Outline

• Some Problems with Soy
• Glyphosate, Aluminum and Arsenic in Soy
• Health Consequences
• Cultivating Genetically Modified Soy is Dangerous
• Summary
Some Problems with Soy

*About 25% of American babies are fed soy infant formula
*Phytic acid in soy blocks the absorption of critical minerals like calcium, magnesium, iron and zinc
*Babies fed soy-based formula had 13,000 to 22,000 times more isoflavones (estrogenic substances) in their blood than babies fed milk-based formula
  – Estrogenic effect leads to early onset of menarche (42% increased rate of menarche before 12.5 years old)
  – This is linked to infertility and breast cancer in later years

*http://www.thehealthyhomeeconomist.com/why-soy-formula-even-organic-is-so-dangerous-for-babies
Soy is High in Oxalates

“A buildup of oxalates in the body interferes with many metabolic processes and contributes to problems such as autism, ADD, COPD, asthma, cystic fibrosis, vulvodynia, autoimmune diseases such as fibromyalgia and hypothyroidism, low energy, chronic pain, and delayed healing of injuries.”

GM Soy is engineered to be “Roundup-Ready”: Bacterial gene inserted which gives the plants resistance to *glyphosate*, the active ingredient in the pervasive herbicide Roundup.

Another claim of Monsanto's has been that residue levels of up to 5.6 mg/kg in GM-soy represent "...extreme levels, and far higher than those typically found" (Monsanto 1999).

*Bøhn et al., Food Chemistry 153(15), 2014, 207-215
Moms Across America Experiment*

- Glyphosate was detected in feeding tube liquid given to babies and children with cancer in hospitals
- 30% of Pediasure samples from the same batch tested positive at levels > 75ppb

*http://www.momsacrossamerica.com/glyphosate_found_in_feeding_tube_liquid

Aluminum in Soy

- Aluminum content of soy infant formulas ranges from 600 to 1300 ng/mL, compared to 4-65 ng/mL in human milk*
  - Derived from mineral salts used in soy production
  - Can cause reduced skeletal mineralization in vulnerable preterm infants**
- Might glyphosate enhance bioavailability of aluminum in brain leading to neurotoxicity?***

**Bhatia_2008_soy_formula_infant_feeding_review.pdf
***S. Seneff et al., Agricultural Sciences, 2015, 6, 42-70
**Glyphosate and Aluminum: Partners in Crime**

- Glyphosate induces pathogens like *C. difficile* in gut, leading to *leaky gut syndrome*
  - *C. diff* produces *p-cresol* which promotes aluminum uptake by cells
  - *p-Cresol* is a known biomarker for autism
  - *p-Cresol* is an important factor in *kidney failure* which leads to aluminum retention in tissues → dementia
- Glyphosate promotes *calcium uptake* by voltage-activated channels
  - Aluminum gains entry as calcium mimetic

*S. Seneff et al., Agricultural Sciences, 2015, 6, 42-70*

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**Arsenic in Soy**

- Study comparing breast-fed with formula-fed infants
- Formula-fed infants had 5.5-fold higher arsenic intake and 7.5-fold higher arsenic in urine
- Formula powder as well as water were contributory

*CC Carignan et al., Environmental Health Perspectives, February 23, 2015 [Epub ahead of print]*
Health Consequences

Autism Prevalence 6 yr-olds
glyphosate is total of year indicated + 3 previous years
R = 0.9972, p <= 2.366e-07

*Plot provided by Dr. Nancy Swanson
Data sources: autism: US Department of Education; Glyphosate: US Department of Agriculture
Percentage of children with Autism in the US*

*Data provided by CDC for 12-year-old children in the US

Half the children born in 2032 will be diagnosed with autism

*Data provided by CDC for 12-year-old children in the US
Glyphosate in GM Soy: Likely Consequences

