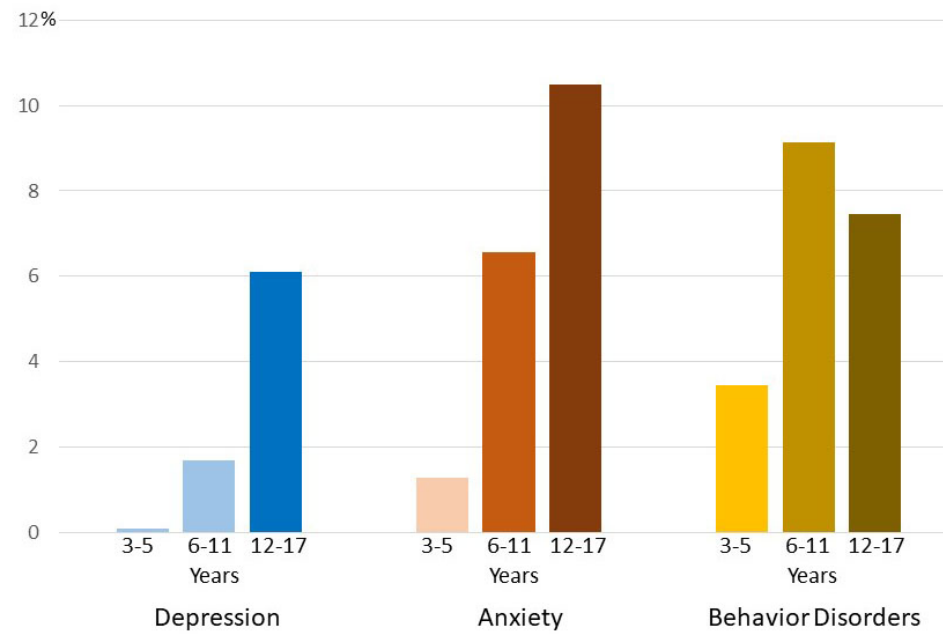




# How foods affect mood, behavior, and learning

Lisa Ann de Garcia  
Whole Child Learning and Wellness

Depression, Anxiety, Behavior Disorders, by Age



- At least 54% of children in the U.S. have been diagnosed with a chronic condition, according to a 2011 study published in *Academic Pediatrics* – and that was 10 years ago!
- The % of children with ADHD almost doubled from 1997 to 2017
- This is largely due to the shift in our standard American diet to one that is more processed and contaminated with chemicals.

# Food additives

<https://pediatrics.aappublications.org/content/pediatrics/142/2/e20181410.full.pdf>

- <https://www.mdlinx.com/article/5-fda-approved-food-additives-with-brain-damaging-effects/1CKUPqKCuQ2egrCNx38hyz>
- Aspartame
  - Nutrasweet
  - cancer, cardiovascular disease, Alzheimer's disease, seizures, stroke and dementia, brain tumors as well as **negative effects** such as intestinal dysbiosis, mood disorders, headaches and migraines
- Sodium Nitrate – processed meats and bacon
  - Linked to stomach and colon cancers, interfere with thyroid function as well as the blood's ability to deliver oxygen to the body
- Dickeyl – in processed foods, used for dairy flavoring,
  - especially popcorn and associated to popcorn lung. Crosses BBB and bad for memory. Has been shown to have an affect on the build up of Beta Amyloids



# Food Additives:

MSG: Mono sodium glutamate – food flavor enhancer

- Neurotransmitter – excitotoxin – neurotoxic (kills brain cells and wrecks havoc on brain function – overstimulate neuron receptors and excites brain cells until they die)
  - Influences glutamatergic neurotransmission
- MSG slowly enters the brain, bypasses the blood-brain barrier and reaches peak concentrations in the brain three hours after ingesting it. The high levels of MSG in the brain remain for 24 hours
- Schizophrenia, depression, autism, hormone imbalances, weight gain, brain damage, headaches, hives, canker sores, runny nose, insomnia, seizures, mood swings, aggressiveness, OCD, depression, insomnia, psychosis, panic attacks, heart palpitations and other heart irregularities, nausea, numbness, asthma attacks, migraines, and restless leg syndrome
- Hidden names in ingredient list:
  - hydrolyzed vegetable protein, hydrolyzed protein, hydrolyzed plant protein, plant protein extract, sodium caseinate, calcium caseinate, yeast extract, textured protein, autolyzed yeast and hydrolyzed oat flour

