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Shocking News About Beans, Peas and Potatoes

Written by Dr. Joseph Mercola Fact Checked

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STORY AT-A-GLANCE

- Genetically engineered foods are not the only source of glyphosate in your diet. Most conventional, non-GE crops are also contaminated, as are some organics, as glyphosate is widely used as a desiccant or drying agent to speed up harvesting
- Food testing by The Detox Project shows glyphosate contamination is rampant in organic plant-based protein supplements. When testing eight of the most popular pea protein brands sold on Amazon.com, one organic brand was found to contain more glyphosate than conventional brands
- Two conventional (nonorganic) brands, Naked Pea and Anthony's Pea Protein, had 39 ppb and 80 ppb respectively, while two separate batches of a top-selling organic brand, Orgain Organic Plant-Based Protein Powder, contained 83 ppb and 281 ppb

- Research shows the desiccant paraquat can trigger Parkinson's disease when combined with plant lectins found in peas, beans, potatoes and many other foods, as the lectins can transport the toxin into the brain
- Evidence suggests diquat may have similar risks as paraquat. According to research, diquat causes cell death by producing reactive oxygen species independently of the mitochondria, and appears to be quite hazardous to brain tissue

In recent years, researchers have discovered glyphosate, the active ingredient in Roundup and other common weed killer formulations, may affect your body's ability to produce fully functioning proteins, inhibit the **shikimate pathway** (found in gut bacteria) and interfere with the function of **cytochrome P450 enzymes** (required for activation of vitamin D and the creation of nitric oxide and cholesterol sulfate).

Glyphosate also chelates important minerals; disrupts sulfate synthesis and transport; interferes with the synthesis of aromatic amino acids (shikimate pathway) and methionine, resulting in **folate** and neurotransmitter shortages; disrupts your **microbiome** by acting as an antibiotic; impairs methylation pathways; and inhibits pituitary release of thyroid stimulating hormone, which can lead to hypothyroidism.[1,2]

Roundup has also been linked to certain cancers.[3] In March 2015, the International Agency for Research on Cancer (IARC) classified **glyphosate** as a "probable carcinogen" (Class 2A),[4] based on "limited evidence" showing the weed killer can cause **non-Hodgkin lymphoma** and lung cancer in humans.

So far, three lawsuits against Monsanto (now Bayer) have resulted in high financial awards as Roundup was found to have caused the plaintiffs' Non-Hodgkin lymphomas. The most recent plaintiffs were awarded a $2 billion judgment against Monsanto.[5] All of this has led to grave concerns about glyphosate residues in food.

We're now also realizing that genetically engineered (GE) foods are not the only source of this contaminant. Most conventional, non-GE crops are also contaminated, as are some organics.

The reason for this has to do with the fact that glyphosate is commonly used as a desiccant or drying agent to speed up harvesting.

But that's not all. Other desiccants may also be causing problems. As a whole, evidence suggests we need to be extremely cautious in our choices of plant-based foods, sticking to organics whenever possible, especially when buying high-lectin foods such as beans, peas and potatoes, as research shows the desiccant paraquat becomes exponentially more hazardous in combination with plant lectins.

Glyphosate Contamination Found in Many Foods, Including Organics

Several rounds of food testing have also revealed just how prevalent glyphosate is in our food. Test results[6] published in August 2018 by the Environmental Working Group (EWG) showed 43 out of 45 food products made with conventionally grown oats tested positive for glyphosate, 31 of which had glyphosate levels higher than EWG scientists believe would be safe for children.

A second round of testing[7,8] revealed glyphosate is a staple contaminant in **Cheerios breakfast cereals** and Quaker oats products. All 28 samples contained glyphosate; 26 at levels suspected to be harmful to children's health.

Five of 16 organic oat foods also contained low amounts of glyphosate, even though it's supposed to contain none, as glyphosate is prohibited in the U.S. organic standards. Similarly, testing[9] done by Friends of the Earth (FOE) earlier this year found **glyphosate in 100% of the 28 oat cereals** sampled.

