factors, we gain traction in stopping and reversing the degenerative process.

ALZHEIMER'S IS A MULTI-FACTORIAL DISEASE

Contributing Factors in Dementia:

**Metabolic, Nutritional, Toxic, Inflammatory,
Infectious, Autoimmune, and/or withdrawal of
Trophic Hormones**



Neuroplasticity:

The amazing capacity our brain has for regeneration when we remove the offending factors.

Starting a Protocol to Reverse Cognitive Decline

DIET

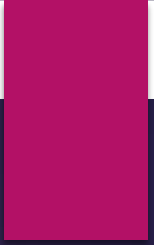
- WHOLE FOODS, NUTRIENT DENSE, GLUTEN/GRAIN FREE, AUTO-IMMUNE
- KETOGENIC IF APPROPRIATE

EXERCISE (INCREASES BDNF)

BRAIN TRAINING

MEDITATION/MINDFULNESS

SLEEP



**Dementia is both
PREVENTABLE and TREATABLE
when we find and correct the
underlying causes.**

Nutrient Deficiencies that Increase Dementia Risk

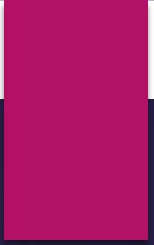
- VITAMIN D
- VITAMIN E
- MAGNESIUM
- B12
- ZINC
- COPPER
- COQ10

Mitochondrial Nutrients

- COQ10
- ACETYL L-CARNITINE
- NAC (N-ACETYL CYSTEINE)
- GLUTATHIONE
- R-LIPOIC ACID

Other Factors to Investigate:

- **TOXINS**
- **INFECTIONS**
- **LACK OF HORMONES**



**Alzheimer's Dementia is a
Neurodegenerative Disorder
characterized by
Amyloid Plaques and
Neurofibrillary Tangles (aka Tau beta).**



**Amyloid Hypothesis is not useful for treatment –
Amyloid is a downstream effect.**

**Amyloid is secreted to protect the brain tissue in
response to a hostile provocation.**

**Treatment goal is to stop the attack, rather than
remove the Amyloid, which does not work.**

Genes that lead to a More Exuberant Amyloid Response

- **APO E4**
- **PRESENILIN-1 (PS1)**
- **AMYLOID PRECURSOR PROTEIN (APP)**



Alzheimer Genetics: Genes Do Not Equal Destiny!

We have control of the epigenetic factors that turn the genes on and off, and cause deposition of the Amyloid.

Hormone Brain Receptors

- ESTROGEN
- PROGESTERONE
- TESTOSTERONE
- PREGNENOLONE
- DHEA
- BDNF (BRAIN DERIVED NEUROTROPHIC FACTOR)
- THYROID HORMONES
- VITAMIN D
- VITAMIN B12

Hormones in Brain:

- **NEUROPROTECTIVE**
- **NEURO-STEROIDS**
- **NEUROTRANSMITTERS**

Estrogen

- SHUTTLES GLUCOSE INTO BRAIN
- BINDS RECEPTORS IN PREFRONTAL CORTEX, HIPPOCAMPUS, BASAL FOREBRAIN, AND STRIATUM
- ESSENTIAL FOR CONSOLIDATION OF MEMORIES
- PRODUCED IN THE HYPOTHALAMUS, EVEN AFTER MENOPAUSE

Progesterone

- ALSO SECRETED BY THE BRAIN
- AFFECTS MYELIN PRODUCTION
- PROMOTES GROWTH AND REPAIR OF MYELIN SHEATH AFTER INJURY
- HIGH-DOSE PROGESTERONE FOR 3 DAYS AFTER TBI OR STROKE HELPFUL FOR DECREASED MORTALITY AND BETTER COGNITIVE RECOVERY
- CONVERTS TO ALLOPREGNANOLONE AND BINDS GABA RECEPTORS – HELPS SLEEP AND ANXIETY, AS WELL AS MEMORY

Hormones are Trophic for the Brain

- IATROGENIC DEMENTIA: FINASTERIDE
- BLOCKS CONVERSION OF PROGESTERONE TO ALLOPREGNANOLONE AND TESTOSTERONE TO DIHYDROTESTOSTERONE
- CAN DAMAGE COGNITION AND LEAD TO NEURODEGENERATION

