BIOMEDICAL HEALING FOR KIDS

Healing naturally from the inside

Greer McGuinness MS, RD, CLT, Dt.Sp. CMH

How Toxins are Impacting the Pediatric Brain & Functional Medicine Approaches to Healing and Detoxing

Greer McGuinness
MS, RD,CLT, Dt.Sp., CMH, CLP

- Integrative Dietitian, Certified Detox Specialist & Lyme Practitioner, Master Herbalist and Autism Mom
- Published Researcher *"Sulforaphane Treatment for Autism Spectrum Disorder", "Metabolic Approaches to the Treatment of Autism Spectrum Disorder"*
- Lab Educator- *GI MAPP*
- Creator of the Rebalance Roadmap to Healing™ eBook
- Specialize in
    - Autism & ADHD
    - Gut Health
    - Detoxing
    - Complex Pediatric Cases

My Family

Keegan’s Story Before

- Keegan regressed at 19 months- Diagnosed with Level 2 Autism with Severe Verbal Delay. (VBMAPP Score 56)
- He stopped speaking, lost all eye contact, had horrible gut issues and screamed from morning to night
- He Became an extreme picky eater (ARFID)
- He was not growing or gaining weight
- Endocrinologist told me to give him “Ice cream” every night
- At 4.5 years old he was still not speaking even though we were doing 20+ hours of therapy a week!

Keegan’s Story After

- ✓ Now at 10 Y Old
- ✓ Talks in full sentences and can hold appropriate conversations (VB MAPP Score 8)
- ✓ Can Read & Write and is an amazing speller!
- ✓ Can do higher level math problems
- ✓ Has expanded is diet
- ✓ Plays sports

Per The CDC

More than 40% of school-aged children and adolescents have at least ONE chronic health condition!

(Asthma, Obesity, Behavior/Learning problems)

Rate of Chronic Health Conditions in Kids

- Obesity- 14.7 Million
- Mental Health- 11 Million
- Allergies – 6 Million
- Asthma- 6 Million
- ADD/ADHD-6.1 Million
- Autism- 1.5 Million (1 in 30 kids)
- Nonverbal/learning Disabilities- 2.2-2.9 Million

WE COME IN CONTACT WITH OVER 800,000 TOXINS PER DAY!!

Today's Toxins

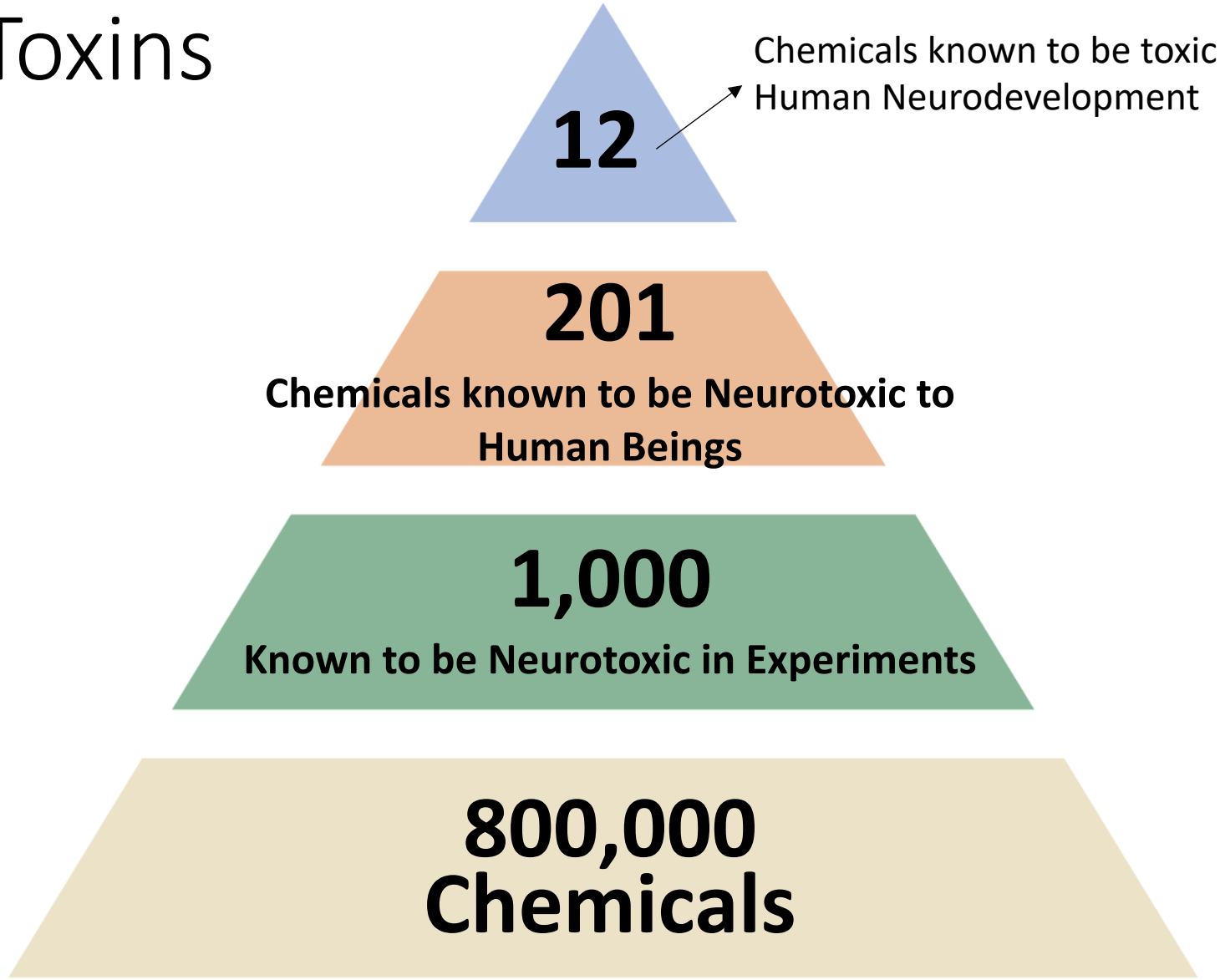


Diagram of the extent of knowledge of neurotoxic chemicals (from Grandjean and Landrigan, 2006).

The Toxic Bucket

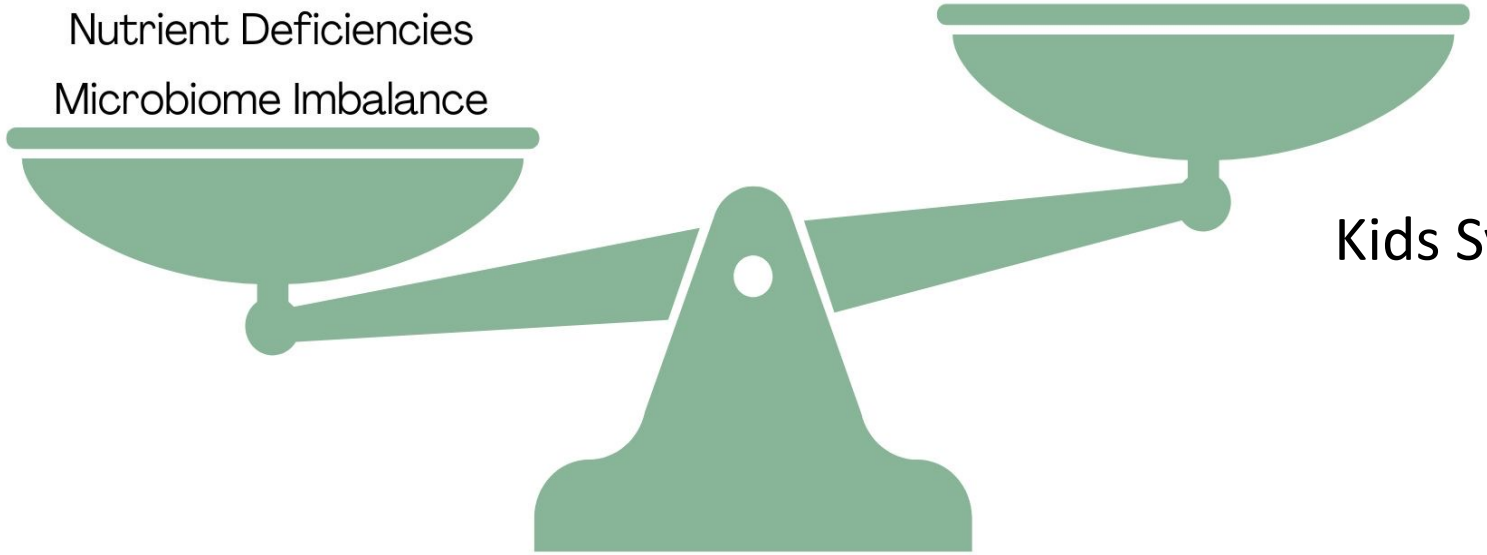
Symptoms of Toxic Burden in Kids

- Fatigue and irritability
- Headaches
- Severe abdominal cramps and pain
- Constipation or diarrhea
- Skin rashes
- Kidney & Liver damage
- Alteration in genetic material
- ADHD
- Autism
- Early Puberty
- Respiratory (sneezing, coughing fits)
- Runny nose
- Asthma
- Excessive urination (urinary incontinence)
- Anxiety
- Food Sensitivities
- Joint pain
- Immune dysregulation
- And more!

