

Requisition #:

Physician Name:

Patient Name:

Date of Collection:

Patient Age:

Time of Collection:

Sex:

Print Date:

## Glyphosate Profile

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

Glyphosate is the world's most widely produced herbicide. It is a broad-spectrum herbicide that is used in more than 700 different products for agriculture and forestry to home use. Glyphosate was introduced in the 1970s to kill weeds by targeting the enzymes that produce the amino acids tyrosine, tryptophan, and phenylalanine. Usage of glyphosate has since amplified, after the introduction of genetically modified (GMO) glyphosate-resistant crops.

Recent studies have discovered glyphosate exposure to be a cause of many chronic health problems. It can enter the body by direct absorption through the skin, by eating foods treated with glyphosate, or by drinking water contaminated with glyphosate. The World Health Organization International Agency for Research on Cancer published a summary in March 2015 that classified glyphosate as a probable carcinogen in humans. Possible cancers linked to glyphosate exposure include non-Hodgkin lymphoma, renal tubule carcinoma, pancreatic islet-cell adenoma, and skin tumors. Studies have also indicated that glyphosate disrupts the microbiome in the intestine, causing a decrease in the ratio of beneficial to harmful bacteria. The relationship between the microbiome of the intestine and overall human health is still unclear, but current research indicates that disruption of the microbiome could cause diseases such as autism, metabolic disorder, diabetes, depression cardiovascular disease, and autoimmune disease.

Treatment of glyphosate toxicity should be centered on determining the route of introduction and avoiding future exposure. Glyphosate is readily metabolized in the body. However, a recent study found that glyphosate accumulates in mammalian bones. Another study found glyphosate to be detectable in mammalian intestine, spleen, liver, muscle, and kidney. Kidney impairment is common in regions where glyphosate may accumulate in ground water as metal chelates. The most effective way to reduce glyphosate exposure is to avoid living in areas where glyphosate is applied and to avoid eating GMO foods or animal products such as milk or meat for which GMO foods were used to feed the animals.

Since glyphosate is now commonly combined with the weed killer 2,4-dichlorophenoxyacetic acid (2,4-D), testing for this chemical with the GPL-TOX test may wish to be considered also.

\*LLOQ - Lower Limit of Quantitation

\*\*N.D. - Not Detected

Testing performed by The Great Plains Laboratory, Inc., Lenexa, Kansas. The Great Plains Laboratory has developed and determined the performance characteristics of this test. This test has not been evaluated by the U.S. FDA; the FDA does not currently regulate such testing.