

Monsanto Roundup Harms Human Endocrine System at Levels Allowed in Drinking Water, Study Shows

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The blockbuster herbicide Roundup causes damage to the human endocrine system at levels that people could easily — and legally — be exposed to, according to a new study conducted by researchers from Flinders University in Australia. The researchers found that, in a laboratory study, Roundup killed cells responsible for producing progesterone in women, leading to a drop in levels of that hormone. The effects were seen at Roundup levels currently permitted in Australian drinking water, which 1 mg/L. The US Environmental Protection Agency's drinking water limit for glyphosate is 0.7 mg/L; however, that does not take into account the other ingredients of Roundup.

Notably, the researchers found that Roundup was even more toxic than its active ingredient (glyphosate) alone, suggesting that other ingredients in Roundup work synergistically with glyphosate and pointing to a problem with current chemical regulatory frameworks.

Kills hormone-producing cells

Roundup is the most widely used herbicide in the United States and one of the most widely used worldwide. Its use has exploded in the past 20 years, driven primarily by the proliferation of crops genetically engineered to resist glyphosate. In the United States alone, 250 million pounds of glyphosate are used every year.

The new study was conducted on human chorioplacental JAr cells, which synthesize the hormone progesterone. Synthesis is increased when the cells are exposed to human chorionic gonadotrophin (hCG), or cAMP, a transduction molecule.

The researchers exposed JAr cells to glyphosate (either with or without the added presence of cAMP or hCG) for time periods of 1, 4, 24, 48 and 72 hours. Other JAr cells were exposed to two different formulations of [Roundup](#) for the same time periods. As expected, the researchers found that the presence of either cAMP or hCG led the JAr cells to increase progesterone output.

Both Roundup and pure glyphosate caused JAr cell death at glyphosate concentrations similar to the maximum allowed in Australian [drinking water](#). This led to a corresponding drop in synthesis of progesterone, showing that glyphosate does indeed act as an endocrine disruptor.

Although the researchers particularly note drinking water, this is not the only method by which consumers may be exposed to Roundup. Residues from this herbicide may be found on many commercial food products; for example, studies have detected glyphosate residues

on 90 percent of U.S. soybean crops.

Not just glyphosate

More JA_r cells died when exposed to Roundup than when they were exposed to glyphosate alone. This suggests that the herbicide's non-glyphosate ingredients are biologically active.

In contrast, most regulatory frameworks assume that only those molecules designated as "active ingredients" need to be tested for safety; all other ingredients are presumed to be inert. These findings call that presumption into question, the researchers said.

"There is a compelling need to conduct *in vivo* studies to characterise the toxicity of [glyphosate](#) in a Roundup formulation, to facilitate re-evaluation of existing public health guidelines," the researchers wrote.

Further studies will also be needed to examine whether Roundup disrupts the endocrine system by any other methods.

Also a carcinogen

Shortly after the publication of the Australian study, the World Health Organization's International Agency for Research on Cancer (IACR) announced that glyphosate is a "probable" carcinogen. Strong evidence from animal studies has linked the chemical to various forms of cancer, and "limited evidence" from human studies has linked it to non-Hodgkins lymphoma in particular. The findings were published in the journal *Lancet Oncology*.

The same IACR [study](#) also concluded that the common insecticides malathion and diazinon are also probable carcinogens. All three substances were also found to increase the risk of DNA damage, and all have been linked to destructive environmental effects.

"For too long the pesticide industry has taken the approach of 'spray first and ask questions later,'" said Jonathan Evans of the Center for Biological Diversity.

"These dangerous and far too common pesticides are having cascading effects on our health and environment, and it's high time we took the worst of the worst chemical cocktails off the market."

Sources:

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