The Imbalanced Child

Anxiety
Eczema
Brain Fog
Meltdowns
Aggression
Poor Focus
Constipaition
Hyperactivity
Sleep Disturbance

Mold
Toxic Load
Heavy Metals
Poor Digestion
Food Sensitivies
Poor Detoxification
Nutrient Deficiencies
Microbiome Imbalance



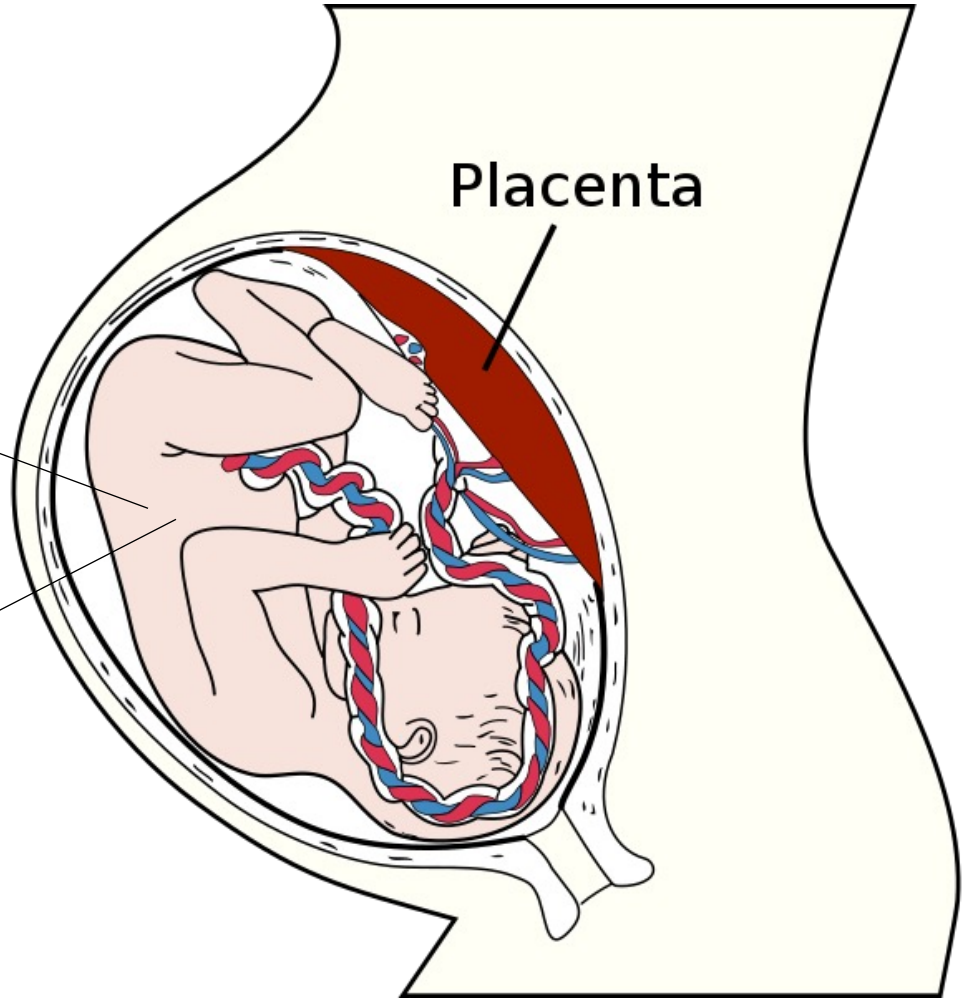
Kids Symptoms

Root Cause

Toxin Exposure In Utero

Studies have shown between 99-100% of pregnant woman carried chemical in organochlorine pesticides, rocket fuel, perchlorate, phthalates, polycyclic aromatic hydrocarbons (PAHs),and Per- fluorinated compounds.

EWG- Found over 287 chemicals in Cord Blood-Pesticides, Plastics, Heavy Metals, Gas fumes, Waste etc.



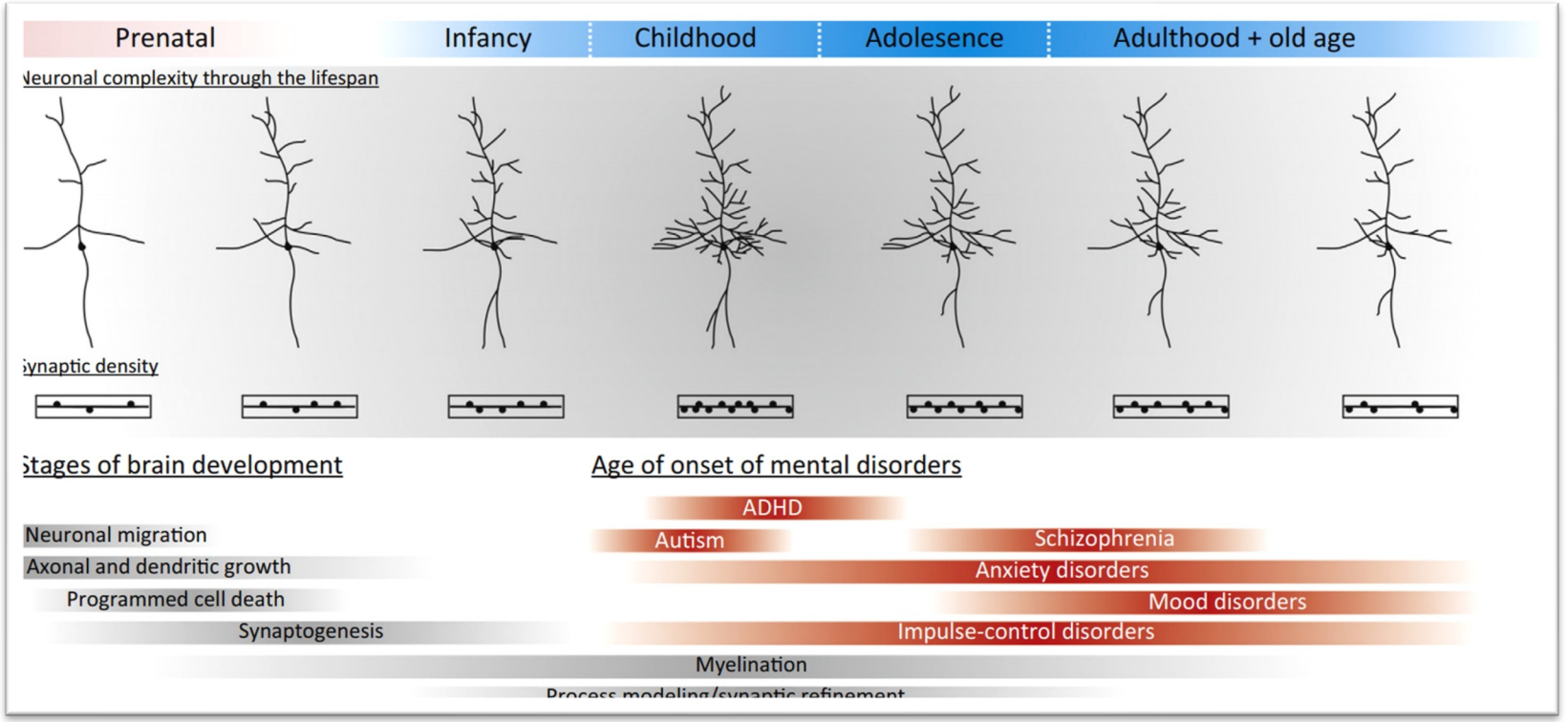
Environmental Chemicals in Pregnant Women in the United States: NHANES 2003–2004 Tracey J. Woodruff, Ami R. Zota, and Jackie M. Schwartz

Brain Development

- From birth to age 5, a child's brain develops more than at any other time in life
- A great deal of the brain's ultimate structure and capacity is shaped early in life before the age of 3 years "First 1,000 Days"
- It keeps growing to about 80% of adult size by age 3 and 90% by age 5
- 90% of Brain growth happens before kindergarten

Neuronal Complexity

Fig. 4. Temporal profile of stages of brain development in relation to the age of onset of mental disorders. Early life perturbations (e.g., gene mutations, or environmental factors) can impact neurodevelopmental processes, such as neural circuits involved in sensory information processing, and potentially lead to adverse mental health outcomes later in life (adapted from (Borre et al., 2014)).



Synaptic density increased during infancy, reaching a maximum at age of 1–2 years which was about 50% more than the adult mean

Betty E. Hornix, Robbert Havekes, Martien J.H. Kas, Multisensory cortical processing and dysfunction across the neuropsychiatric spectrum, Neuroscience & Biobehavioral Reviews, Volume 97, 2019, Pages 138-151,ISSN 0149-7634, https://doi.org/10.1016/j.neubiorev.2018.02.010.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8468246/

Brain Development

- Critical Period- Occurs during the early years of a child's life, from birth to around the age of five. Typically conceptualized as early-life epochs when alterations to brain structure of function by an environmental factor (nutrition/toxins) results in irreversible long term consequences. (I.e. Folate)

- Sensitive periods- Is an epoch when the brain (or brain region) is more vulnerable to environmental factors, including nutrient deficiencies, but when the effect is not necessarily detrimental (depends on timing, dose, duration of exposure).

Colombo J, Gustafson KM, Carlson SE. Critical and sensitive periods in development and nutrition. *Ann Nutr Metab*. 2019;75(Suppl. 1):34-42.

Kids drink 7x more water than adults

Kids consume 3-4X more food than adults

Kids breathe in 2X more air than adults

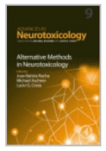
Kids skin is 30% thinner than adults

Toxins Linked to Lower IQ Scores

- Heavy Metals (Mercury, Aluminum, Lead)
- Pesticides
- Chemicals in Flame Retardants
- BPA
- Phthalates
- Mold & Mycotoxins
- Perchlorate
- Fluoride

Liu J, Lewis G. Environmental toxicity and poor cognitive outcomes in children and adults. J Environ Health. 2014 Jan-Feb;76(6):130-8. PMID: 24645424; PMCID: PMC4247328.

Advances in Neurotoxicology
Volume 9, 2023, Pages 1-28



Chapter One - Assessment of mitochondrial function in neurotoxicology using alternative model organisms

D.F. Gonçalves, P. Michelotti, A.F. da Silva, F.A.A. Soares, C.L. Dalla Corte

Show more

https://doi.org/10.1016/bs.ant.2023.01.001

Precise mitochondrial function is essential for cellular functioning. Because mitochondria are the main site of reactive oxygen species (ROS) production, any toxin that disrupts mitochondrial function can increase ROS production, thereby generating oxidative stress and compromising cellular functioning. In addition, mitochondria are essential for cellular metabolism, generating ATP from the oxidation of energetic substrates and also providing important metabolic intermediates. Thus, any perturbation to mitochondrial function may compromise the metabolism and energy production of cells.

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https://doi.org/10.1016/bs.ant.2023.01.001

Exposure to toxins due to medication, lifestyle, and the environment may lead to mitochondrial dysfunction, cell damage, and organ dysfunction. Furthermore, knowledge of the importance of mitochondrial in disease has been growing fast. Many methods are available to assess mitochondrial function. Fluorescent markers have been used to label membrane potential, calcium levels, ROS production, and ATP levels. The enzymatic activity of mitochondrial complexes is also important to measure the complexes' ability to transfer electrons. Another method for evaluating the functioning of the complexes is through respirometry measuring the consumption of oxygen by the electron transport chain. This last technique allows the analysis of the functioning of the chain as a whole, which is not possible when measuring the enzymatic activity of the complexes. In fact, the enzymatic techniques require the study the mitochondrial complexes separetely. Currently, oxygen sensors have become increasingly sensitive, allowing for more robust analyzes with a variety of sample preparations.