Glyphosate has even been detected in PediaSure Enteral Formula nutritional drink, which is given to infants and children via feeding tubes. Thirty percent of the samples tested contained levels of glyphosate over 75 ppb — far higher levels than have been found to destroy gut bacteria in chickens (0.1 ppb).[10]

It's also found in air, rain, municipal water supplies, soil samples, breast milk, urine and even vaccines, including the pneumococcal, Tdap, hepatitis B (which is injected on the day of birth), influenza and MMR. The **MMR vaccine** had the highest amounts at 0.8 ppb.[11]

Now, food testing by The Detox Project shows glyphosate contamination is rampant in organic plant-based protein supplements as well.[12,13] According to The Detox Project,[14] zero to 9 parts per billion (ppb) of glyphosate is a nondetectable level of no concern; 10 to 79 ppb is trace amounts of slight concern; anything above 80 ppb is of high concern.

When testing eight of the most popular pea protein brands sold on Amazon.com as of March 2019, one organic brand was found to contain as much or more glyphosate than conventional brands.

Two conventional (nonorganic) brands, Naked Pea and Anthony's Pea Protein, had 39 ppb and 80 ppb respectively, while two separate batches of a top-selling organic brand, Orgain Organic Plant-Based Protein Powder, contained 83 ppb and 281 ppb.

Desiccation — A Serious Contamination Concern

One of the reasons so many grains and legumes are heavily contaminated with glyphosate is because it's being used as a desiccant right before harvest. A desiccant is a chemical that

speeds up the ripening of the crop and dries it out, which facilitates harvesting and allows it to be harvested sooner than were the crop left to dry naturally.[15]

Desiccation is also used to improve profits, as farmers are penalized when the grain contains moisture. The greater the moisture content of the grain at sale, the lower the price they get.

According to a 2017 study[16] by University of California San Diego School of Medicine researchers, "The herbicide Roundup is sprayed onto genetically modified crops and applied as a desiccant to most small nongenetically modified grains."

So, whether we're talking about Roundup Ready GE crops or conventional, non-GE grains, glyphosate, the active ingredient in Roundup, "is found in these crops at harvest."

As for how it ends up in many organic products is anyone's guess. Drift from nearby conventional and/or GE crop fields is one possibility. Contamination during processing is another. Outright fraud, where a nonorganic crop is sold as organic is also a possibility.

Glyphosate Is Not an Approved Desiccant

While glyphosate is commonly used as a desiccant,[17,18] it's not actually supposed to be used that way. Desiccants require special registration, as high levels of the chemicals can be left on the crop, and glyphosate is not an approved desiccant.[19]

Farmers who use glyphosate anyway, and douse their crops at the wrong time, can cause their crop to be heavily contaminated. As explained in "Clarification of Preharvest Uses of Glyphosate," [20] the grain must not be sprayed with glyphosate "until seed heads or pods are almost ripe (i.e., bulk sample less than 30 percent moisture)."

If applied too early, while the grain has a moisture rate higher than 30 percent, the glyphosate is absorbed through the leaves and stems and translocates throughout the plant. Farm Progress also notes that:[21]

> *"Glyphosate should be used only to control weeds that hinder harvest, not for vine desiccation. Not all glyphosate products are labeled for preharvest timings. The translocating properties of glyphosate make it possible for herbicide residues to*

accumulate in harvested beans if applications occur before the hard dough stage."

Desiccant Combined With Lectins Is a Highly Toxic Combo

Glyphosate isn't the only desiccant that might be causing health problems. Research[22] published 2018 in the journal NPJ Parkinson's disease revealed that when the herbicide paraquat[23] is combined with lectins, found in many plant foods, especially legumes, it can trigger the hallmark damage found in those with Parkinson's disease.

The findings were reported by Medical News Today[24] in December 2018. On a side note, Medical News Today[25] incorrectly stated that paraquat was banned in the U.S. in 2007. It was actually the European Union that banned it that year,[26,27] in large part due to research showing it can trigger Parkinson's disease,[28] which is precisely what they found in this 2018 study as well.