# Food Additives:

## Food dyes/colors: Red

<https://www.youtube.com/watch?v=SLvagftuOiU>



- Symptoms:
  - Hyperactivity, including [ADHD](#), Behavioral changes like irritability and depression, Hives and asthma, Tumor growth (three of the primary food dyes contain benzene, a known cancer-causing substance).
- You can find Red Dye 40 in a wide range of foods and beverages, including:
  - Candy, Condiments, Snack foods, Baked goods, Beverages, Salad dressings, Dairy products, Frozen desserts, Breakfast cereals, Fruit bars, Sauces
- Artificial dyes may also trigger “mind-storms,” which are issues with the brain’s wiring or electrical activity. Abnormal electrical activity can not only change the activity of the brain, but it can also change your mind and cause mind-storms that can be associated with [temper outbursts](#), [depression](#), [suicidal thoughts](#), [panic attacks](#), distractibility, and confusion.

<http://www.whydye.org/resources/health-effects-by-color/>

# 10 Terrible Truths About

One of the Most Commonly Used Food Dyes in the US

## RED DYE #40

1. Red Dye #40 is one of the most commonly used food dyes used in the U.S.

2. An estimated 6 million pounds of Red Dye #40 are dumped into foods each year.

3. Red Dye #40 is a synthetic, petroleum-based substance.

4. Red Dye #40 can be found in candy, condiments, snack foods, breakfast cereals, baked goods, sodas, juice drinks, gelatins, dairy products, and salad dressings.

5. Red Dye #40 is used in personal care products, cosmetics, and even in prescription medications.

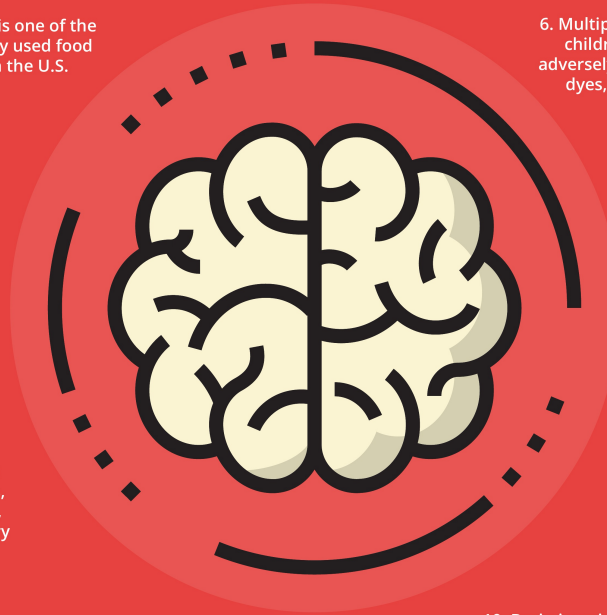
6. Multiple studies show that some children with ADD/ADHD are adversely affected by artificial food dyes, including Red Dye #40.

7. Scientific research reports that artificial coloring, such as Red Dye #40, can make some non-ADD/ADHD kids hyperactive.

8. Many parents blame increased hyperactivity on a "sugar rush" after children consume a snack, but it's often linked to Red Dye #40.

9. Symptoms reported after ingesting Red Dye #40 include upset stomach, migraines, jitteriness, nervousness, an inability to concentrate, and aggressive behavior.

10. Brain imaging studies at Amen Clinics show that Red Dye #40 can dramatically alter brain function and increase activity throughout the brain.