The Decline of Real Food

Decrease of Fruits and Vegetables

Center for Disease Control Reported Children between ages of 2-18y:

- 60% of children don't eat enough Fruit
- 93% of children don't eat enough Vegetables

	1-3 Years Old	4-8 Years Old	9-13 Years Old
Fruit	1 cup/day	1.5 cups/day	1.5 cups/day
Vegetables	1 cup/day	1.5 cups/day	2-2.5 cups/day
Grains	3oz/day	4.5oz/day	5-6oz/day
Protein	2oz/day	3-4oz/day	5 oz/day

Processed and Ultra Processed Foods

2018 Study found Ultra Processed Foods made up 67% of a child's diet

Trends in Consumption of Ultraprocessed Foods Among US Youths Aged 2-19 Years, 1999-2018Lu Wang, PhD, MPH[1]; Euridice Martínez Steele, PhD[2,3]; Mengxi Du, MS, MPH, RD[1]; et al

School Lunches

- 95.3% contained the herbicide glyphosate, a suspected carcinogenic.
- 74% contained at least one of 29 harmful pesticides.
- 21% contained four veterinary drugs and hormones at high levels.
- 100% contained heavy metals at levels up to 6,293 times higher than the U.S.

Environmental Protection Agency's (EPA's) maximum levels allowed in drinking water

https://www.momsacrossamerica.com/national_school_lunch_testing

Rate of Autism & Glyphosate

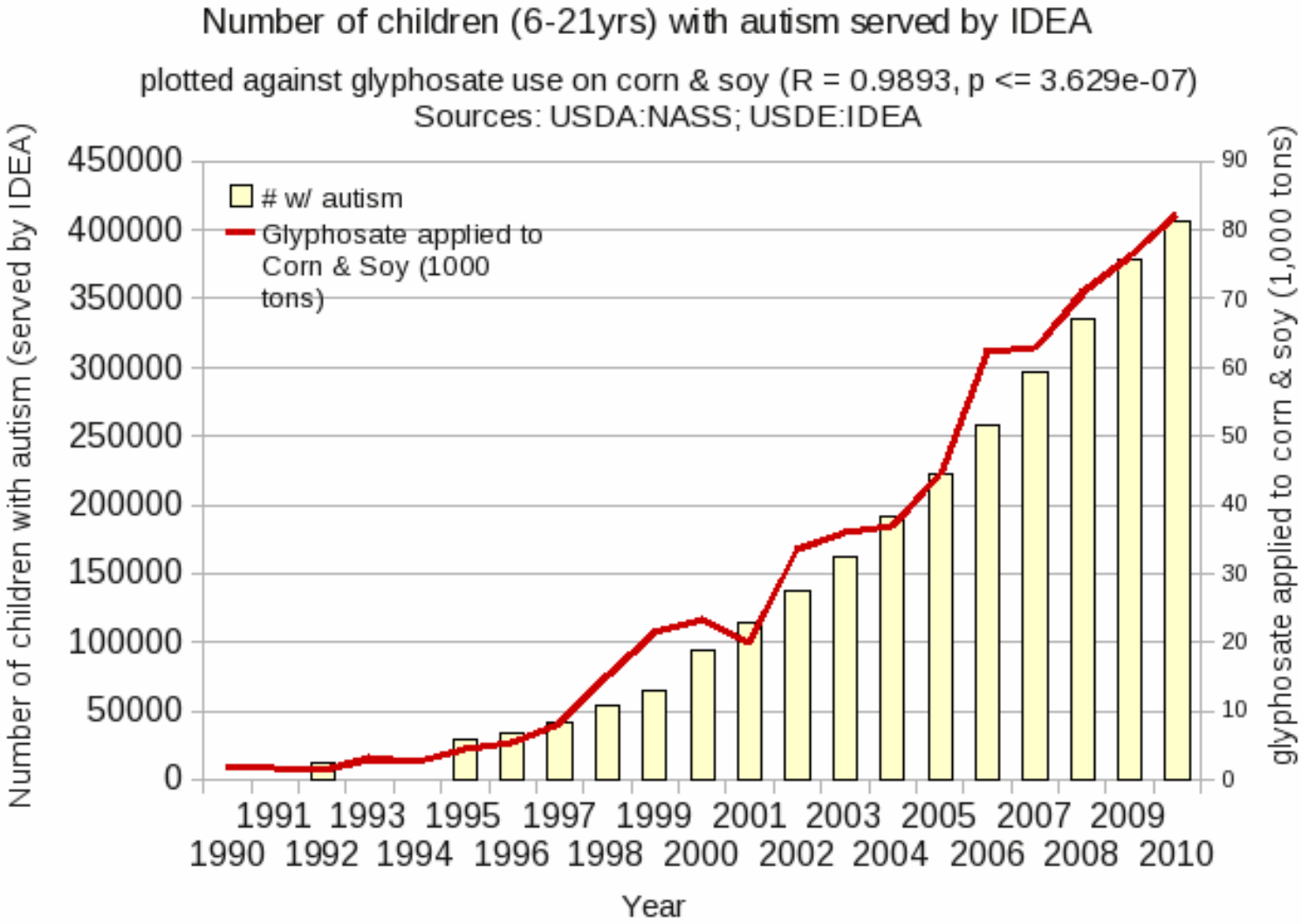
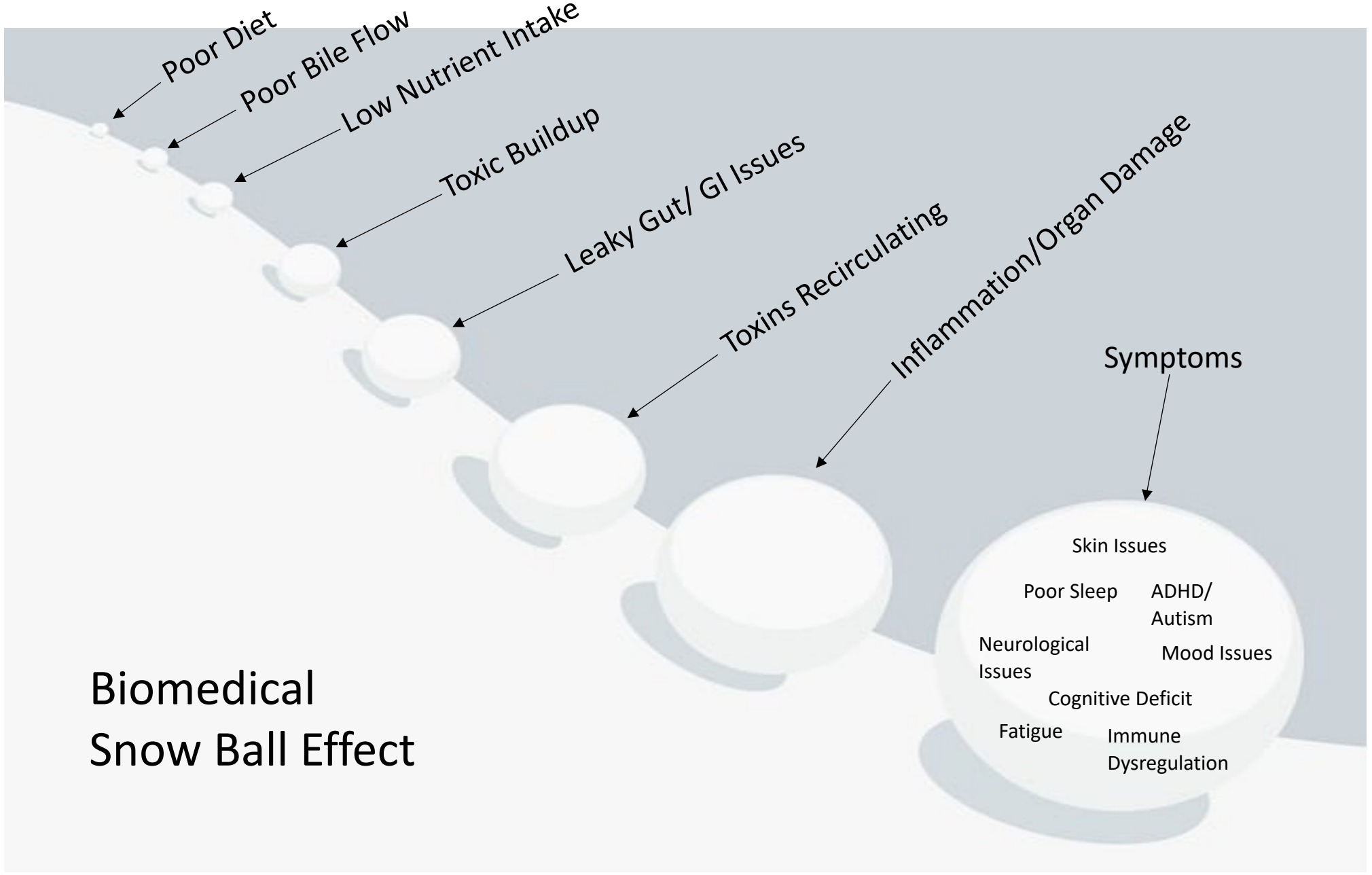


Figure 23. Correlation between children with autism and glyphosate applications.