• Glyphosate disrupts gut microbes, leading to inflammatory gut and leaky gut
• Glyphosate chelates metals – like phytates
• Glyphosate is an endocrine disruptor, like the isoflavone, genistein
  – Both genistein and glyphosate increase growth rate of breast cancer cells
  – Glyphosate at parts per trillion concentration*
• * Glyphosate formulations likely contain oxalate


Monsanto Patents: 2002-2010: Pesticide Compositions Containing Oxalic Acid

“[origin: WO02069718A2] Pesticidal concentrate and spray compositions are described which exhibit enhanced efficacy ... More particularly, the present invention relates to a method of enhancing the herbicidal effectiveness of glyphosate concentrate and tank mix formulations containing one or more surfactants through the addition of oxalic acid.”
Monsanto Patents: 2002-2010:
Pesticide Compositions Containing Oxalic Acid

“[origin: WO02069718A2] Pesticidal concentrate and spray compositions containing oxalic acid... Monsanto Technology, St. Louis, MO

Oxalic acid and oxalate are the same thing!

Autism Linked to Oxalate Crystals*

• Crystals of oxalate form kidney stones and cause great discomfort
• Study has shown at least 3-fold higher serum and urinary levels of oxalate in autistic kids**

*William Shaw, The Role of Oxalates in Autism and Chronic Disorders WAPF, March 26, 2010
Soy Formula Linked to Seizures in Autism*

"There was a 2.6-fold higher rate of febrile seizures, a 2.1-fold higher rate of epilepsy comorbidity and a 4-fold higher rate of simple partial seizures in the autistic children fed soy-based formula"

*CJ Westmark, PLOSOne March 12, 2014, DOI: 10.1371/journal.pone.0080488.

Health effects of **GM Soy Imports** in China*

China has now switched from growing its own soy to importing GM soy from the West

- **Autism rates** have increased 100 times during the past 20 years
- **Parkinson's disease** in China has increased over 20 fold during the past 20 years
- **Infertility** rates have risen sharply:
  - 2012: 15.6%
  - 2002: 8%
  - 1972: 3%

*Mi Zhen-yu, Former Vice President, Academy of Military Science
English translation by Chen I-wan
blog.sina.com.cn/s/blog_4bb17e9d0102edhg.html
USDA Data on Soy and Canola Oil Consumption: Human + Animal*

Parkinson's, Alzheimer's & Senile Dementia combined death rates (per 100,000)

\[ R = 0.9769, p \leq 5.494 \times 10^{-13} \]

VAERS Database Analysis Compared to Human Oil Consumption*

Children under 6 with autism, pervasive developmental delay or anxiety – counts of events in VAERS database

\[ R = 0.8931, p \leq 1.442 \times 10^{-06} \]

VAERS = Vaccine Adverse Event Reporting System

* Plots provided by Nancy Swanson with permission
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* Plots provided by Nancy Swanson with permission

Cultivating Genetically Modified Soy is Dangerous
Cultivating GM Soy Is Dangerous to Your Health!*  

- Increasing rates are observed in cancer, birth defects, miscarriages, mental disabilities, endocrine and immune disorders suffered by rural populations in Argentina near GM Soy crops  
- Glyphosate is the most commonly used toxic agrochemical in Argentina, comprising 64% of total sales, and 200 million litres of glyphosate were applied during the last crop season


Hectares of Land Dedicated to GM Soybean Cultivation, Chaco Argentina*  

Rate of Birth Defects in Children Born in Chaco, Argentina*


Down’s syndrome, spina bifida, neural tube defects, congenital heart disease, etc.

Summary

• Soy is an unhealthy food, especially GM Roundup-Ready soy used in food processing
  – Soy contains mineral-chelating phytates, estrogenic genistein, and oxalate
  – GM soy contains high concentrations of glyphosate, with many health consequences
  – Soy is also high in aluminum and arsenic
• Over 90% of the soy cultivated today is genetically modified to resist glyphosate
• Many negative health consequences
  – Autism, dementia, Parkinson’s disease, breast cancer, infertility, etc.
• People exposed to soy crops suffer from negative health effects, including high rate of congenital defects