



THE CELL DAMAGING EFFECTS OF ROUNDUP (GLYPHOSATE) HERBICIDES

Roundup is a highly toxic herbicide containing the active ingredient glyphosate. Glyphosate is a non-selective herbicide which means that it kills most plants by preventing them from making certain proteins required for their growth. Monsanto produces Roundup and the seeds that grow into genetically engineered (GE) plants that are tolerant to glyphosate. Worldwide Roundup sales are approximately \$6B annually. They are projected to be \$9B by 2019 due to the demand created by the company's proprietary Roundup Ready genetically modified crops. Roundup destroys all life in the soil. It kills all microbes that would typically help in plant growth by providing nutrients and protection from diseases.

In 2015 the World Health Organization declared glyphosate as a probable carcinogen, however, the regulatory agencies still debate about the safety of Roundup for human consumption. The US Environmental Protection Agency now allows 50 times more glyphosate on corn crops than they did in 1996. In 2015 more than 220 million pounds of glyphosate were used in the US alone on edible crops such as GE corn and soybeans, processed foods with MSG, vegetable oils, high fructose corn syrup and animal feed. The more we use these chemicals to grow our food, the harder they are to avoid. With such a widespread use of glyphosates, the indirect human consumption has increased through drinking water and other plants all leading to a multitude of health issues.

Farmers exposed to glyphosate herbicides have double the risk of developing non-Hodgkin's lymphoma because of its effects on the immune system. Minimal exposure by inhalation of Glyphosate, even at 450 times less concentration than that used for spraying, damages DNA in the cells. Glyphosate exposure is also linked to cancers of the thyroid, liver, pancreas, kidneys and urinary bladder. Glyphosate is known to be an endocrine disruptor. The endocrine system regulates metabolism, growth and development, tissue function, sexual function, reproduction, and sleep and mood. Glyphosate wreaks havoc on the endocrine system due in part to the levels that are legally allowed in drinking water. Scientists have



associated glyphosate exposure with increased incidence of diseases such as celiac and Crohn's, lactose and gluten intolerance, fatty liver, metabolic syndrome, and neurological conditions including autism, ADHD, and Alzheimer's disease.

At the Dr. Rath Research Institute, we conducted a study to evaluate the effects of glyphosate at various doses on human cells.* We used human skin fibroblasts to mimic a direct exposure to this herbicide through skin contact, and with kidney cells since Roundup has been indicated to cause increased risk of kidney damage in workers exposed to it. In the study we also used different commercially available nutritional supplements to assess their protective effects against the cellular damage caused by glyphosate exposure to determine if they are sources of possible protection from the harm caused by this widely used herbicide.

Our results confirm glyphosate exposure is severely toxic to human cells. Except for one supplement formula, other commercially available micronutrient formulas tested in this study did not show any protection against glyphosate damage. The one specific micronutrient combination that showed cell protective effects contained potent antioxidants such as vitamin C, green tea and plant extracts, quercetin, and others. The micronutrient combination in this formula was based on the principle of nutrient synergy.

The best way to protect your health against this and other herbicides is to avoid all genetically engineered and processed foods containing corn, soy, and canola. In addition to consuming organic food, people should also consider including scientifically researched micronutrient supplements. Furthermore, it is critical to build worldwide awareness and demand strict regulations against such toxic agents.

*M Chatterjee, et al., *Cellular Medicine and Natural Health Journal*, Mar 2017

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The ground-breaking nature of this research poses a threat to the multi-billion dollar pharmaceutical "business with disease". It is no surprise that over the years the drug lobby has attacked Dr. Rath and his research team in an attempt to silence this message. To no avail. During this battle, Dr. Rath has become an internationally renowned advocate for natural health. Says he: "Never in the history of medicine have researchers been so ferociously attacked for their discoveries. It reminds us that health is not given to us voluntarily, but we need to fight for it."

This information is based on scientific research results. It is not intended to substitute for medical advice to treat, cure, or prevent any disease.
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