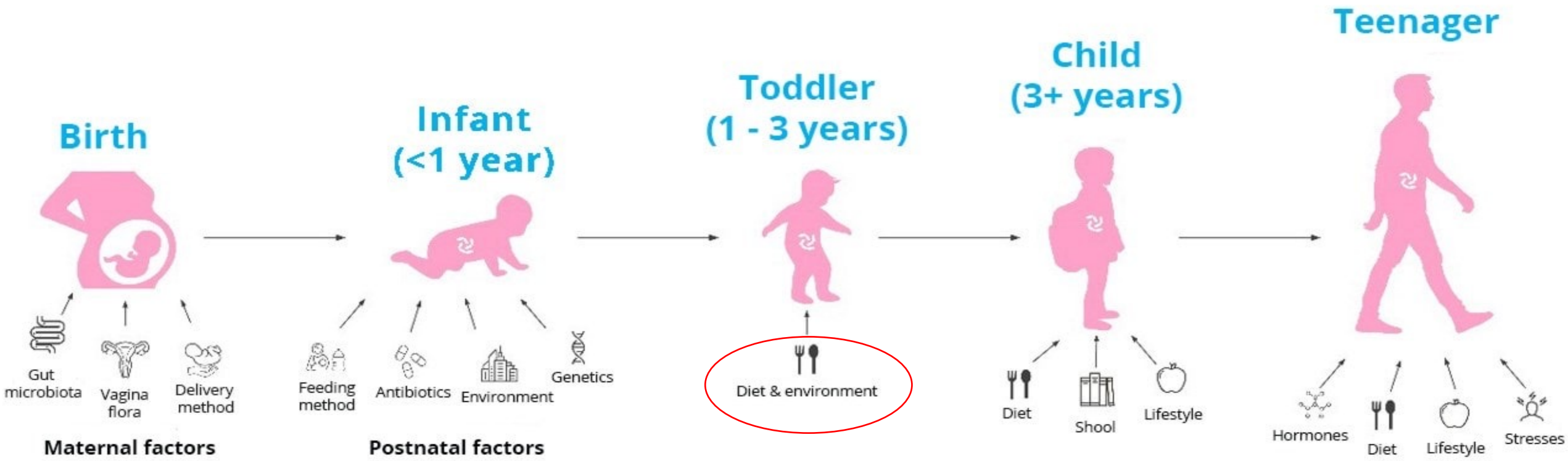
Genetically engineered crops, glyphosate and the deterioration of health in the United States of America. Nancy L. Swanson1, Andre Leu2*, Jon Abrahamson3 and Bradley Wallet

Getting Started With Testing


Poor Diet
Poor Bile Flow
Low Nutrient Intake
Toxic Buildup
Leaky Gut/ GI Issues
Toxins Recirculating
Inflammation/Organ Damage
Symptoms
Skin Issues
Poor Sleep
ADHD/ Autism
Neurological Issues
Mood Issues
Cognitive Deficit
Fatigue
Immune Dysregulation
Biomedical
Snow Ball Effect

Biomedical Testing

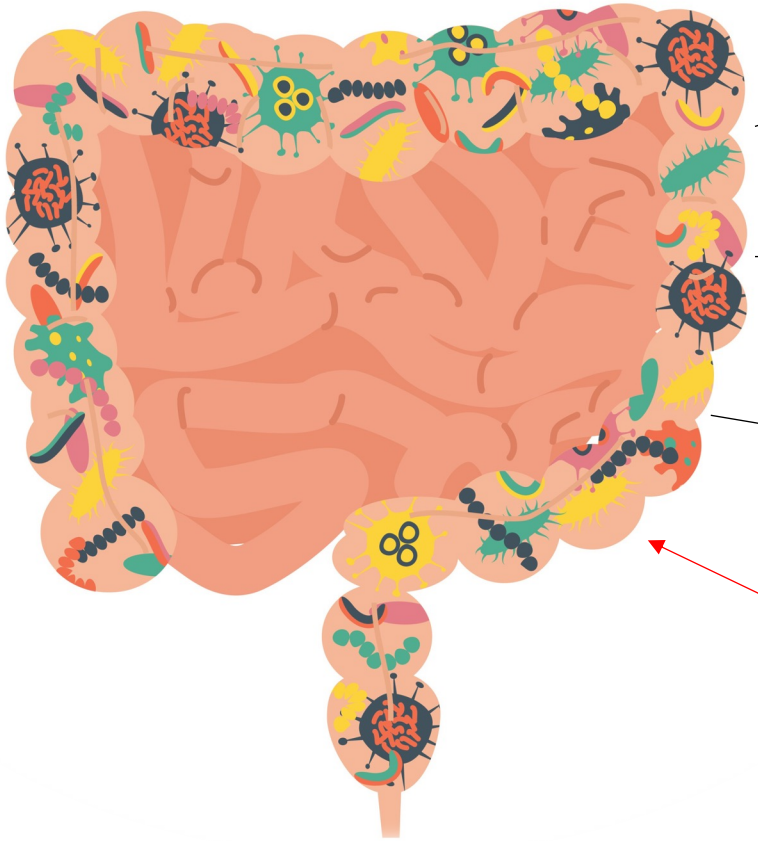
- Stool Test
- Micronutrient Testing
- Heavy Metal Testing
- Mycotoxin Testing
- Environmental Toxin Testing
- Food Sensitivity Testing
- Organic Acids Testing
- Neural Transmitter Testing
- Neural Zoomer Plus
- FRAT Testing


Birth
Infant
(<1 year)
Toddler
(1 - 3 years)
Child
(3+ years)
Teenager
Gut microbiota
Vagina flora
Delivery method
Feeding method
Antibiotics
Environment
Genetics
Diet & environment
Diet
Shool
Lifestyle
Hormones
Diet
Lifestyle
Stresses
Maternal factors
Postnatal factors

My Rebalance Roadmap™

- Step 1- Testing- Stool Test and Toxin Testing
- Step 2- Toxin Avoidance, Avoidance, Avoidance
- Step 3- Build up the child's body (Gut and Nutrients) (4-6 Weeks)
- Step 4- Prime the body for allowing proper detox (2-3 Weeks)
- Step 5- Use specific supplements to target and remove toxins safely from the body

The Gut Influences



Micronutrients

Neural Transmitters

Organic Acids

Toxins

Supplement /Detox Facts 101

You can give a child all the high quality supplements in the world but if their GUT isn't digesting or absorbing it they aren't getting it!

Example….

Patient Came to me with

- Not Sleeping
- Hyperactive
- Irritable
- Constipated
- No Progress

- **Biocidin: 5 drops, three times per day**
- **Uva Ursi: 8 drops once per day**
- **Grapefruit seed extract: 8 drops twice per day**
- **Carbon activated: one capsule at night**
- **Trienza, once capsule three times per day**
- **Milk Thistle: 1 capsule twice per day**
- **Oxy powder: 1 or 2 capsules before going to bed**
- **Buffered Vitamin C: ½ of teaspoon once per day**
- **L-Carnitine: three times per day**
- **Restore: 5ml Three times per day**
- **Probutyrate: 1 capsules twice per day**
- **Five Strain Probiotic 340Billions UCFS: 1 pediatric measure twice per day**
- **D-Lactate Free Probiotic 250 Billions UCFS: 1 pediatric measure twice per day**
- **L-Reuteri Probiotic 75 million UCFS: 1 adult measure twice per day**
- **5MTHF 5mg: 1 capsule once a day**
- **Vitamin B6 50mg: 1 capsule twice per day**
- **L-Theanine 100mg : 1 capsule at night**
- **Neuro Magnesium 144mg: 1 capsule twice per day**
- **Zinc Picolinate 25mg: 2 capsules once per day**
- **Spectrum Support minerals: 5ml twice per day**
- **Nordic Naturals Ultimate Omega 2840EPA: 10 ml twice per day**
- **5HTP 50mg: 1 capsule twice per day**
- **Melatonin PR 3mg: 1 pill at night before bed**
- **N-Acethyl Cysteine 500mg: 1 capsule once per day**
- **Vitamin E: 1 capsule every other day**
- **Selenium Hypoallergenic: 1 capsule every other day**
- **CQ10: 1 capsule once per day**
- **Glutathione Lotion: on his feet at night**
- **Epsom salt bath every night**
- **PQQ 20mg: 1 capsule twice per day**
- **Acethyl L Carnitine 250mg: 1 capsule twice per day**
- **Adrenal Cortex 50mg: 1 capsule once per day**
- **Benfotiamine (Vitamin B1): 1 capsule once per day**
- **Vitamin D3/K2: 3 drops once a day**
- **Gaba 250mg: 1 capsule three times per day**

Fight

Flight

Freeze

Toxin Testing

Heavy Metals

TEST NAME	PERCENTILE 75th	PERCENTILE 95th
Aluminum		97.58
Beryllium	<0.0	
Antimony	0.03	
Platinum	<0.0	
Bismuth	<0.0	
Tungsten		3.61
Tellurium	0.26	
Gadolinium	<0.0	
Cesium	1.99	
Tin	<0.0	

COMMENTS

Pesticides

TEST NAME	PERCENTILE 75th	PERCENTILE 95th	REFERENCE
Diethyl phosphate (DEP)	0.06		≤15.7 mcg/g
Diethylthiophosphate (DETP)	0.1		≤3.92 mcg/g
Dimethylthiophosphate (DMTP)	0.44		≤33.7 mcg/g
Dimethyl phosphate (DMP)	0.26		

TEST NAME	PERCENTILE 75th	PERCENTILE 95th	REFERENCE
3-Phenoxybenzoic Acid (3PBA)	0.19		≤5.44 mcg/g
2,2-bis(4-Chlorophenyl) acetic acid (DDA)		24.29	≤19 mcg/g
Diethyldithiophosphate (DEDTP)	0.06		≤0.3 mcg/g

COMMENTS

2,2-bis(4-Chlorophenyl) acetic acid (DDA)

DDT metabolism in humans yields 2,2-bis (4-chlorophen
a persistent organic pollutant that is readily adsorbed to
was a commonly used pesticide for insect control. DDT
disruption in semen quality, menstruation, gestational le
high lipid content and can affect reproductive capabilitie
cancer. DDE is a metabolite of DDT and is excreted as D

Volatile organic compounds

TEST NAME	PERCENTILE 75th	PERCENTILE 95th
3-Methylhippuric Acid (3MHA)		2596.38
N-acetyl phenyl cysteine (NAP)	0.21	
N-Acetyl (2-Cyanoethyl) Cysteine (NACE)		11.79
Phenyl glyoxylic Acid (PGO)	68.63	
2-Methylhippuric Acid (2MHA)		30.79
2-Hydroxyethyl Mercapturic Acid (HEMA)	0.25	