Hormones are Trophic for the Brain

- LACK OF ESTROGEN ALSO LEADS TO COGNITIVE DECLINE AND NEURODEGENERATION IN SOME WOMEN
- NATALIE RASGON, MD AT STANFORD: RANDOMIZED WOMEN ON HRT X 10 YEARS TO STOP OR CONTINUE; FOLLOWED 2 YEARS
- THE WOMEN WHO CONTINUED THEIR HORMONE REPLACEMENT HAD PRESERVATION OF THE FRONTAL AND CORTISOL METABOLISM
- THE WOMEN RANDOMIZED TO STOP THE HORMONES ALL EXPERIENCED A DECLINE, EVIDENCED BY FDG-PET SCAN.

Hormones are Trophic for the Brain

- MANY STUDIES WITH EVIDENCE OF THE TROPHIC NATURE OF THESE HORMONES FOR THE BRAIN AND COGNITION.
- ALSO STUDIES SUPPORTING THE USE OF HORMONES FOR HEALING FROM TBI AND STROKE.
- EASY TO TEST ALL OF THESE VARIOUS HORMONES AND REPLACE THE LEVELS TO THE MID-POINT OF A THERAPEUTIC RANGE.
- ESTROGEN, PROGESTERONE, FREE TESTOSTERONE, SHBG, DHEA-S, PREGNENOLONE, TFTS

Replacing Bioidentical Hormones

- MEASURE BLOOD LEVELS TO ASSURE PATIENTS ARE IN A THERAPEUTIC RANGE.
- TRANSDERMAL BIOIDENTICAL ESTROGEN DOES NOT INCREASE RISKS FOR BREAST AND UTERINE CANCER OR BLOOD CLOTS
- NEW STUDIES ARE SHOWING THAT IT MIGHT ACTUALLY BE PROTECTIVE FOR THESE TYPES OF CANCERS WHEN A WOMAN HAS ALREADY HAD BREAST CANCER.
- EASILY OBTAINED IN THE FORM OF THE PRESCRIPTION ESTROGEN PATCH OR COMPOUNDED ESTRADIOL CREAM

HPA Axis Disrupted By:

- LACK OF TROPHIC HORMONES
- HEAD TRAUMA
- CHEMICAL TOXINS
- HEAVY METALS
- INFECTIONS

I-Cubed: Inflammation/Infection/ Immune

- ALL OF THESE CONDITIONS CAN DESTROY THE BRAIN
- INFECTION ACTIVATES THE IMMUNE SYSTEM
- ACTIVATION OF THE IMMUNE SYSTEM LEADS TO INFLAMMATION

Infections Inflammation and Disrupt the HPA Axis – Affect Hormone Levels

- NEUROPSYCHIATRIC LYME DISEASE
- REACTIVATED OR NEW EBV
- MYCOTOXINS FROM TOXIC MOLD
- OTHERS

Syphilis and Lyme Disease

- BOTH ARE SPIROCHETES THAT AFFECT THE BRAIN
- MIGRATE TO THE BRAIN AND GROW SLOWLY OVER MANY YEARS
- CAN PRESENT WITH COGNITIVE PROBLEMS WHEN ENOUGH BRAIN TISSUE IS DESTROYED

New Ways to Detect Lyme Disease

- T-CELL RESPONSE (ARMIN LABS IN GERMANY)
- PCR TESTING (RISK OF CROSS-CONTAMINATION)
- NEW WESTERN BLOT TESTS THAT LOOK AT INCREASED NUMBERS OF BORRELIA SPECIES

Infections Linked with Cognitive Decline

- *LYME*
- *BABESIA*
- *BARTONELLA*
- *EHRlichia/ANAPLASMA*
- *EBV*
- *HSV 1/2*
- *HHV-6*
- *HHV-7*
- *TOXOPLASMOSIS*
- *MYCOPLASMA*
- *CMV*