# Food dyes/colors: Blue



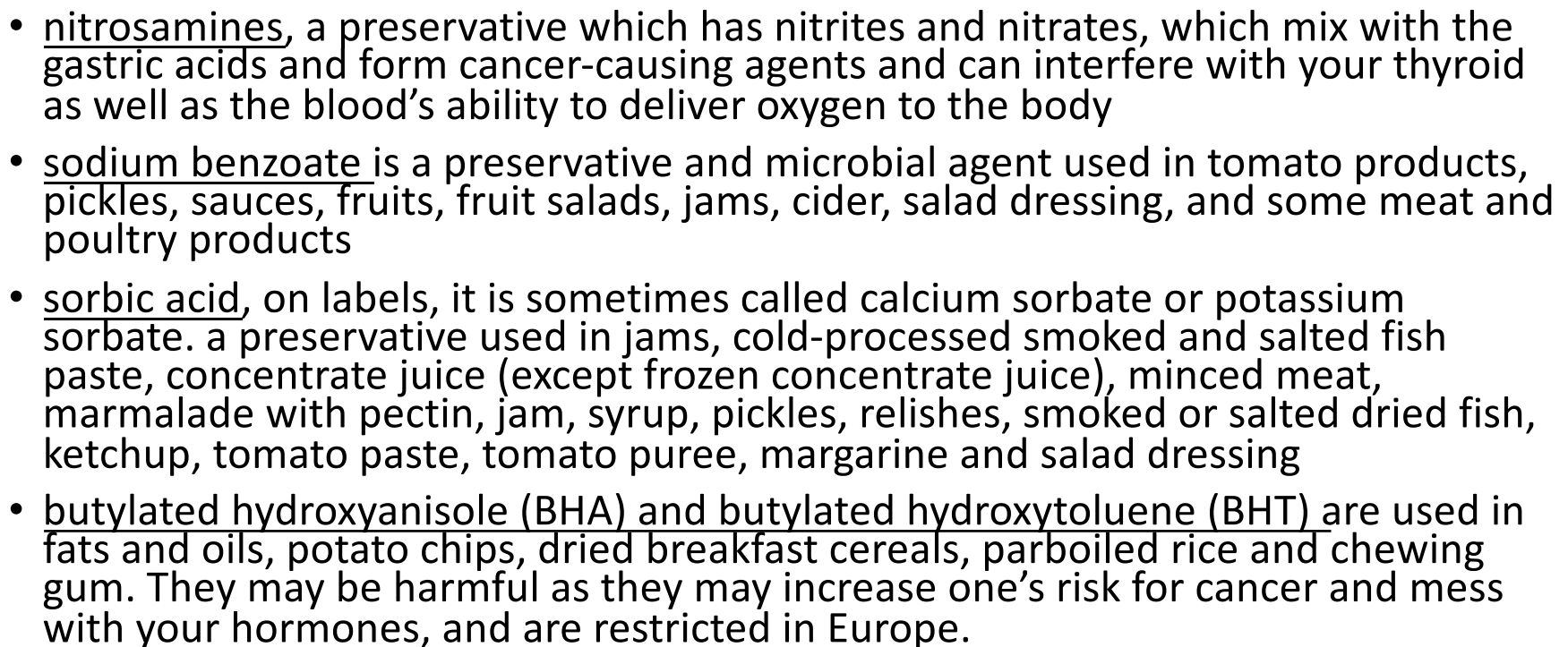
- Some reactions to Blue 1 include: eczema, hives, puffy eyelids, dry skin, sneezing, recurring ear infections, congestion, wheezing, headaches, migraines, anxiety, crying and fatigue. Blue 1 has also been linked to hyperactivity and behavior problems in children. According to the Feingold Association of the United States, Blue 1 can also cause chromosomal damage, which changes or breaks chromosomes of cells.
- Expertstestified at the 2011 FDA Food Advisory hearings that Blue #1 behaves differently than other FD&C colors as it is absorbed more and has been noted to cross the blood-brain barrier.
- Blue #1 is sometimes used in combination with FD&C Yellow #6 to create a green hue in products
- Blue #1 is used to generate a blue hue in many products including candies, gums, cereals, beverages, spirits, vitamins, medications, toothpaste, shampoo and mouthwash

# Food dyes/colors: Yellow



- Research has linked FD&C Yellow #5 to allergies, asthma, skin rashes, hyperactivity and migraines, its use has been [banned](#) in Norway and Austria.
  - foods that may contain FD&C Yellow #5 includes cake, pudding, biscuits, cookies, muffins, bread, pie crusts, frostings, candy, gums, ice cream, beverages, cereal, instant waffles, yogurt, chips, crackers, salad dressing, pickles, cheeses, dips, fast foods, prepared dried and frozen entrees and sides. It is also found in vitamins, soaps, and shampoos.
- Reported side effects of FD&C Yellow #6 include gastric upset, hives, runny nose, allergies, hyperactivity, tumors in animals, mood swings, and headache. It is [banned](#) in Norway and Finland
  - A partial list of foods that may contain Sunset Yellow includes orange soda, jams and jellies, baked goods, dessert mixes, cookies, frosting, cereal, candies, gum, beverages, soup mixes, margarine, chips, macaroni and cheese mix, condiments, and prepared chicken nuggets.