COMMENTS

Trichothecenes

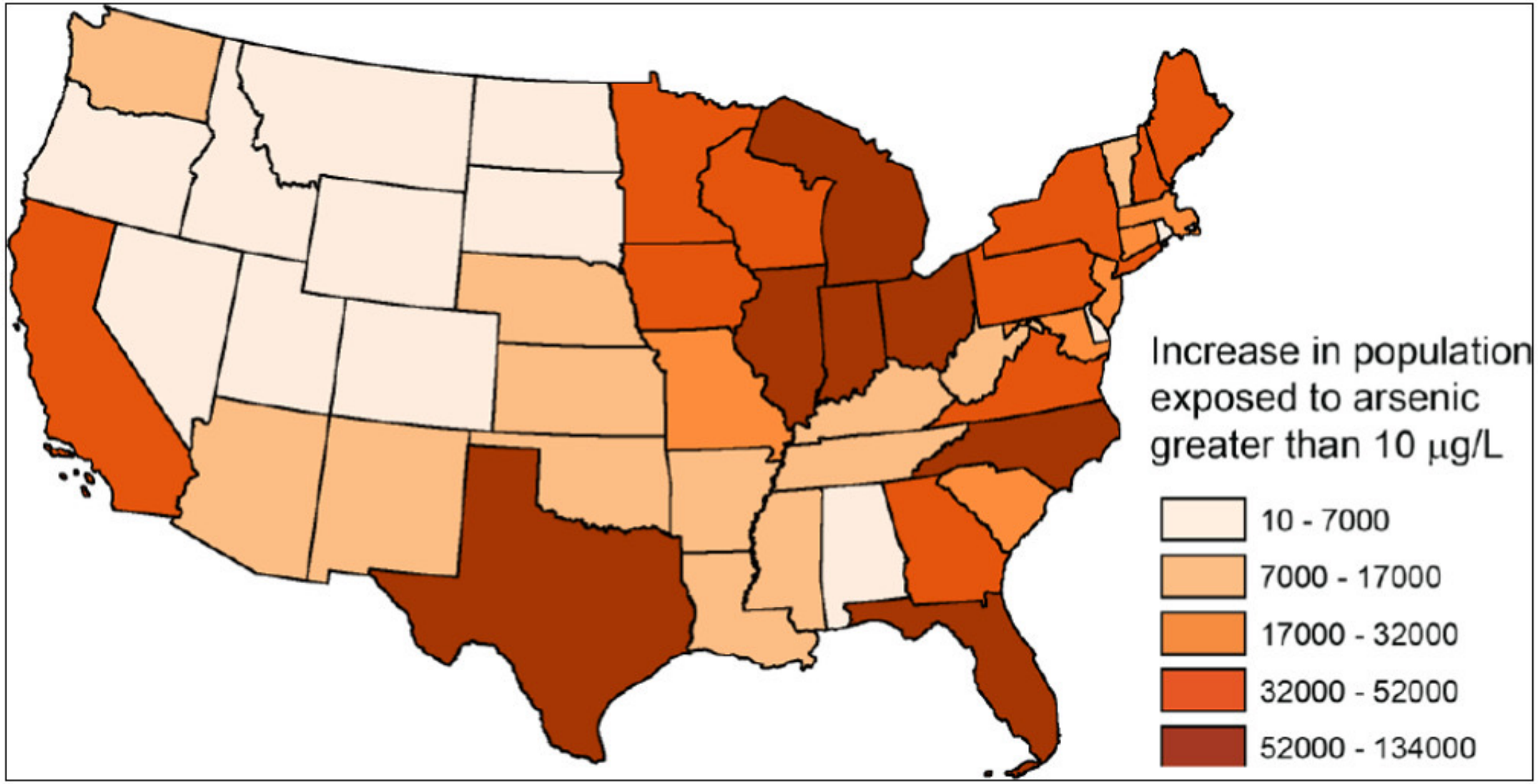
TEST NAME	PERCENTILE 75th	PERCENTILE 95th	REFERENCE
Verrucarin A	0.84		≤1.33 ng/g
Nivalenol (NIV)	1.84		≤3.2 ng/g
T-2 Toxin	0.09		≤0.18 ng/g
Satratoxin H	0.07		≤0.18 ng/g
Roridin A		9.21	≤7.6 ng/g
Roridin L2	3.57		≤6.8 ng/g
Roridin E	0.58		≤1.33 ng/g

TEST NAME	PERCENTILE 75th	PERCENTILE 95th	REFERENCE
Deoxynivalenol(DON)	3.38		≤67.47 ng/g
Diacetoxyscirpenol (DAS)	1.79		≤4.27 ng/g
Satratoxin G	0.05		≤0.18 ng/g
Isostratoxin F	0.1		≤0.18 ng/g
Roridin H	0.94		≤8.4 ng/g
Verrucarin J	1.07		≤9.2 ng/g

COMMENTS

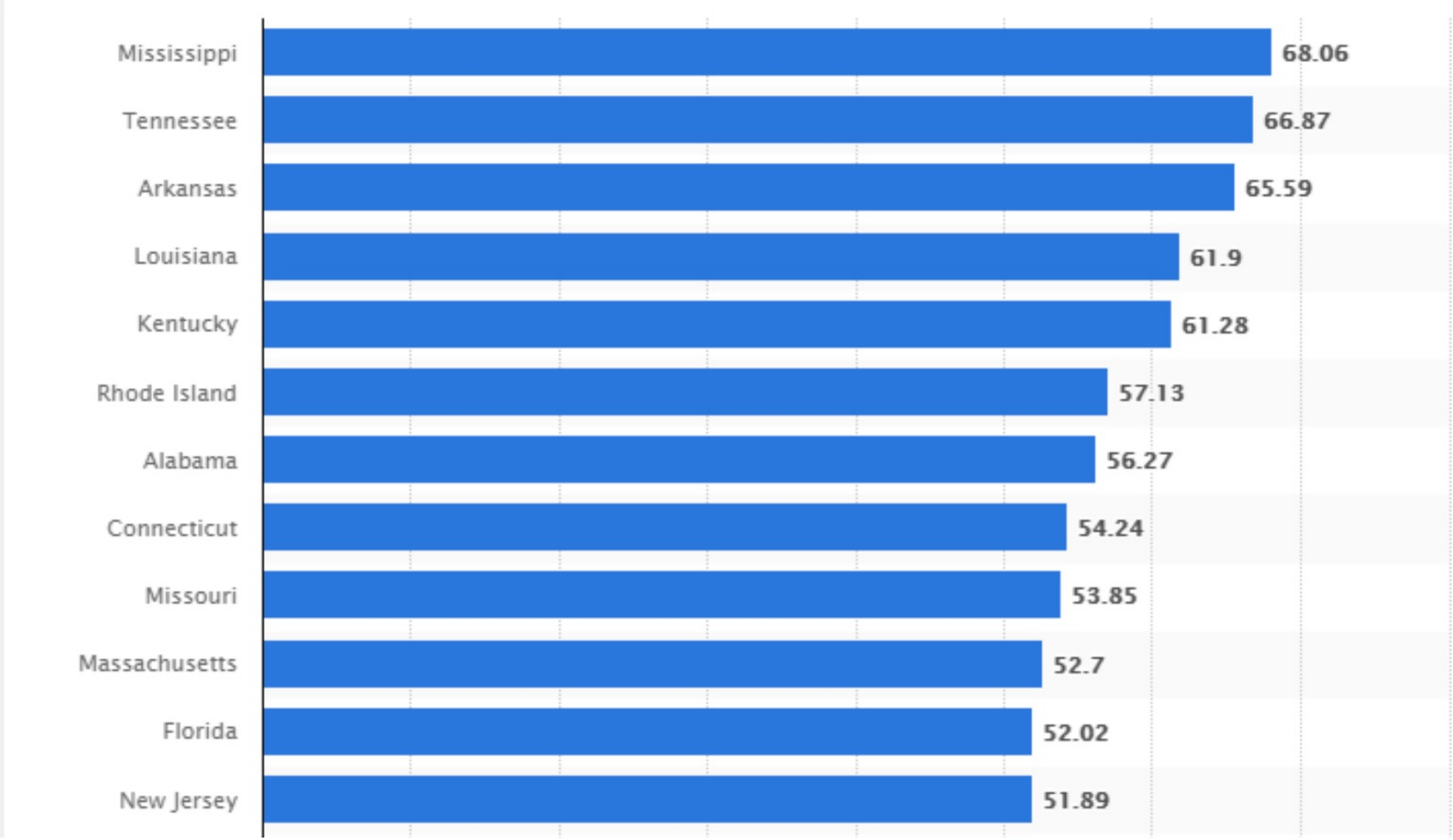
Roridin A

Roridin A mycotoxin is one of the important macrocyclic trichothecenes, produced on foodstuffs such as corn, rice, wheat and other crops. Roridin A is an inhibitor of pollen development in Arabidopsis thaliana. Roridin A is isolated from the fungus Cylindrocarpon species. Roridin A inhibits pollen development at concentrations of 2 µM. Humans suffer from several pathologies due to intoxication after consumption of foodstuffs contaminated with trichothecenes. Roridin A has been implicated in the causation of numerous signs and symptoms of disease, including fatigue, skin irritation, headache, dry cough, irritated eyes, generalised allergic symptoms, and inflammation. Roridin A mycotoxins prevent polypeptide chain initiation or elongation and interact with the enzyme peptidyl transferase.



Assessing the Impact of Drought on Arsenic Exposure from Private Domestic Wells in the Conterminous United States. Melissa A. Lombard*Johnni Daniel, Zuha Jeddy, Lauren E. Hay, and Joseph D. Ayotte
Cite this: *Environ. Sci. Technol.* 2021, 55, 3, 1822–1831