Viruses and Dementia

- **TWO PAPERS PUBLISHED IN 2018 IN NEURON HAVE IMPLICATED HERPESVIRUSES HHV-6A, HHV-7 AND HSV1 IN THE DEVELOPMENT OF ALZHEIMER'S.**
- **HHV-6A, IN PARTICULAR, WAS FOUND TO BE A KEY VIRAL MODULATOR IN AD.**
- **THESE VIRUSES ACCELERATE B AMYLOID DEPOSITION AND INDUCE TAU B FIBRILLIZATION**
- **PROGRESSION OF AD CORRELATES WITH INCREASED LEVELS OF HSV1, HHV-6, AND HHV-7 ACROSS MULTIPLE BRAIN REGIONS.**
- **A THIRD 2018 PAPER: J OF ALZHEIMER'S DISEASE - WHEN PATIENTS ARE TREATED AGGRESSIVELY WITH ANTIVIRAL MEDICATIONS, THE RELATIVE RISK OF DEMENTIA WAS REDUCED BY A FACTOR OF 10.**

Mycotoxins from Toxic Mold

- MANY PEOPLE CAN CLEAR MYCOTOXINS EASILY
- SOME CANNOT ELIMINATE THE MYCOTOXINS, WHICH STAY IN THE BODY AND KEEP TRIGGERING THE IMMUNE SYSTEM
- INHALED MYCOTOXINS CAN TRAVEL THROUGH THE POROUS CRIBRIFORM PLATE AT BACK OF NOSE TO THE BRAIN
- CAN TEST NEUROPEPTIDE LEVELS AFFECTED BY MYCOTOXINS AND/OR LYME (CIRS LABS – CHRONIC INFLAMMATORY RESPONSE SYSTEM) – QUEST AND LABCORP
- HAVE HAD PATIENTS UNABLE TO TALK OR FEED THEMSELVES RECOVER AFTER REMOVING AND TREATING FOR MOLD

Chemical Toxins and Heavy Metals

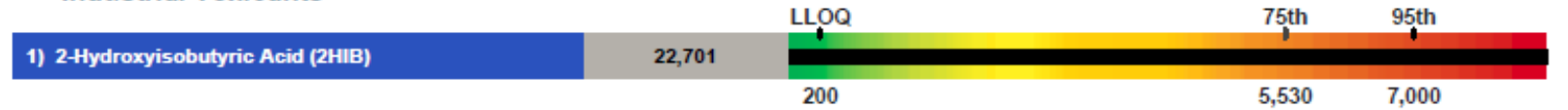
- DISRUPT THE BRAIN FUNCTION AND HPA AXIS
- CAUSE CANCER, ENDOCRINE DISRUPTION, NEURODEGENERATION
- GREAT PLAIN LABS TOX TEST
- DOCTORS DATA TOXIC METALS TEST – USE DMSA AS CHELATOR TO PROVOKE THE METALS (DO PRE AND POST TESTS)
- CAN DETOX CHEMICALS BY SAUNA/SWEATING
- CAN DETOX METALS WITH DMSA OR EDTA + BINDERS (MODIFIED CITRUS PECTIN, CHARCOAL, CLAY, CHLORELLA)
- CAN SEE RAPID IMPROVEMENT IN COGNITION FOR SOME PEOPLE WHEN CHELATING HIGH LEAD

Industrial Toxicants

Toxic Compounds

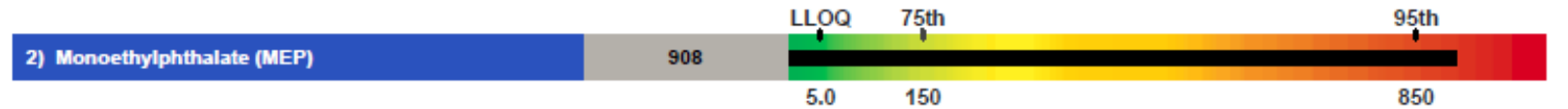
Metabolite	Result µg/g creatinine	Percentile
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Industrial Toxicants



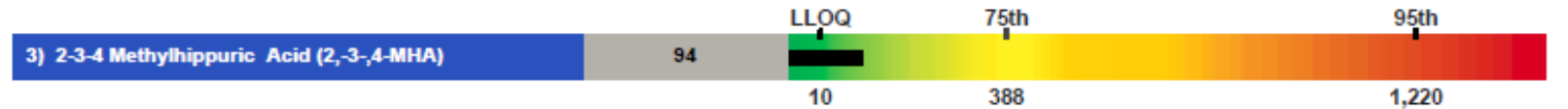
Parent: MTBE/ETBE

MTBE and ETBE are gasoline additives used to improve octane ratings. Exposure to these compounds is most likely due to groundwater contamination, inhalation or skin exposure to gasoline or its vapors, and exhaust fumes. MTBE has been demonstrated to cause hepatic, kidney, and central nervous system toxicity, peripheral neurotoxicity, and cancer in animals. Very high values have been reported in genetic disorders. Because the metabolites of these compounds are the same, ETBE may be similarly toxic.