One of the most harmful effects of preservatives on food items is their **ability to transform into carcinogen agents**



## Other Chemicals



- Perchlorate This chemical also interferes with thyroid function, and can disrupt early brain development. It's found in some dry food packaging — it's used to decrease static electricity — and sometimes in drinking water.
- Perfluoroalkyl chemicals (PFCs) They can lead to low-birthweight babies, as well as problems with the immune system, the thyroid, and fertility. They are commonly found in grease-proof paper, cardboard packaging, and commercial household products such as water-repellent fabric and nonstick pans, among other places.
- **Phthalates.** These can also act like hormones, interfering with male genital development, and can increase the risk of obesity and cardiovascular disease. They are ubiquitous, found not just in plastic packaging, garden hoses, and inflatable toys, but also in things like nail polish, hairsprays, lotions, and fragrances.
- Bisphenols, such as BPA. They can act like the hormone estrogen and interfere with puberty and fertility. Bisphenols can also increase body fat, and cause problems with the immune system and nervous system. They are found in the lining of food and soda cans, plastics with the number 3 or 7, and cash register receipts, among other places. They used to be found in plastic baby bottles and sippy cups; while this has been banned, older bottles and cups may still contain them.



# Natural Flavors

- According to the Food and Drug Administration a natural flavor is classified as: 1
  - *“...The essential oil, oleoresin, essence or extractive, protein hydrolysate, distillate, or any product of roasting, heating or enzymolysis, which contains the flavoring constituents derived from a spice, fruit or fruit juice, vegetable or vegetable juice, edible yeast, herb, bark, bud, root, leaf or similar plant material, meat, seafood, poultry, eggs, dairy products, or fermentation products thereof, whose significant function in food is flavoring rather than nutritional.”*
- “natural flavor” on the ingredient list, which is often code for glutamate by-products.



# Natural Flavors

- The single word “flavor” in an ingredient list is actually a recipe that may be comprised of [upwards of 100 ingredients](#) that may come from some surprising (and disgusting) sources. For example, you would expect that “natural apple flavor” is juice extracted from an apple. Unfortunately, that is wishful thinking as the apple flavor needs to be preserved and stabilized with chemical agents added to help it mix into the product such as propylene glycol, BHT, BHA, and polysorbate 80. Castoreum, a “natural flavor” that tastes like strawberry and vanilla, found in ice creams, puddings, and other desserts comes from the castor sac of beavers. What is a castor sac? Located on a beaver’s backside, this sac stores the spray they use to mark their territories and is usually mixed with anal gland secretions and urine. Another example, known as “isinglass”, is often added to beer and wines and comes from the bladders of sturgeons<sup>9</sup>. Information like this often comes as a shock to vegans who would otherwise have no idea they were consuming animal by-products. Since both of these substances come from nature (beavers and fish), they can be hidden under the label “natural flavor”.
- <https://branchbasics.com/blogs/food/the-bizarre-truth-about-natural-flavors>

# Gluten

**Gluten** is a family of proteins that can be found in all grains including wheat, barley, and rye.



- When the body senses it as a toxin, causing one's immune cells to overreact and attack it. If an unknowingly sensitive person continues to eat gluten, this creates a kind of battle ground resulting in inflammation. The side effects can range from mild (fatigue, bloating, alternating constipation and diarrhea) to severe (unintentional weight loss, malnutrition, intestinal damage) as seen in the autoimmune disorder *celiac disease*.
- Problem is that it is GMO'd so that the body has a harder time digesting it.
- Gliadin appears to be the primary cause of celiac disease. Gliadin is a peptide contained within gluten-containing foods, and upon ingestion causes inflammation due to stimulation of helper T-cells. Gliadin activates zonulin signaling irrespective of the genetic expression of autoimmunity, leading to increased intestinal permeability to macromolecules ("leaky gut").
- There have been 4 opioid peptides isolated in gluten and can fit in their receptors of the brain, causing an opioid effect
- Due to molecular mimicry, after prolonged exposure to gluten and its peptides, the immune system can get mixed up and attack tissues that look nearly identical, including the thyroid, purkinje cells of the cerebellum and the basal ganglia.

"An innovative approach to our most fragile organ."