Paraquat is still legal in the U.S., but is classified as "restricted use," meaning it must be applied by a licensed applicator. In the U.S., paraquat is currently scheduled for a registration review by the Environmental Protection Agency in the third quarter of 2019.[29]

At the end of October 2014, the EPA updated some of its residue tolerance levels for paraquat, specifically setting the level allowed on tuberous and corn vegetables (which include cassava, ginger, potato, tanier and true yam) at 0.5 ppm.[30]

According to the EPA's pesticide reregistration in 1997,[31] tolerance levels for paraquat have been set for over 80 raw agricultural commodities, processed foods and animal feed. During the 1997 reregistration, EPA updated tolerances for certain crops as follows:

- Sorghum forage was reassessed from 0.05 to .1 ppm
- Soybeans from 0.05 ppm to 0.25 ppm
- Hops from 0.2 ppm to 0.5 ppm
- Popcorn tolerance established at 0.05 ppm

Getting back to the NPJ Parkinson's Disease study,[32] results suggest that lectins, found in foods such as raw vegetables and grains, are the key link between paraquat and the damage

resulting in Parkinson's disease. As reported by Medical News Today:[33]

> *"[P]araquat, once in the stomach, causes alpha-synuclein to be misfolded and then helps it travel to the brain. Scientists believe that alpha-synuclein runs along the vagus nerve, which itself runs between the stomach and the brain.*
>
> *In fact, recent studies have shown that the vagus nerve has a direct connection with the substantia nigra, making it a prime suspect in Parkinson's disease. This direct link also helps explain why digestive problems often precede the motor symptoms of Parkinson's by several years."*
>
> *To investigate, the researchers fed rats small doses of paraquat for 7 days. They also fed them lectins … As expected, they identified Parkinson's-related changes … As study co-author Prof. Thyagarajan Subramanian explains:*
>
> *'We were able to demonstrate that if you have oral paraquat exposure, even at very low levels, and you also consume lectins [...] then it could potentially trigger the formation of this protein — alpha-synuclein — in the gut. Once it's formed, it can travel up the vagus nerve and to the part of the brain that triggers the onset of Parkinson's disease.'*
>
> *This series of experiments demonstrates how the interplay between two ingested compounds can conspire to create and then transport toxic protein structures from the gut to the brain."*

The Problem With Lectins

Download Interview Transcript

Last year, I interviewed Dr. Steven Gundry, author of "**The Plant Paradox**," on the health hazards of lectins. I've embedded that interview above for your convenience.

As explained by Gundry, plant lectins can wreak havoc on your health by attaching to your cell membranes, causing inflammation, damage to your nerves and cell death. Some can also interfere with gene expression and disrupt endocrine function.

The cruel irony here is that paraquat is widely used as an herbicide and desiccant on crops rich in lectins, including wheat, **soybeans**, **potatoes**, cereal grains and **beans**.[34]

In other words, while lectins can cause severe health problems in and of themselves, by spraying paraquat on lectin-rich crops, those crops are made exponentially more hazardous, as the lectins act as transport vehicles for the toxic herbicide.

Could Diquat Pose Similar Risks?

In the U.S., one of the registered desiccants is Reglone.[35] The active ingredient in this desiccant herbicide is diquat, which like paraquat is chemically identified as a dipyridyl.[36] Stated product benefits include maximized pea and lentil yield, more scuff resistant potato skins and easier potato harvesting.[37]

According to the National Pesticide Information Center,[38] "diquat poisoning is less common than paraquat poisoning … In animal studies, diquat causes mild, reversible injury to type I pneumatocytes but does not injure the type II cells." Since it's considered less toxic than paraquat, diquat is not registered as a limited use herbicide.

