Glyphosate
TEST

Glyphosate

The Perfect Add-On Test to GPL-TOX

General Description

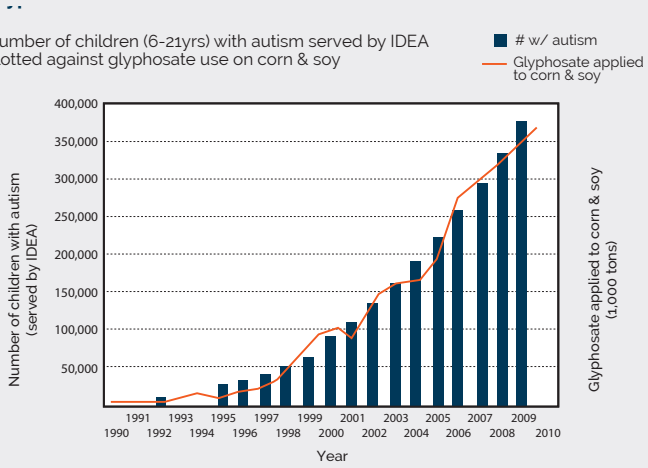
Glyphosate is the world's most widely produced herbicide and is the primary toxic chemical in Roundup™, as well as in many other herbicides. Glyphosate was introduced in the 1970s to kill weeds by targeting the enzymes that produce the amino acids tyrosine, tryptophan, and phenylalanine.

The enzymes of many bacteria are also susceptible to inhibition by this chemical, thus altering the flora of many animals. Usage of glyphosate has since amplified, after the introduction of genetically modified (GMO) glyphosate-resistant crops that can grow well in the presence of this chemical in soil. In addition, in 2014 Enlist Duo™, a herbicide product which contains a 2,4-dichlorophenoxyacetic acid (2,4-D) salt and glyphosate, was approved for use in Canada and the U.S. for use on genetically modified soybeans and genetically modified maize, both of which were modified to be resistant to both 2,4-D and glyphosate. 2,4-D has many toxic effects of its own and can be measured in the GPL-TOX Profile. Our Glyphosate Test is done via urine sample and can be easily added on to other urine tests like the Organic Acids Test or GPL-TOX Toxic Non-Metal Chemical Profile at a discounted rate.

Clinical Significance

Glyphosate has been declared a likely carcinogen by the International Agency for Research on Cancer of the World Health Organization. Chronic kidney disease of farm workers has also been associated with glyphosate exposure. Researchers Stephanie Seneff and Anthony Samsel have proposed that glyphosate toxicity in animals is due to alteration of cytochrome P450 enzyme activities. In addition, many beneficial microorganisms are susceptible to glyphosate, leading to decreases in beneficial flora and increases in bacterial pathogens such as Salmonella and Clostridia. Recent studies by Seneff et al have found significant associations between the ingestion of glyphosate and/or GMO foods and a variety of diseases including common cancers, autism, Alzheimer's disease, multiple sclerosis, diabetes, and many others.

Glyphosate and Autism*



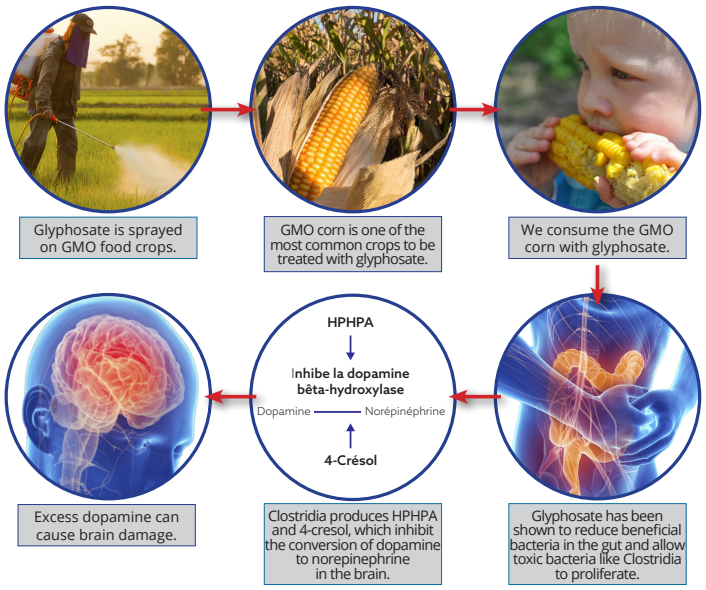
High correlations exist between glyphosate usage and numerous chronic illnesses, including autism, which is shown in graph. Mosaic Diagnostics recently conducted a study on a set of triplets (two with autism and one with a suspected seizure disorder) and found that when their intake of glyphosate was decreased (switching to organic food), their symptoms improved. Other disease incidences with high correlations include hypertension, stroke, diabetes, obesity, lipoprotein metabolism disorder, Alzheimer's, senile dementia, Parkinson's, multiple sclerosis, inflammatory bowel disease, intestinal infections, end stage renal disease, acute kidney failure, cancers of the thyroid, liver, bladder, pancreas, kidney, and myeloid leukemia. Correlations are not causations, yet they raise concern over the use of a chemical to which all life on earth appears to be exposed.

Conditions Associated with Glyphosate Exposure

The chelating ability of glyphosate also extends to toxic metals. The high incidence of kidney disease of unknown etiology (renal tubular nephropathy) has reached epidemic proportions among young male farm workers in sub-regions of the Pacific coasts of the Central American countries of El Salvador, Nicaragua, Costa Rica as well as in India and Sri Lanka. The researchers propose that glyphosate forms stable chelates with a variety of toxic metals that are then ingested in the food and water or in the case of rice paddy workers, may be absorbed through the skin. These glyphosate-heavy metal chelates reach the kidney where the toxic metals damage the kidney. These authors propose that these chelates accumulate in hard water and clay soils and persist for years, compared to much shorter periods of persistence for non-chelated glyphosate. Furthermore, these chelates may not be detected by common analytical chemistry methods which can only detect free glyphosate, thus dramatically reducing estimates of glyphosate persistence in the environment when metals are high (for example, in clay soil or hard water).

Treatment

Treatment of glyphosate toxicity should be centered on determining the route of introduction and avoiding future exposure. Eating non-GMO (genetically modified organism) foods and drinking reverse osmosis water are two of the best ways to avoid glyphosate. A recent study showed that people eating organic food had considerably lower concentrations of glyphosate in the urine. Drinking extra water may also be beneficial since glyphosate is water soluble. More than 90% of corn and soy used are now of the GMO type. In addition, non-GMO wheat is commonly treated with glyphosate as a drying procedure. Glyphosate is somewhat volatile and a high percentage of rain samples contained glyphosate. Another study found that glyphosate accumulated in bones. Considering the strong chelating ability of glyphosate for calcium, accumulation in bones is not surprising. Other results showed that glyphosate is detectable in intestine, liver, muscle, spleen and kidney tissue. A 54-year-old man who accidentally sprayed himself with glyphosate developed disseminated skin lesions six hours after the accident. One month later, he developed a symmetrical parkinsonian syndrome.



Glyphosate Profile

Metabolite	Result µg/g creatinine	Patient Value
Glyphosate	2.50	LLOQ 0.38 · 75th 1.8 · 95th 2.5

Visit MosaicDX.com for more resources
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