— MEHMET OZ, MD

*The Surprising Truth About Wheat, Carbs,  
and Sugar—Your Brain's Silent Killers*



# GRAIN BRAIN

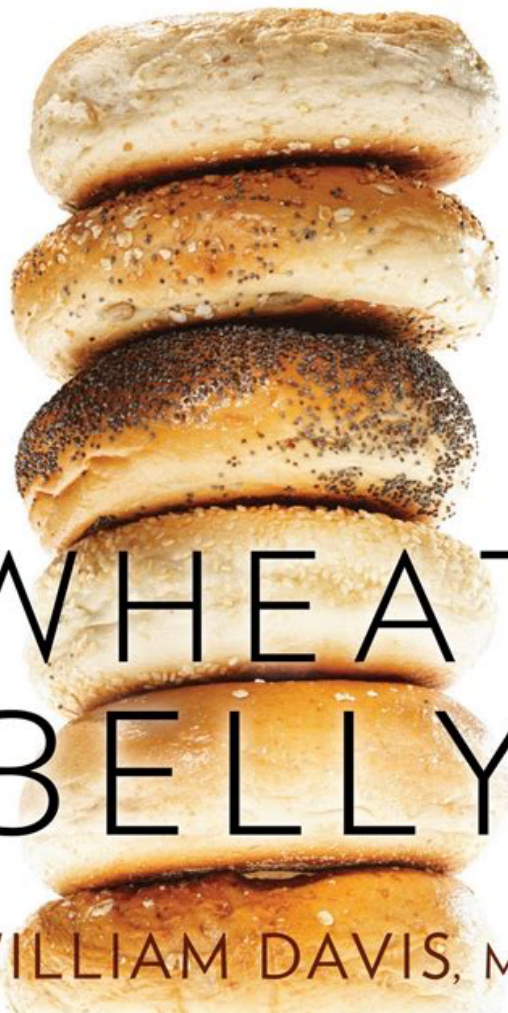
DAVID PERLMUTTER, MD

*Author of The Better Brain Book*

WITH KRISTIN LOBERG

Unabridged • Read by Peter Ganim • Includes a PDF of Recipes & More!

LOSE THE WHEAT, LOSE THE WEIGHT,  
AND FIND YOUR PATH BACK TO HEALTH



# WHEAT BELLY

WILLIAM DAVIS, MD

# Dairy & Casein

- Casein, has not only been linked to addiction that makes it hard to give up, but also aggression, depression, and even anger. It has to do with receptors in the gut and brain that react to the casein and create antibodies as a response.
- Reports of aggression and autistic symptoms seem to be higher when dairy is consumed.
- Dairy sensitivities are associated with reflux, mucous build up, phlem, chronic clear runny nose, headaches, brain fog, and emotional issues such as meltdowns
- Casein affects the central nervous system and is associated with hypersensitivities
- It seems the release of inflammatory cytokines during the process of immune system response of casein alters the blood-brain-barrier (BBB) integrity and lead to neuronal inflammation which could lead to seizures





# Pesticides



- Pesticides are chemicals that prevent insects, weeds, and fungi from damaging crops. Farmers use them to increase the amount of crops they are able to produce.
- There is pesticide residue in food and water. Pesticides can run off fields or soak through the ground to enter watercourses. Spraying crops with pesticides, or using pesticides in the soil, can leave some residue on produce.
- Pesticides can cause short-term adverse health effects, called acute effects, as well as chronic adverse effects that can occur months or years after exposure. Examples of acute health effects include stinging eyes, rashes, blisters, blindness, nausea, dizziness, diarrhea and death. Examples of known chronic effects are cancers, birth defects, reproductive harm, immunotoxicity, neurological and developmental toxicity, and disruption of the endocrine system.
- Some people are more vulnerable than others to pesticide impacts. For example, infants and young children are known to be more susceptible than adults to the toxic effects of pesticides.

# The 2019 DIRTY DOZEN List

Environmental Working Group's annual  
list of produce with the **most pesticides**.