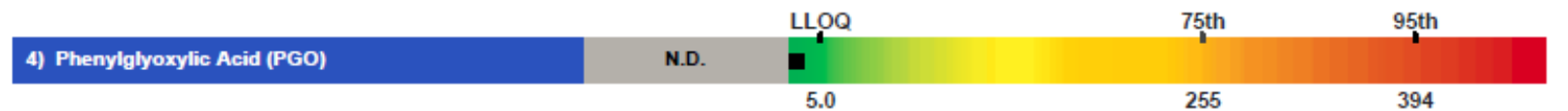
Parent: Diethylphthalates

Phthalates may be the most widespread group of toxins in our environment, commonly found in many bath and beauty products, cosmetics, perfumes, oral pharmaceuticals, insect repellants, adhesives, inks, and varnishes. Phthalates have been implicated in reproductive damage, depressed leukocyte function, and cancer. Phthalates have also been found to impede blood coagulation, lower testosterone, and alter sexual development in children. Low levels of phthalates can feminize the male brain of the fetus, while high levels can hyper-masculinize the developing male brain.



Parent: Xylene

Xylenes (dimethylbenzenes) are found not only in common products such as paints, lacquers, pesticides, cleaning fluids, fuel and exhaust fumes, but also in perfumes and insect repellents. Xylenes are oxidized in the liver and bound to glycine before eliminated in urine. High exposures to xylene create an increase in oxidative stress, causing symptoms such as nausea, vomiting, dizziness, central nervous system depression, and death. Occupational exposure is often found in pathology laboratories where xylene is used for tissue processing.



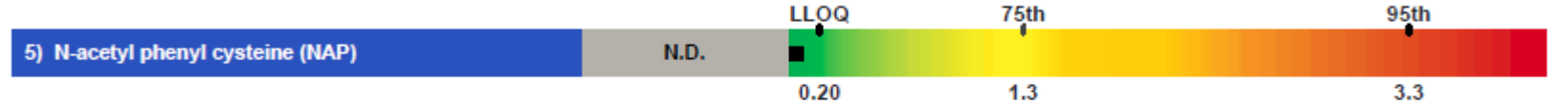
Parent: Styrene/Ethylbenzene

Styrene is used in the manufacturing of plastics, in building materials, and is found in car exhaust fumes. Polystyrene and its copolymers are widely used as food-packaging materials. The ability of styrene monomer to leach from polystyrene packaging to food has been reported. Occupational exposure due to inhalation of large amounts of styrene adversely impacts the central nervous system, causes concentration problems, muscle weakness, fatigue, and nausea, and irritates the mucous membranes of the eyes, nose, and throat.

Toxic Compounds

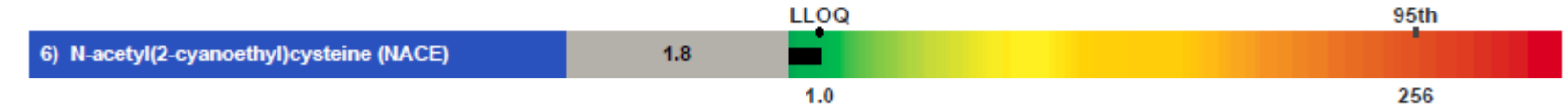
Toxic Compounds

Metabolite	Result µg/g creatinine	Percentile
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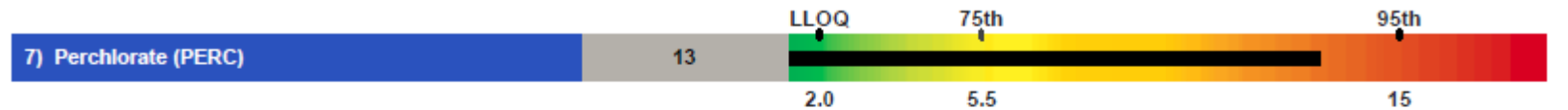
Parent: Benzene