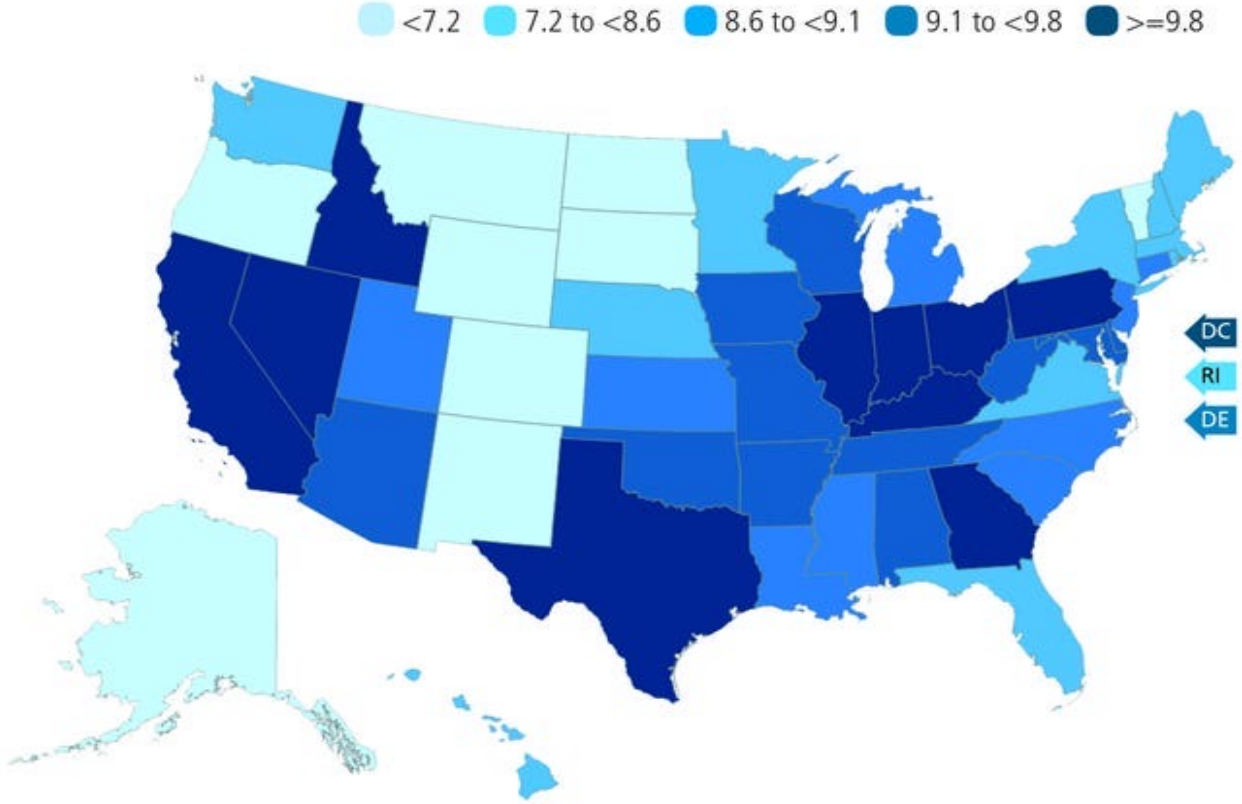
Top States With Highest Home Mold



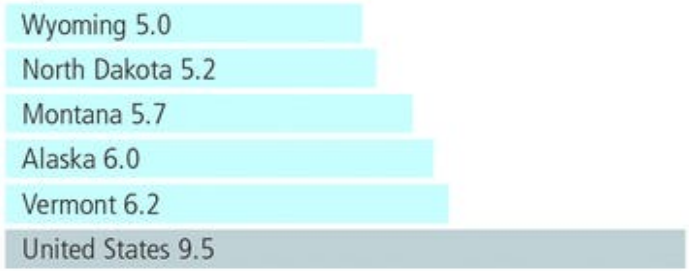
https://lookmold.com/detect/the-top-5-moldiest-states-to-live-in

Air Pollution by State

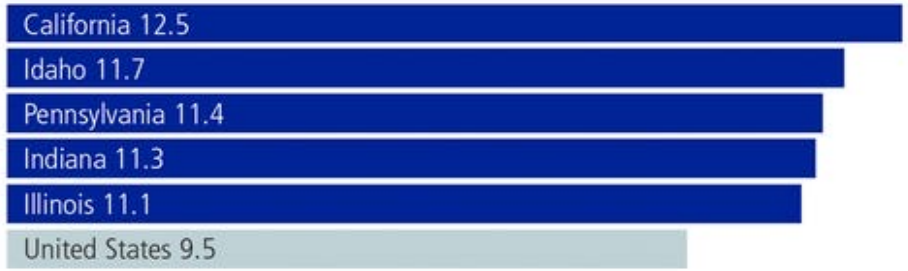
Average exposure of the general public to particulate matter of 2.5 microns or less in size (PM2.5)



Top 5 States



Bottom 5 States



Priority #1
Gut Work

DYSBIOTIC & OVERGROWTH BACTERIA	Result		Reference
Bacillus spp.	**1.21e8**	**High ↑**	< 1.76e6
Enterococcus faecalis	**6.77e8**	**High ↑**	< 1.00e4
Enterococcus faecium	**7.42e4**	**High ↑**	< 1.00e4
Morganella spp.	<dl		< 1.00e3
Pseudomonas spp.	1.33e3		< 1.00e4
Pseudomonas aeruginosa	<dl		< 5.00e2
Staphylococcus spp.	9.39e2		< 1.00e4
Staphylococcus aureus	**8.06e4**	**High ↑**	< 5.00e2
Streptococcus spp.	**7.47e3**	**High ↑**	< 1.00e3
COMMENSAL OVERGROWTH MICROBES			
Desulfovibrio spp.	2.15e4		< 7.98e8
Methanobacteriaceae (family)	2.20e8		< 3.38e8
INFLAMMATORY & AUTOIMMUNE-RELATED BACTERIA			
Citrobacter spp.	<dl		< 5.00e6
Citrobacter freundii	<dl		< 5.00e5
Klebsiella spp.	**7.80e5**	**High ↑**	< 5.00e3
Klebsiella pneumoniae	<dl		< 5.00e4
M. avium subsp. paratuberculosis	<dl		< 5.00e3
Proteus spp.	<dl		< 5.00e4
Proteus mirabilis	<dl		< 1.00e3
COMMENSAL INFLAMMATORY & AUTOIMMUNE-RELATED BACTERIA			
Enterobacter spp.	6.52e6		< 5.00e7
Escherichia spp.	**1.29e10**	**High ↑**	< 3.80e9
Fusobacterium spp.	3.61e7		< 1.00e8
Prevotella spp.	1.49e7		< 1.00e8

Why the Gut Matters

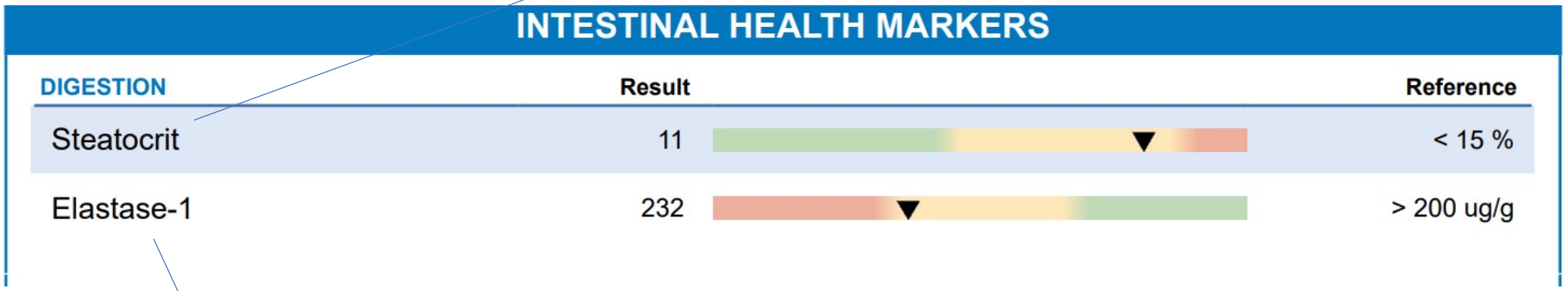
Heavy Metals, Mold, Environmental Toxins Can……

- Cause Nutrient Deficiencies
- Damage the Microbiome and our good Microbes (Lacto's and Bifido's)
- Damage our Digestive Support (How we move Toxins out)
- Damage our Liver (Main Detox Organ)
- Cause Oxidative Stress (Body Stress)
- Cause Inflammation of the body and **BRAIN (Neurotoxicity)**

Goyer RA. Nutrition and metal toxicity. Am J Clin Nutr. 1995 Mar;61(3 Suppl):646S-650S. doi: 10.1093/ajcn/61.3.646S. PMID: 7879732.

Digestive Insufficiency

Fat Malabsorption



INTESTINAL HEALTH MARKERS			
DIGESTION	Result		Reference
Steatocrit	11		< 15 %
Elastase-1	232		> 200 ug/g

Digestive Support

What is Hyperchlorhydria?

- Hyperchlorhydria means low or insufficient stomach acids
- Our stomach makes Hydrochloric Acid AKA HCL
- Helps breakdown and allows for proper digestion of foods
- Helps with mineral absorption
- Kills pathogens bacteria and parasites
- If HCL is low it cannot trigger the Pancreas and Liver to Secrete Enzymes
- Bile helps carrier out waste (heavy metals, mold, pesticides, excess copper, fluoride)

Symptoms of Hypochlorhydria

- Feeling like you want to eat even when you're not hungry
- Feeling too full after regular meals
- Indigestion
- Gas or flatulence
- Bloating
- Constipation
- Diarrhea
- Stomach upset and cramps
- Undigested food in stool
- Nausea
- Heartburn/Reflux

What Can Cause Low HCL in Kids?

- High sugar diet
- Poor protein diet
- Low Zinc levels
- Stress
- Eating to fast
- PPI's
- Antacids
- Toxins

Elastase Review

Number Of Test	Elastase Range <200	Elastase Range 200-500	Elastase Range >501-700	Elastase Range >701
37 Stool Tests	**6**	**13**	**5**	**13**

PDF

P293 What is the significance of a faecal elastase-1 level between 200 – 500µg/g?

Darren Fernandes [1], Darren Fernandes [2], Jervoise Andreyev [2, 3]

Abstract

Introduction Pancreatic exocrine insufficiency (PEI) is a common cause of gastrointestinal (GI) symptoms relating to malabsorption. It is commonly diagnosed if Faecal elastase-1 (FE-1) levels are below 200µg/g. However, there is insufficient data to define the significance of faecal elastase levels above 200µg/g but less than 500µg/g, with a suggestion that levels between these values being a deviation from normal pancreatic exocrine function. This study therefore sought to assess the response to treatment in patients who had a FE-1 level between 200-500µg/g.

Pancreatic elastase 1 in stool: variations within one stool passage and individual changes from day to day

A Hamwi [1], M Veitl, G Maenner, H Vogelsang, T Szekeres

Affiliations + expand

PMID: 10689738

Abstract

Concentration of fecal pancreatic elastase 1 has been claimed to be a highly sensitive and specific noninvasive test for exocrine pancreatic function. The aim of our study was to investigate variations in elastase concentration within one stool passage and from day to day. For the analysis of the variation of fecal elastase within one stool passage, we utilized 3 different samples collected from 8 patients. Further, we assessed the individual day to day variation of fecal elastase using stools collected on 3 consecutive days from 40 patients. For the determination of pancreatic elastase 1 in stool we used an ELISA kit. We found a relatively considerable variation of fecal elastase concentration within one stool passage (n = 8, mean CV = 22%, range 4.6-83.1%) and from day to day (n = 40; mean CV = 26%, range 2.4-61.1%). Therefore, we recommend routine analysis of more than 1 stool sample collected on different days for fecal elastase and to use a borderline area of +/- 25% of the recommended cut off of 200 micrograms/g stool for the diagnosis of pancreatic insufficiency.