However, evidence suggests diquat may still have similar risks as paraquat. As noted in a 2015 study[39] in the Archives of Toxicology, diquat causes cell death by producing reactive oxygen species independently of the mitochondria, and appears to be quite hazardous to brain tissue. According to the authors:

> *"Evidence indicates that Parkinson's disease (PD), in addition to having a genetic aetiology, has an environmental component that contributes to disease onset and progression …*
>
> *Given its similarity to paraquat, an agrochemical removed from registration in the EU for its suspected potential to cause PD, we have investigated the in vitro capacity of the related herbicide Diquat to cause PD-like cell death.*
>
> *Diquat showed greater toxicity towards SH-SY5Y neuroblastoma cells and human midbrain neural cells than paraquat and also MPTP, which was independent of dopamine transporter-mediated uptake.*

Diquat caused cell death independently of caspase activation … with only a minor contribution from apoptosis, which was accompanied by enhanced reactive oxygen species production in the absence of major inhibition of complex I of the mitochondrial respiratory chain …

Diquat may, therefore, kill neural tissue by programmed necrosis rather than apoptosis, reflecting the pathological changes seen following high-level exposure, although its ability to promote PD is unclear."

In January 2019, the EU confirmed it is withdrawing the approval of diquat. The final date for order and delivery of diquat products to farms is July 31, 2019, and the final date for use is February 4, 2020.[40] Its use continues unabated in the U.S., however. In fact, some are recommending diquat to replace glyphosate for certain kinds of weed control.[41]

Hummus Lovers, Be Sure to Buy Organic

The paper[42] "Use of Paraquat as a Desiccant for Early Maturity of Chickpea and Residue Dynamics," presented at the 2019 International conference on Global Environmental Challenges Human Health and Sustainable Development conference, highlights the potential hazards of consuming nonorganic hummus and other products made from chickpeas:

"Several herbicides have been used in the agricultural fields to increase the crop productivity and grain yield through weed management. Chickpea (Cicerarietinum L.) is an important food legume crop.

As chickpea is a slow growing crop and may take approximately 5-6 months and this may further delay sowing of next crops which can be taken in the same field in summer season such as moongbean.

Hence in order to reduce days of crop maturity and to study fate of paraquat residues in soil and chickpea grains that may exist as a result of use of this herbicide on chickpea, a broad leaf herbicide, paraquat was chosen to use as a desiccant to facilitate early maturity of chickpea.

> *Paraquat application at 750 to 1.0 kg/ha as desiccant enhanced the process of maturity of chickpea and 10 to 16 days can be saved by this application. However paraquat application at 750g/ha and 1.0 kg/ha resulted in residues in chickpea grains and straw and restrict its application as a desiccant in chickpea crop."*

BASF, meanwhile, recommends using a mix of both paraquat and glyphosate to "sharpen up chickpea harvest results."[43] It's no wonder then that food testing reveals concerning levels of glyphosate in popular hummus brands[44] (paraquat was not part of this testing).

The highest levels of glyphosate were found in Trader Joe's Hummus Dip (effective level 30.67 ng/g) and Sabra Class Hummus Non-GMO Gluten Free (14.35 ng/g), again proving that GMO-free is not a guarantee that it won't contain glyphosate. As reported by Moms Across America on August 31, 2018:[45]

> *"Moms Across America has been especially concerned about the presence of glyphosate in hummus, as the consumption of hummus, fueled by companies like PepsiCo, has risen dramatically over the past five years …*
>
> *Hummus is considered a healthy snack for children, a popular protein replacement for meat for vegetarians, and vegans, and is a go-to party food on college campuses.*
>
> *In addition, Canadian activist Tony Mitra released records of 7,800 glyphosate test result findings from the Canadian Food Inspection Agency in 2017 in his book '*Poison Foods of North America*.'*
>
> *In those documents, results for glyphosate residues on garbanzo beans from North America had levels as high as 795 ppb.[46] In other countries levels were, on average 32 ppb. Even organic garbanzo beans tested positive glyphosate residues, pointing to the problem of widespread contamination."*

Take-Home Messages

There are at least two take-home messages from all this. First, it's important to realize that glyphosate contamination is not restricted to GMOs. It's a more or less universal contaminant,

affecting conventional and even some organic foods as well, primarily due to its use as a desiccant right before harvest.