Benzene is an organic solvent that is widespread in the environment. Benzene is a by-product of all types of industrial processes and combustion, including motor vehicle exhaust and cigarette smoke, and is released by outgassing from synthetic materials. Benzene is an extremely toxic chemical that is mutagenic and carcinogenic. High exposures to benzene cause symptoms of nausea, vomiting, dizziness, lack of coordination, central nervous system depression, and death. It can also cause hematological abnormalities.



Parent: Acrylonitrile

Acrylonitrile is a colorless liquid with a pungent odor. It is used in the production of acrylic fibers, resins, and rubber. Use of any of these products could lead to exposure to acrylonitrile. Smoking tobacco and cigarettes is another potential exposure. Exposure to acrylonitrile can lead to headaches, nausea, dizziness, fatigue, and chest pains. The European Union has classified acrylonitrile as a carcinogen.



Parent: Perchlorate

This chemical is used in the production of rocket fuel, missiles, fireworks, flares, explosives, fertilizers, and bleach. Studies show that perchlorate is often found in water supplies. Many food sources are also contaminated with percholate. Percholate can disrupt the thyroid's ability to produce hormones. The EPA has also labeled perchlorate a likely human carcinogen. Patients that are high in perchlorate can use a reverse osmosis water treatment system.



Parent: Diphenyl Phosphate

This is a metabolite of the organophosphate flame retardant triphenyl phosphate (TPHP), which is used in plastics, electronic equipment, nail polish, and resins. TPHP can cause endocrine disruption. Studies have also linked TPHP to reproductive and developmental problems.

Toxic Compounds

Toxic Compounds

Metabolite	Result µg/g creatinine	Percentile		
9) 2-hydroxyethyl mercapturic (HEMA)	7.5	LLOQ 0.80	75th 1.7	95th 4.8

Parent: Ethylene oxide, Vinyl chloride, Halopropane

High HEMA may be due to exposure to ethylene oxide, which is used in many different industries including agrochemicals detergents, pharmaceuticals, and personal care products. Ethylene oxide is also used as a sterilant on rubber, plastics, and electronics. Chronic exposure to ethylene oxide has been determined to be mutagenic to humans. Multiple agencies have reported it as a carcinogen. Studies of people exposed to ethylene oxide show an increased incidence of breast cancer and leukemia. Ethylene oxide may be difficult to detect since it is odorless at toxic levels.

High HEMA may also due to exposure to vinyl chloride, an intermediate in the synthesis of several major commercial chemicals, including polyvinyl chloride, and used in the past as an aerosol propellant. Exposure to vinyl chloride has been associated with increased incidence of autism. High concentrations of vinyl chloride may cause central nervous system depression, nausea, headache, dizziness, liver damage and liver cancer, degenerative bone changes, thrombocytopenia, enlargement of the spleen and even death. To reduce exposure to vinyl chloride, eliminate use of plastic containers for cooking, reheating, eating or drinking (especially warm or hot) food or beverages. Replace these containers with glass, paper, or stainless steel whenever possible. Elimination of vinyl chloride can also be accelerated by sauna treatment, the Hubbard detoxification protocol employing niacin supplementation, vitamin B-12 therapy, by glutathione (reduced) supplementation (oral, intravenous, transdermal, or precursors such as N-acetyl cysteine [NAC]).

10) N-acetyl(propyl)cysteine (NAPR)	72	LLOQ 4.0	75th 11	95th 46
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Parent: 1-bromopropane

1-bromopropane is an organic solvent used for metal cleaning, foam gluing, and dry cleaning. Studies have shown that 1-BP is a neurotoxin as well as a reproductive toxin. Research indicates that exposure to 1-BP can cause sensory and motor deficits. Chronic exposure can lead to decreased cognitive function and impairment of the central nervous system. Acute exposure can lead to headaches.