INTESTINAL HEALTH MARKERS

DIGESTION	Result	Reference
Steatocrit	<dl	< 15 %
Elastase-1	>750	> 200 ug/g

Normal Elastase Levels

BACTERIAL PHYLA			
Bacteroidetes	3.12e12		8.6e11 - 3.3e12
Firmicutes	2.80e11		5.7e10 - 3.0e11
Firmicutes:Bacteroidetes Ratio	0.09		< 1.0

Potential Low HLC Pattern

3 PLANT BASED PROTEOLYTIC ENZYMES

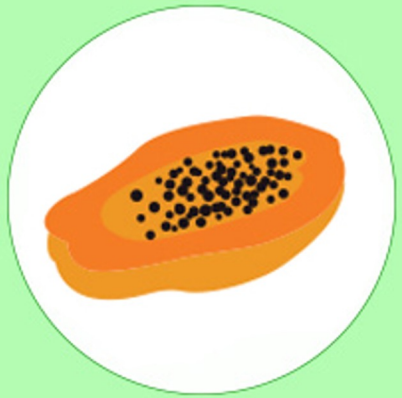
BROMELAIN

can be found
in pineapple juice &
the pineapple stem

RUTIN

can be found in asparagus,
buckwheat, Japanese
pagoda tree, etc.

PAPAIN



can be found in
papaya and
mountain papaya

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Potential role of bromelain in clinical and therapeutic applications

Vidhya Rathnavelu,[1] Noorjahan Banu Alitheen,[2] Subramaniam Sohila,[3] Samikannu Kanagesan,[4] and Rajendran Ramesh[5]

Bromelain supplementation protects animals against diarrhea caused by bacterial enterotoxins from *Escherichia coli* and *Vibrio cholerae* (68). Bromelain acts as anti-adhesion agent by modifying the receptor attachment sites and influences the intestinal secretory signaling pathways (69,70). In addition to its ability to counter certain effects of particular intestinal pathogens and its synergism with antibiotics, these two mechanisms are indicative of the benefits of bromelain against specific infections. *In vitro* evidence also suggests that bromelain exerts antihelminthic activity against the gastrointestinal nematodes, *Trichuris muris* and *Heligmosomoides polygyrus* (71,72). Conversely, bromelain acts as an anti-fungal agent by stimulating phagocytosis and respiratory burst killing of *Candida albicans* when incubated with trypsin *in vitro* (73). *Pityriasis lichenoides chronica* is an infectious skin disease and bromelain reportedly caused complete resolution of this condition (74). Bromelain has been documented to increase blood and

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In vitro efficacy of latex and purified papain from *Carica papaya* against *Strongyloides venezuelensis* eggs and larvae

Dayane Moraes, [1] Marcelo Arantes Levenhagen, [2] Julia Maria Costa-Cruz, [2] Antônio Paulino da Costa, Netto, [3] and Rosângela Maria Rodrigues [1]

The IC50 discrepancy regarding the treatment of eggs and larvae indicates the difference between the larval cuticle and the eggs shell. In addition, emphasizes the effectiveness of another compound, that is not papain, against eggs. Papain acts by releasing the internal structures of larvaes, leading to the death of parasites [26]. In this sense, papain inhibits the action of the larvae, preventing reinfection cycles in disseminated strongyloidiasis and could possibly interfere with parthenogenetic females by preventing eggs posture.

Home › Neurochemical Journal › Article

Neuroprotective Effects of Bromelain on the Common Neurodegenerative Diseases: A Systematic Review

REVIEW ARTICLES | Published: 30 January 2024

Volume 17, pages 715–726, (2023) Cite this article

inflammatory cytokines in the central nervous system. Bromelain also neutralizes free radicals and up-regulated levels of endogenous antioxidant enzymes and improves mitochondrial function in neural cells. So, by antioxidant and anti-inflammatory activity, bromelain neutralizes apoptosis and neuronal damage. Moreover, the immune response in the CNS may be regulated by bromelain. apoptosis and neuronal damage. This proteolytic enzyme also reduced β-amyloid aggregation in AD. In vivo, in vitro, and ex vivo studies revealed that bromelain shows promising neuroprotective effects on NDs by reducing inflammatory factors, and oxidative stress, regulating the immune system, and reducing neurotoxicity. However, more clinical trial studies are needed in this field.

The Gut Work Supplements (Build Up)

- Digestive Enzymes/ Proteolytic Enzymes
- Probiotics
- Anti-Inflammatories (Fish oils, DGL)
- Polyphenols
- Resistant Starches
- Antimicrobials
- Liver Support
- Vitamins
- Minerals

Caution With L-Glutamine Powders

- “Leaky Gut” Powders have high levels of L-Glutamine
- Kids with Autism and ADHD typically have elevated Glutamate levels
- Giving L-Glutamine will increase anxiety, hyperactivity, stimming, tics restlessness
- Also avoid Glycine if you suspect elevated Glutamate levels
- Can do a micronutrient test to measure Glutamate levels in serum and WBC before supplementing

Improvements Without The Extras

Hi Greer! It's been a few weeks since I checked in. I don't have any explanation for it other than the supplements, but within the last couple of weeks my son has been consistently eating and trying new foods, and is having pretty regular and healthy bowel movements! This is huge for him! I thought we were going down the AFRID route but we've seen such an improvement! And, I know we haven't gotten to the detox stage yet, but he's saying more words and phrases! I really think he was hurting on the inside but wasn't showing any signs and now that he's feeling good internally, things are just really clicking! We're so so excited! I'll send you an update in the next couple weeks! Hope all is well! Thank you!!

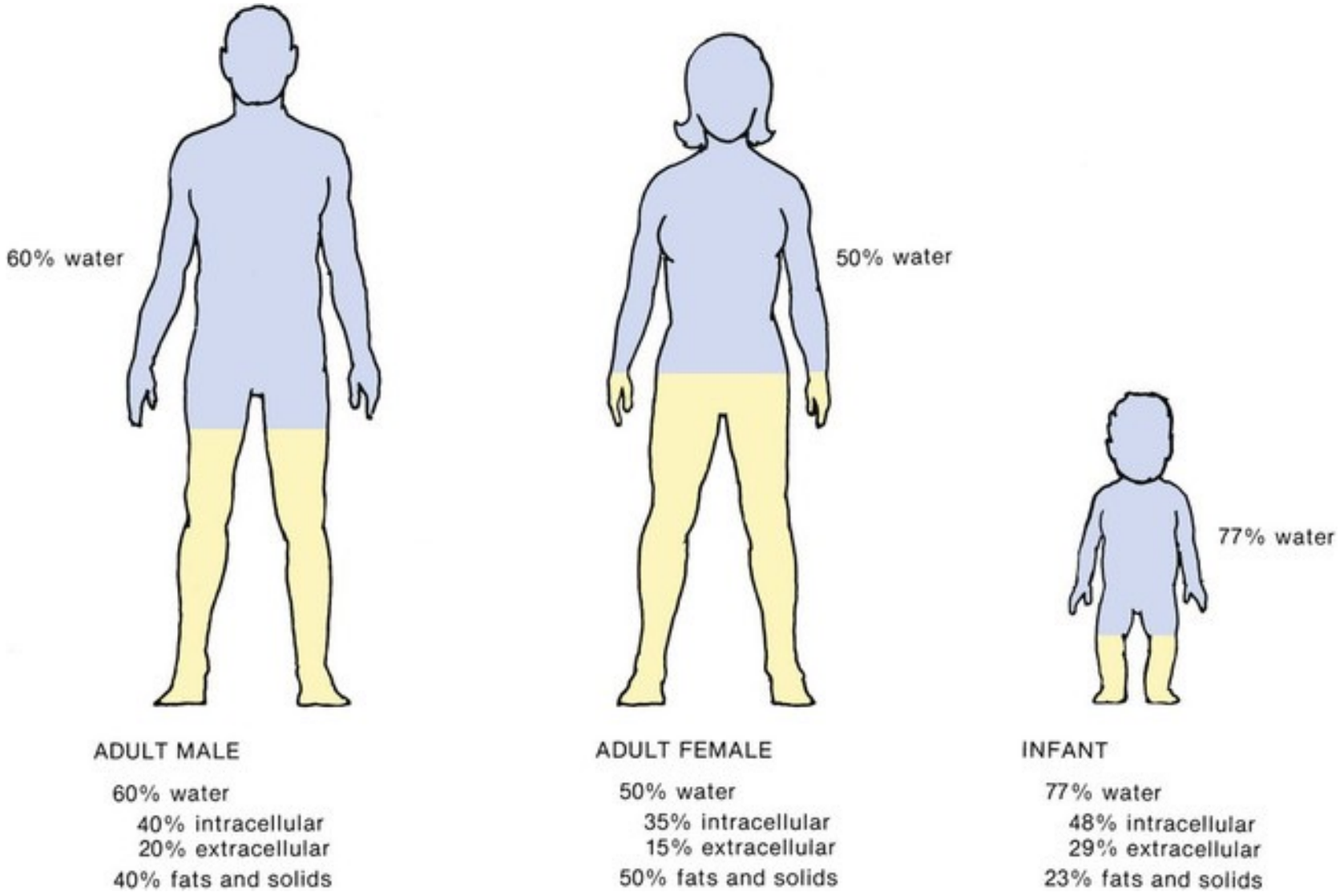
Greer - I wanted to let you know that we've seen so much improvement in our son in just this week he's been taking the supplements you recommended. In as little as a week of us giving him all the supplements, his echoing is so minuet and yesterday when I asked him what he did with his therapists he was finally able to respond to my question and not just parrot what I asked him! My husband and I cried so hard 😭.

All I ever keep telling my family is "I just wish my son could answer my questions without echoing or responding with something he remembered!" And it finally happened for us and we're so thankful! We know it's not just a coincidence and even though he has a long road ahead we wanted to take the time to share his wins! Thank you again for continuing to work with us.