Secondly, the hazards of desiccation are not limited to glyphosate. Paraquat has been linked to the development of Parkinson's disease by attaching to lectins in the foods, and questions remain as to whether diquat may have similar effects. These herbicides are considered the "best" drying option for legumes in particular, which are also particularly high in lectins.

As a result, many foods that vegetarians and vegans rely on may pose significant health hazards in more ways than one. You can reduce lectin concentration by pressure cooking, for example, but if you're using an unclean source, you're dealing with extra-toxic kinds of lectins.

To avoid or at least minimize these hazards, it's important to buy organic beans, peas, potatoes and other high-lectin foods from a reputable source, ideally a local farmer you can trust.

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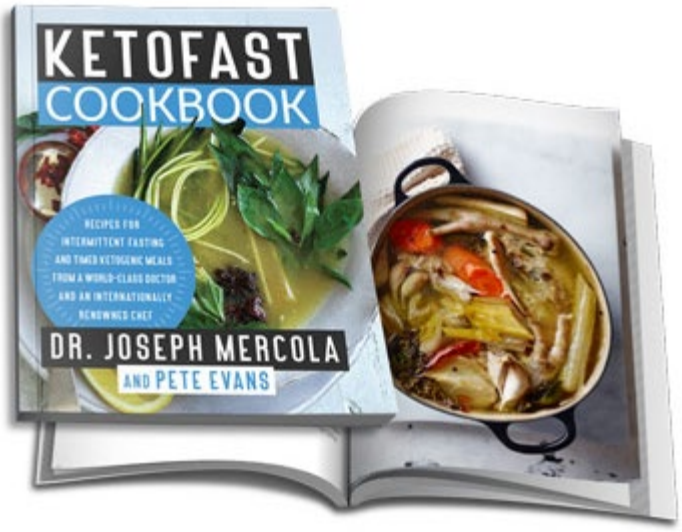

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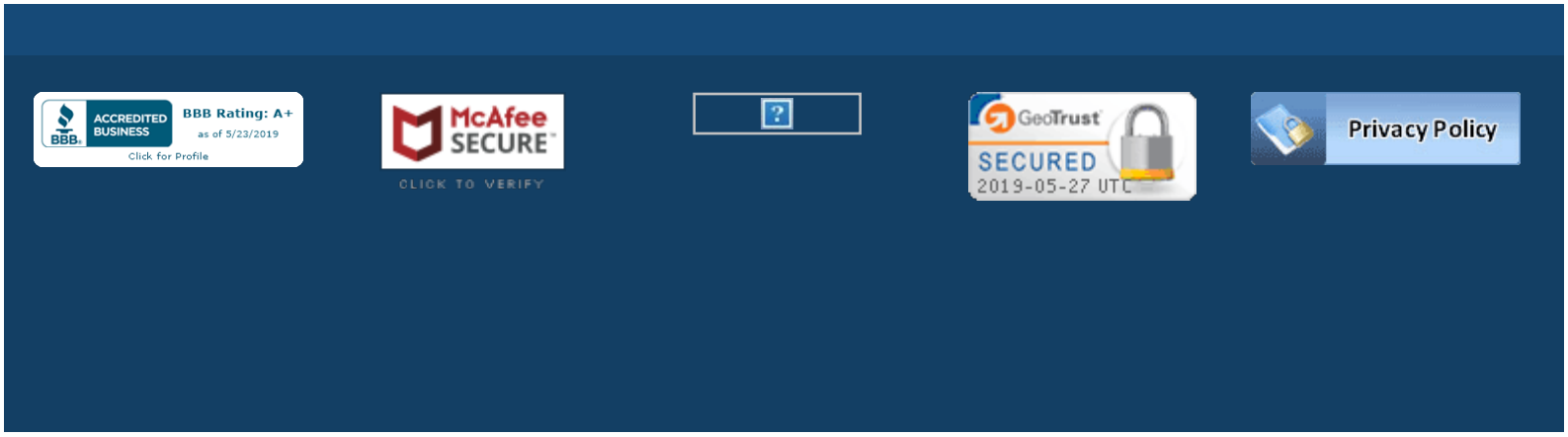
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