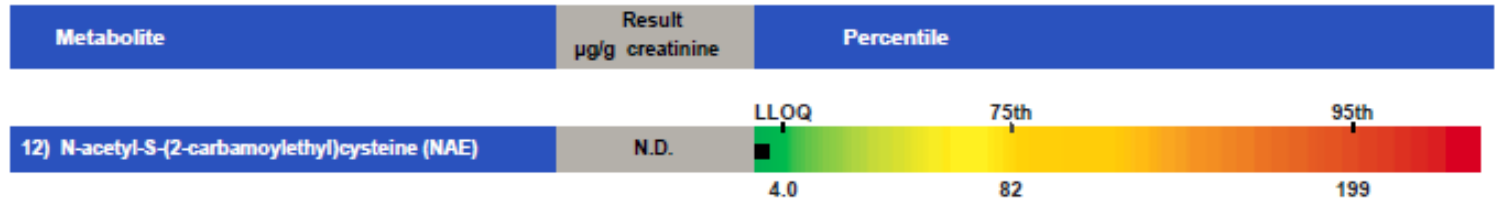
11) N-acetyl(2-hydroxypropyl)cysteine (NAHP)	532	LLOQ 4.0	75th 101	95th 403
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Parent: Propylene oxide

This chemical is used in the production of plastics and is used as a fumigant. Propylene oxide is used to make polyester resins for textile and construction industries. It is also used in the preparation of lubricants, surfactants, and oil demulsifiers. It has also been used as a food additive, an herbicide, a microbicide, an insecticide, a fungicide, and a miticide. Propylene oxide is a probable human carcinogen.

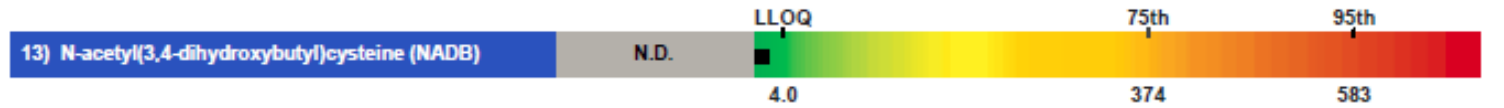
Toxic Compounds

Toxic Compounds



Parent: Acrylamide

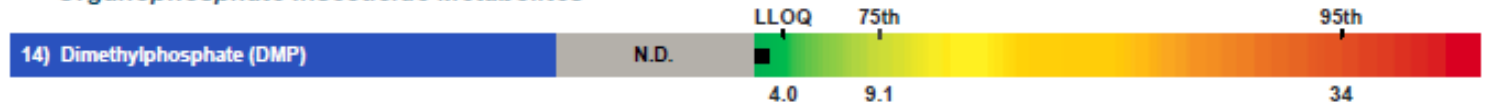
Acrylamide can polymerize to form polyacrylamide. These chemicals are used in many industrial processes such as plastics, food packaging, cosmetics, dyes, and treatment of drinking water. Food and cigarette smoke are also two major sources of exposure. Acrylamide has been found in foods like potato chips and French fries. This is because asparagine, an important amino acid for central nervous system function, can produce acrylamide when cooked at high temperature in the presence of sugars. Foods rich in asparagine include asparagus, potatoes, legumes, nuts, seeds, beef, eggs, and fish, and are potential sources of exposure to acrylamide. High levels of acrylamide can elevate a patient's risk of cancer. In addition, acrylamide is known to cause neurological damage.



Parent: 1,3 butadiene

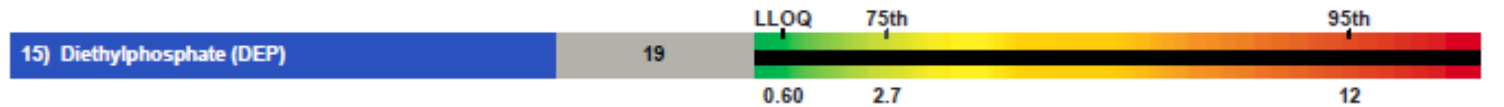
This is a chemical made from the processing of petroleum. It is often a colorless gas with a mild gasoline-like odor. Most of this chemical is used in the production of synthetic rubber. 1,3 butadiene is a known carcinogen and has been linked to increased risk of cardiovascular disease. Individuals that come into contact with rubber, such as car tires, could absorb 1,3 butadiene through the skin. The increased use of old tires in the production of crumb rubber playgrounds and athletic fields is quite concerning since soccer players on such fields have increased cancer rates.