1. STRAWBERRIES



2. SPINACH



3. KALE



4. NECTARINES



5. APPLES



6. GRAPES



7. PEACHES



8. CHERRIES



9. PEARS



10. TOMATOES



11. CELERY



SOURCE: EWG.COM

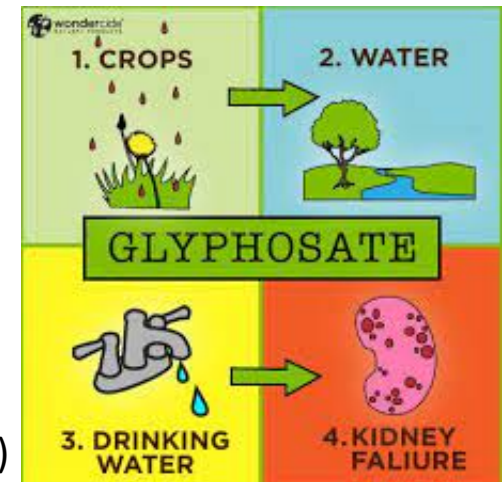
12. POTATOES





# Herbicides / Glyphosate

- Glyphosate is an herbicide that people use to kill weeds and is the main ingredient in the weed-killer Roundup®
- Glyphosate severely depletes manganese which:
  - Causes the glutamate excitotoxicity in the brain (key problem in autism)
  - Causes mitochondrial dysfunction (problem particularly in autism)
  - Reduces chondroitin sulphate synthesis, leading to osteoporosis
  - Decreases lactobacillus, thus leading to anxiety (especially in autism & Chronic fatigue syndrome), & the overgrowth of salmonella
  - Increase rates of infertility and birth defects
- Glyphosate encourages accumulation of manganese in the brainstem, contributing to Parkinson's and prion disease
- Glyphosate alters the brain amino acid metabolism, and destroys the blood brain barrier.
- It is in most all the food we eat due to new Roundup® ready seeds.



# Foods with the most glyphosate

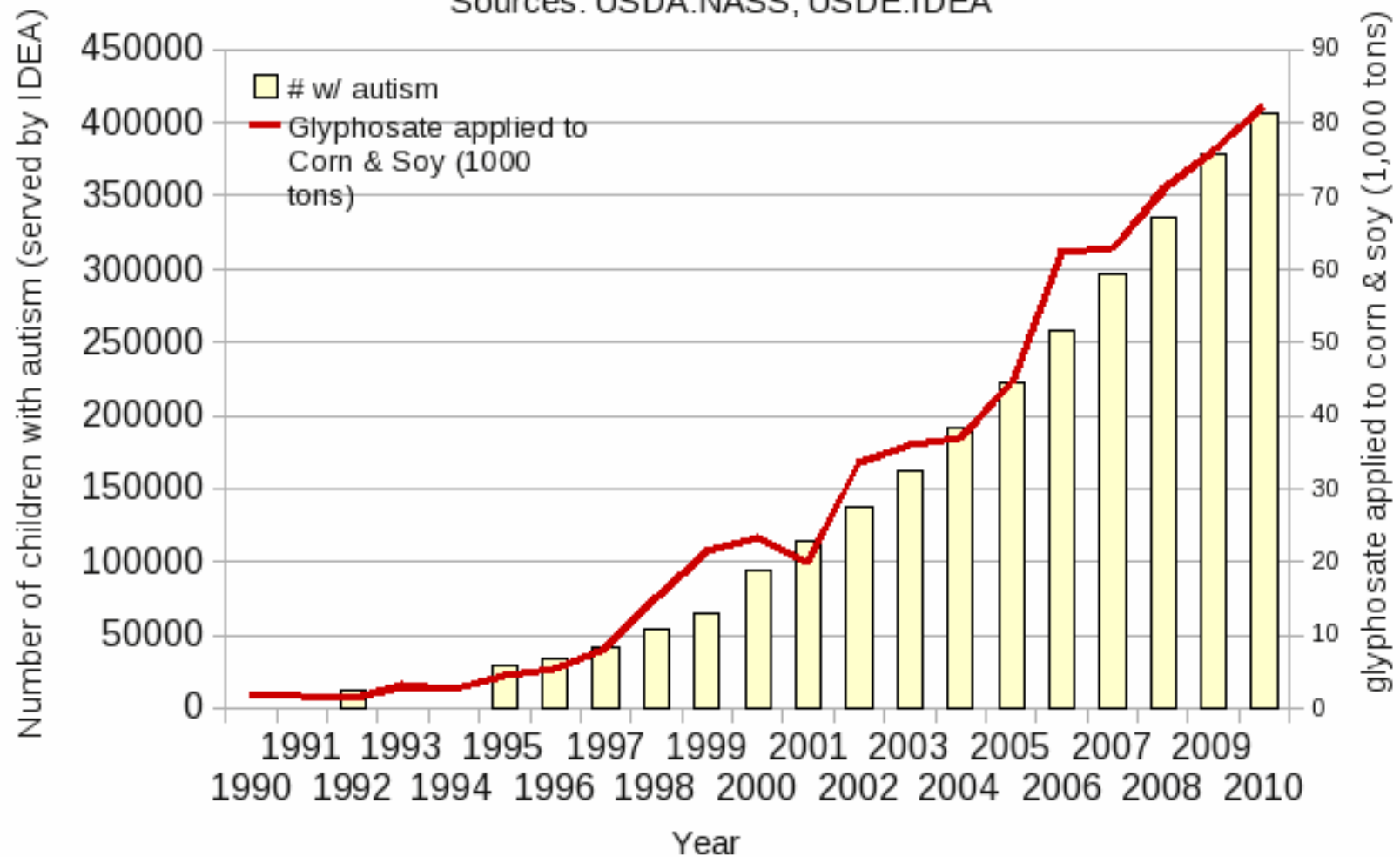
- Over half of all samples of soy (67.4%), wheat (47.8%), rice (80%), and corn (58.6%) contained pesticide residues. These were not the worst offenders, however. A staggering 95.9% of cherry fruit/juice and 90.8% of apple fruit/juice tested positive for pesticides. As for grape fruit/juice and raisins, 92.8% of samples were found to be contaminated, while 92.5% of strawberries were also tainted. As a group, almost four out of five samples (79%) of fruit or fruit products tested positive for pesticides.