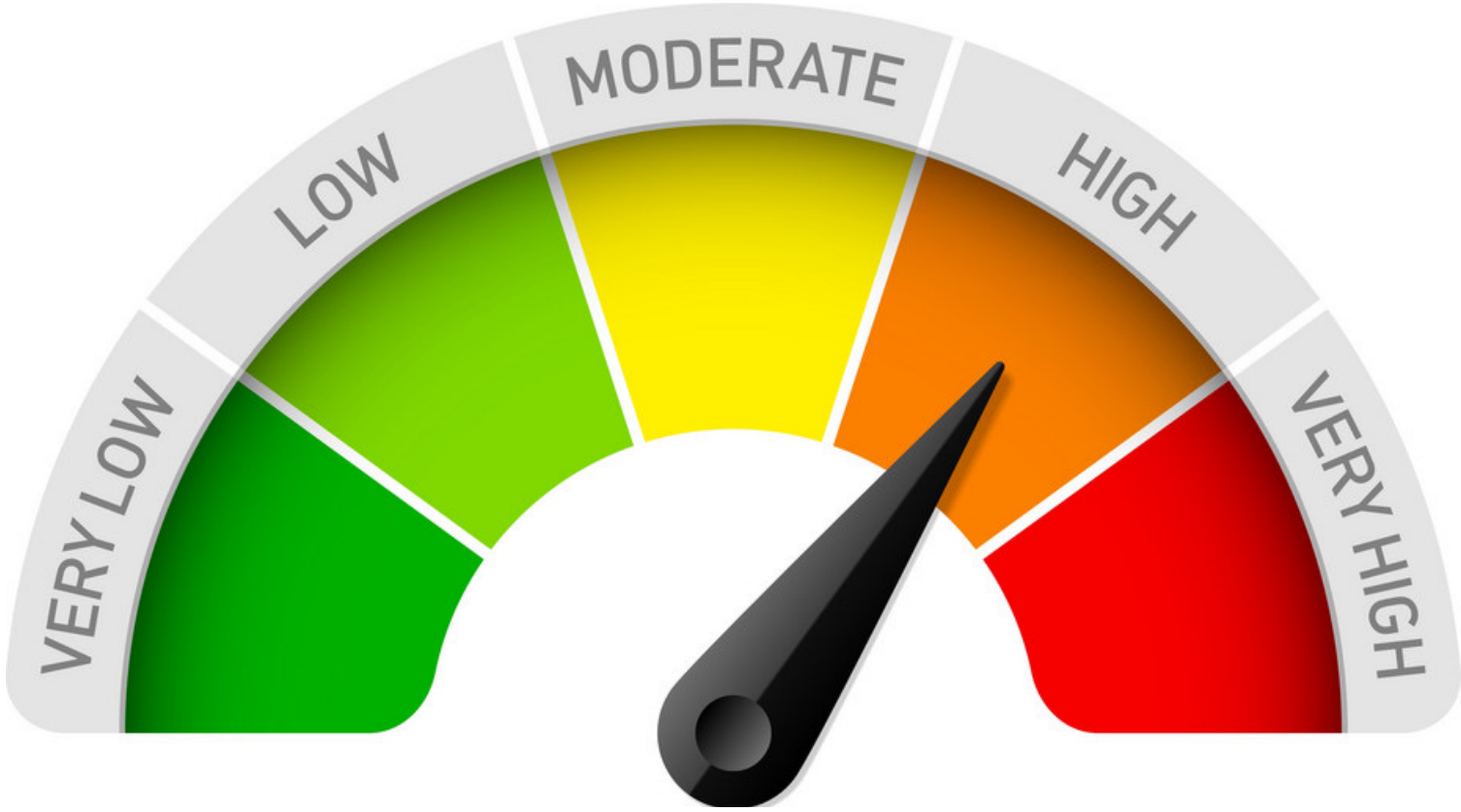

!!STOP YOUR OVER THINKING !!
Nothing good comes from overthinking

Priming The Body

Kid's Are NOT Mini Adults



Types of Detoxifiers



4 Pillars of Detox

- Clean Water- Water filtration system for the home (Heavy Metals, Pesticides, Medication, Parasites)
- Clean Food- Organic, whole foods, decrease processed foods (Pesticides, Bacteria, Heavy Metals)
- Clean Air- Air filtration system (Heavy Metals, Mold, Plastics)
- Clean Products- Bedding, cleaning, bath, personal products, cooking (Heavy Metals, Parabens, Phthalates, VOC'S)

Priming The Body (3-4 Weeks)

- Epsom Salt Baths
- Castor Oil Packs
- Increasing Fiber
- Lymphatic Drainage (Massages/Trampoline/Vibrating Plate)
- Red Light Therapy
- Lemon Water
- Teas (Milk Thistle/Dandelion Root)
- Homeopathy

What Toxin Do I tackle First?

Tackling Toxins

Step 1- Heavy Metals (low hanging fruit)

- Zeolites
- Silica (Fiji Water)
- Chlorophyll
- Chlorella
- Bentonite Clay
- Modified Citrus Pectin
- Activated Charcoal

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Bioreduction of precious and heavy metals by *Candida* species under oxidative stress conditions

Abel Moreno,[1] Nicola Demitri,[2] Estela Ruiz-Baca,[3] Arturo Vega-González,[4] Maurizio Polentarutti,[2] and Mayra Cuéllar-Cruz✉[1,5]

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Summary

Go to:

The aim of the present work was to evaluate whether *Candida* species can reduce both precious and toxic pure metals from the respective molecular ions. From these results, the nanoparticles formed were studied using scanning electron microscopy with energy-dispersive spectroscopy, Raman spectroscopy, X-ray fluorescence spectroscopy and synchrotron radiation. Our results showed that the metal ions were reduced to their corresponding metallic nanoconglomerate or nanoparticles by *Candida* species. This is the first report on how yeasts of this genus are capable of achieving homeostasis (resilience) in the presence of metal ions of both precious and toxic metals by reducing them to a metallic state.

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obtained results in the three *Candida* species in the presence of Au^{3+} are shown in Fig. 3 and S2. *Candida* cells, in the presence of Au^{3+}, can reduce this cation to gold NPs (AuNPs, see Fig. 3 and S2). As seen in Fig. 3A, B and S2 the Au^0 nanoparticles (AuNPs) are grouped in clusters. Under higher magnification, we can see the AuNPs, which have a completely spherical shape (Fig. 3B). Analysing the samples under SEM, AuNPs clusters were found in all the analysed fields, which shows that the *Candida* species have the ability to efficiently reduce Au^{3+} to Au^0. Additionally, to corroborate that the AuNPs observed through SEM corresponded to Au^0, the analysis of the elements present in the sample was carried out by means of EDS.

Mold & Environmental Toxins

Killing two birds with one supplements

Many binders and chelators will remove not just metals but mold and environmental toxins too

- Probiotics (Spore based)
- Fulvic
- Humic
- Alpha Lipoic Acid
- Activated Carbon
- Binders*

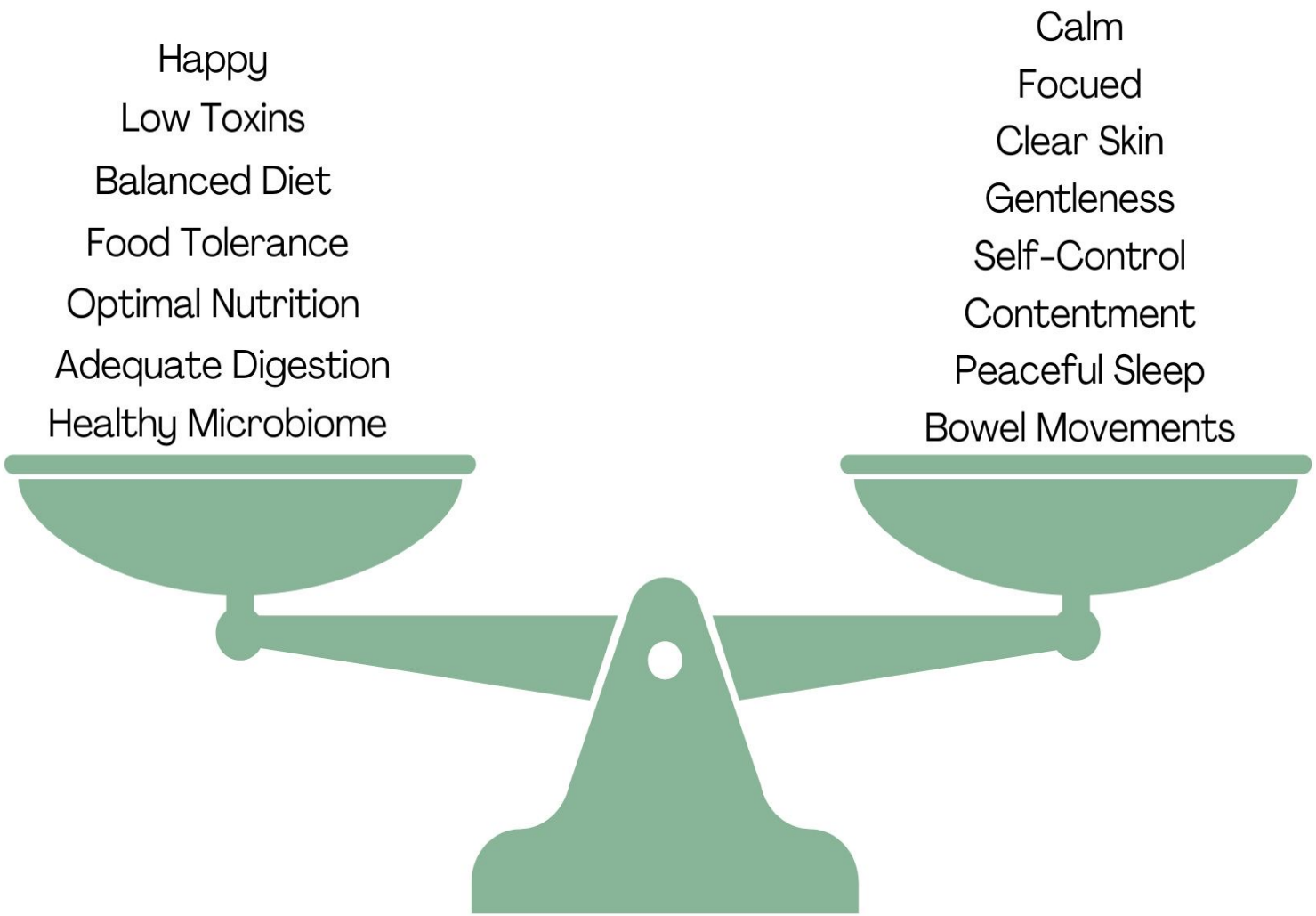
Don’t Forget Your Basics

- Fibers (Soluble)
- Garlic
- Cilantro
- Royal Jelly
- Quercetin
- Vitamin C
- NAC
- Glutathione

Recap

- Focus on foundations first (Stool and Toxins)
- Work on the gut and building up your patient
- Do NOT throw the kitchen sink at them with supplements
- Prime their body to gage how they will handle detoxing
- Detox and monitor
- Set up your patient for the future

End Result a Rebalanced Kid



Thank You
Questions??

www.biomedicalhealingforkids.com