Organophosphate Insecticide Metabolites



Parent: Organophosphates

Organophosphates are one of the most toxic groups of substances in the world, primarily found in pesticide formulations. They are inhibitors of cholinesterase enzymes, leading to overstimulation of nerve cells, causing sweating, salivation, diarrhea, abnormal behavior, including aggression and depression. Children exposed to organophosphates have more than twice the risk of developing pervasive developmental disorder (PDD), an autism spectrum disorder. Maternal organophosphate exposure has been associated with various adverse outcomes including having shorter pregnancies and children with impaired reflexes.



Parent: Organophosphates

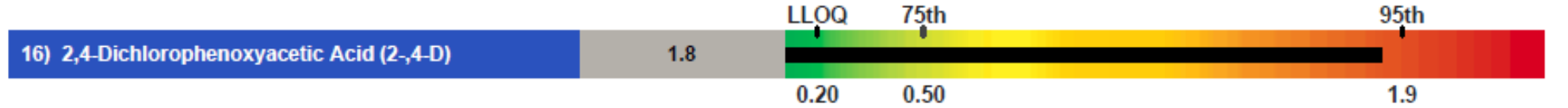
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Herbicide S

Toxic Compounds

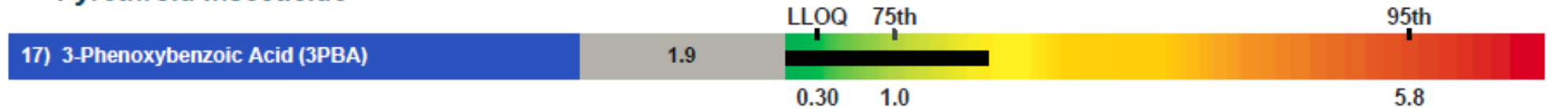
Metabolite	Result µg/g creatinine	Percentile
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Herbicide



2,4-Dichlorophenoxyacetic Acid (2,4-D) is a very common herbicide that was a part of Agent Orange, which was used by the U.S. in the Vietnam War. It is most commonly used in agriculture on genetically modified foods, and as a weed killer for lawns. Exposure to 2, 4-D via skin or oral ingestion is associated with neuritis, weakness, nausea, abdominal pain, headache, dizziness, peripheral neuropathy, stupor, seizures, brain damage, and impaired reflexes. 2, 4-D is a known endocrine disruptor, and can block hormone distribution and cause glandular breakdown.

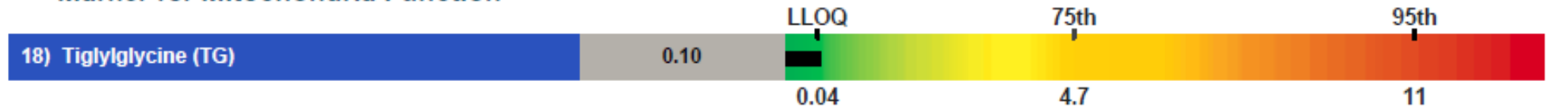
Pyrethroid Insecticide



Parent: Pyrethroids - Including Permethrin, Cypermethrin, Cyhalothrins, Fenpropathrin, Deltamethrin, Trihalomethrin
 Pyrethrins are widely used as insecticides. Exposure during pregnancy doubles the likelihood of autism. Pyrethrins may affect neurological development, disrupt hormones, induce cancer, and suppress the immune system.

Metabolite	Result Creat mmol/mol	Percentile
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Marker for Mitochondria Function



Tiglylglycine (TG) is a marker for mitochondrial disorders resulting from mutations of mitochondrial DNA, which can manifest from exposure to toxic chemicals, infections, inflammation, and nutritional deficiencies. TG indicates mitochondrial dysfunction by monitoring a metabolite that is elevated in mitochondrial deficiency of cofactors such as NAD⁺, flavin-containing coenzymes, and Coenzyme Q10. Disorders associated with mitochondrial dysfunction include autism, Parkinson's disease, and cancer.