Crop	↕ Annual average (Lbs. Glyphosate)
Soybeans	101,200,000
Corn	63,500,000
Cotton	18,400,000
Fallow	8,800,000
Wheat	8,600,000
Oranges	3,200,000
Sorghum	3,000,000
Almonds	2,100,000
Grapes	1,500,000
Sugar beets	1,300,000
Sunflowers	1,100,000
Rice	800,000

# Number of children (6-21yrs) with autism served by IDEA

plotted against glyphosate use on corn & soy ( $R = 0.9893$ ,  $p \leq 3.629e-07$ )

Sources: USDA:NASS; USDE:IDEA



# Trans fats / Omega 6

- Trans fat is known as partially hydrogenated vegetable oil and it penetrates all cells and is also linked to memory loss due to systemic inflammation
- Omega 6 promotes inflammation and Omega 3 lowers it.
- For optimal health, we should have a ratio of omega 6 to omega 3 of 3:1. The average ratio in the U.S. is 25:1, leading to all kinds of conditions resulting from chronic inflammation, including brain related issues.
- There are three kinds of Omega 3: EPA, ALA, and DHA. DHA is particularly useful for brain development.
- Omega 6 is in everything and Omega 3 (DHA & EPA) is only found in fish, seaweed, and algae. ALA can be found in some plants, such as flax seeds, but it needs to be converted to one of the other two forms, a process which is not very efficient. Our modern U.S. diet is highly lacking in sources for Omega 3 and it needs to be supplemented.

Oil	Omega-6 Content	Omega-3 Content
Safflower	75%	0%
Sunflower	65%	0%
Corn	54%	0%
Cottonseed	50%	0%
Sesame	42%	0%
Peanut	32%	0%
Soybean	51%	7%
Canola	20%	9%
Walnut	52%	10%
Flaxseed	14%	57%
Fish*	0%	100%

# Sugar / fruit juices



- Fruit juices are high in glyphosate
- Fruit juices often have added flavors, food coloring or other additives. (“natural flavors” see slide 11)
- Fruit juice and soda contain similar amounts of sugar.
- In one popular apple juice brand, one 4 oz. box contained 14 grams of sugar. That equals about 3 teaspoons of sugar. In a 6 oz. box of a popular orange juice, it was found to have 18 grams of sugar, or a little more than 4 teaspoons. If you compare that to a can of soda, in terms of volume, it’s about the same – and those are fruit juices with no added sugar.
  - Leads to type 2 diabetes
- Any fruit juices can contain lead or other metals.
- The whole fruit is better because the fiber in the fruit binds with the sugar to prevent absorption. In the juice, the sugar goes straight into the blood stream.

# Phenols / salicylates



- Phenols and salicylates are chemical compounds found in fruit, vegetables, nuts, and some medications.
- The term phenol refers to a large group of chemical compounds found in plants. Salicylates are a specific type of phenol. These beneficial compounds act as a preservative, protecting plants from bacterial/fungal infections, insects, and UV radiation damage.
- Natural phenols are not only beneficial to plants but humans too. For example, phenols in fruits, vegetables, nuts, and seeds are excellent sources of antioxidants, which protect us from heart disease, promote healthy digestion, improve brain function, and reduce inflammation.
- Also, processed and packaged foods contain phenols. However, many of these are synthetically produced phenols that manufacturers add to artificially flavor, color, and lengthen shelf life. Similarly, some medications, toothpaste, and lotion contain synthetically produced salicylates.