Basic Dementia Protocol in a Nutshell:

- 1) Find and correct/remove/re-balance any underlying causes that are contributing to the cognitive decline/dementia.
- 2) Diet - Paleo/Mediterranean Ketogenic Diet with Intermittent Fasting
- 3) Exercise: 60 minutes a day
- 4) Mindfulness/ Meditation/ Tai Chi or Chi Gung/ Guided Meditation/ Heartmath: 20+ minutes a day
- 5) Brain Training: Brain-HQ 20+ minutes a day
- 6) Sleep - 8 hours a night, before midnight
- 7) Supplements as indicated by symptoms and testing to support processes affecting the brain and cognition
- 8) Optimize all Hormones

LABS/TESTING: to be done over several visits (too much to do all at once)

- **Advanced Lipid Profile with lipid sub-particles**
- **Glucose/Blood Sugar control: Hemoglobin A1c, fasting insulin, fasting glucose + advanced diabetes markers (will pick up early diabetes risk)**
- **Inflammation – advanced inflammation markers (hsCRP, PLA-2, MPO)**
- **Hormones – Sex hormones and Thyroid hormones with antibodies**
- **Vitamin and Mineral levels**
- **Infections that affect the brain: Lyme, Lyme co-infections, Mycoplasma, HIV, Syphilis, Toxoplasmosis, Epstein Barr Virus (EBV), Cytomegalovirus (CMV), Herpes Simplex 1/2, Human Herpes Virus (HHV-6, HHV-7), Tuberculosis, Mycotoxins (mold), ...**
- **Genetics: ApoE Alzheimer's gene, MTHFR methylation genes, Detox genes if indicated**
- **Heavy Metals testing - provoked**
- **Chemical Toxin and Glyphosate (Round-Up) testing**
- **Comprehensive Stool Analysis with Parasitology x 3**
- **MARCoNS testing for bacterial infections and fungus in nose (Microbiology Dx)**
- **Sleep Apnea and/or High Intensity Pulse-Ox home testing**
- **MRI Brain for NeuroReader or NeuroQuant (volumetric measurement of the brain structures)**

Promising Mitochondrial/Rejuvenation Treatments

- HBOT (HYPERBARIC OXYGEN TREATMENTS)
- PHOTOBIO-MODULATION (RED LIGHT/PEMF/LOW LIGHT LASERS)
- IV NAD
- STEM CELLS

General Resources for More Info:

The End of Alzheimer's – book by Dale Bredeesen, MD

ApoE4 Website by Julie Gregory – a Nutritionist with ApoE4 +/- who healed with Dr. Bredeesen's approach:

ApoE4.info

Reversal of Cognitive Decline in Alzheimer's Disease

<https://www.mpicognition.com/wp-content/uploads/2016/06/Rev-Cog-Dec-2-on-6.13.16.pdf>

References – Infections

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MICROBES AND ALZHEIMER'S DISEASE: NEW FINDINGS CALL FOR A PARADIGM CHANGE

TRENDS IN NEUROSCIENCES. VOLUME 41, ISSUE 9, SEPTEMBER 2018, PAGES 570-573
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BEN READHEAD, ET AL

MULTISCALE ANALYSIS OF INDEPENDENT ALZHEIMER'S COHORTS FINDS DISRUPTION OF MOLECULAR, GENETIC, AND CLINICAL NETWORKS BY HUMAN HERPESVIRUS

NEURON. VOLUME 99, ISSUE 1, 11 JULY 2018, PAGES 64-82.E7

WILLIAM EIMER, ET AL

ALZHEIMER'S DISEASE-ASSOCIATED B-AMYLOID IS RAPIDLY SEEDED BY *HERPESVIRIDAE* TO PROTECT AGAINST BRAIN INFECTION

NEURON. VOLUME 99, ISSUE 1. 11 JULY 2018, PAGES 56-63.E3

RUTH ITZHAKI ET AL

MICROBES AND ALZHEIMER'S DISEASE

JOURNAL OF ALZHEIMER'S DISEASE. VOL 51, NO 4, PP 979-94, 2016. DOI: 10.3233/JAD-160152

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ESTROGENS, AGING, AND WORKING MEMORY

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POTENTIAL ROLE OF ESTROGEN IN THE PATHOBIOLOGY AND PREVENTION OF ALZHEIMER'S DISEASE

AM J TRANSL RES. 2009; 1(2): 131–147.

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THANK YOU!

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