# Why Are Kids Sensitive To Phenols And Salicylates?

- Even though phenols and salicylates are beneficial for our bodies, some people have adverse reactions to them. For example, a child with a phenol sulfurtransferase (PST) deficiency will have trouble processing foods high in phenols. PST is an enzyme that breaks down phenols, allowing the body to use what it needs and excrete what it doesn't need. Accordingly, people with a PST deficiency have trouble detoxifying and clearing away phenols and salicylates, causing them to accumulate. As a result of this accumulation, symptoms of phenol sensitivities develop.
- Some of these chemical phenols (food additives) look very similar to neurotransmitters and act as neurotoxins (toxic to the nerves and nervous system) by binding to neurotransmitter receptors. From there they artificially stimulate the brain and cause 'noise' this can manifest as aggression, hyperactivity.



A person with a phenol/salicylate sensitivity may experience some of the following adverse side effects:

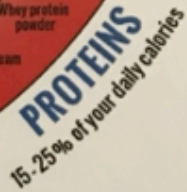
- **Physical:**

- Headaches
- Hives, eczema, or changes in skin color
  - Specifically, red ears and/or cheeks
- Allergy-like or respiratory issues:
  - Runny and/or stuffy nose
  - Sinus infection
  - Nasal and sinus polyps
  - Asthma
- Gastrointestinal issues:
  - Abdominal pain
  - Colitis
  - Diarrhea
  - Inflammation



- **Behavior:**

- Hyperactivity
- Mood swings, irritability, or aggression
- Stimming
- Laughing at inappropriate times
- Night waking

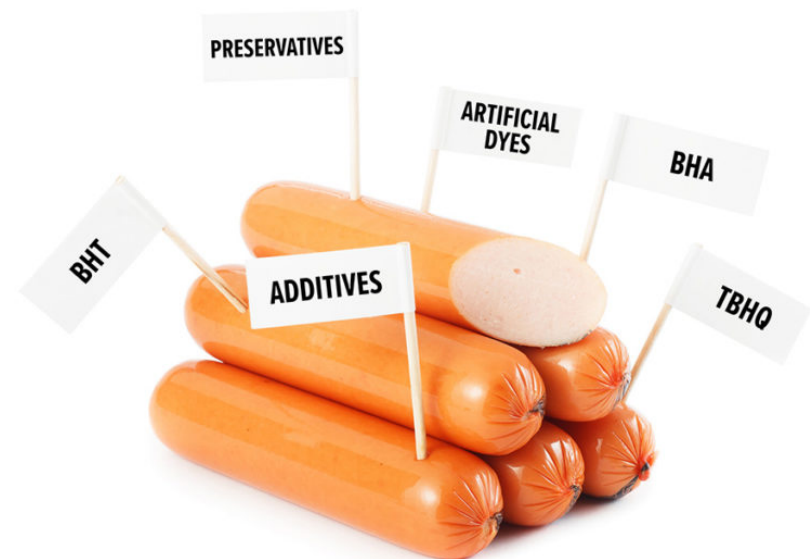


# School Lunch

Looking at calories, food groups and macronutrients school lunches don't prove to be healthy.

Many food suppliers utilize processed foods as well as artificial flavors and coloring, preservatives, emulsifiers and other food additives, which are currently allowed in cafeteria meals. Meanwhile, more likely than not, meats and produce are conventionally raised and produced as well to keep costs down.

Conventional ketchup often contains high fructose corn syrup. Mayonnaise is typically laden with processed vegetable oils.







- Teachers should NEVER give food as a reward (unless they want to start giving little baggies of baby carrots 😊 )

- The worst nightmare of a parent with sensitive children is the unexpected school birthday party.



- Food that has un-natural ingredients can potentially cause physical and emotional harm. They can cause anxiety, rage, brain fog, etc.
- It can take someone up to 48 hours to react to an ingredient he/she is sensitive to. If the offending food is being constantly consumed (i.e., gluten) it may never be realized that it is what is causing symptoms.
- There are many parents who are in tune to how their children respond to food and feed them "clean" food. They are at the mercy of the school to follow through so their child is able to optimally function
- Even if the school lunches are "free," children shouldn't be given free reign to whatever they want...parents should have some say-so.
- For someone who is reacting to an ingredient with an immune response, there is no such thing as "just a little bit". One speck can cause a reaction, though unlike anaphalaxis, it may not be noticeable.