

Another study finds glyphosate herbicide kills tumor cells. Is the much-maligned weedkiller a cancer fighter?



While biotech giant Bayer [attempts to settle](#) thousands of lawsuits alleging its weed killer Roundup causes cancer, several studies published over the last six years have suggested that glyphosate, the active ingredient in the the much-maligned herbicide, may actually prohibit cancer cell growth.

[su_panel color="#3A3A3A" border="1px solid #3A3A3A" radius="2" text_align="left"]This is part two of a two-part series. Read part one: [Glyphosate can cure cancer? Yes, some research 'shows' that — but what does it mean? And what does it say about Roundup doomsday claims?](#)[/su_panel]

A paper published on June 24, 2019 in the [Journal of Environmental Science and Health, Part B](#) is the fourth such study since 2013 to suggest that Roundup may have cancer-fighting properties. The authors reported that the co-formulants—substances that enhance the performance of the active ingredient glyphosate—inhibited the growth of cancerous human liver, lung and nerve cells, while glyphosate was relatively harmless:

Glyphosate-based herbicides are broad-spectrum pesticides widely used in the world but recently, there has been an ongoing controversy regarding their carcinogenicity Data obtained showed that all tested ethoxylated formulants and their mixtures with declared active ingredient glyphosate isopropylamine salt (GP) have significant inhibitory effect on cell proliferation, while the declared active ingredient has no significant toxicity.

If Roundup or one of its ingredients turns out to be an effective cancer treatment, it would be a stunning twist in the midst of Bayer's ongoing legal battle. But that's not yet the appropriate conclusion to draw from this evidence. The four existing studies are very preliminary. Three of them, including the June 24 paper, are [in-vitro or cell culture studies](#), which involve dousing cells in chemicals to see what happens, a notoriously unreliable way to measure real-world toxicity.



Beware the cherry pickers

While this study adds to the body of evidence amassed by 15 regulatory agencies and independent experts worldwide showing that glyphosate probably doesn't cause cancer, there's a more important point worth stressing. In May 2019, the GLP reported on the three earlier papers suggesting that glyphosate could potentially be developed into a cancer therapy, because we wanted to illustrate why cherry picking studies to justify [preconceived opinions is so problematic](#).

Selectively citing studies can lead to erroneous conclusions, which is [why scientists](#) insist on evaluating all the available research To illustrate how easy it is to defend an unsubstantiated hypothesis, and why we should be skeptical of sensational claims about chemical harm or safety, let's 'demonstrate' that glyphosate might be a 'cure' for cancer by highlighting only the research that helps make the case.

The same lesson applies to this new study. If we wanted to argue without reservation that certain ingredients in Roundup kill cancer cells while glyphosate itself poses no threat to human health, we could have. But that's an exaggerated conclusion and not the only possible interpretation. The study authors

went in the opposite direction, in fact. They titled their paper, “Evaluation of the cytotoxic effects of glyphosate herbicides in human liver, lung, and nerve” and speculated that Roundup is possibly toxic because of its various “formulants and formulation,” not glyphosate itself.

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Drawing either conclusion, that Roundup causes or cures cancer, on the basis of this study exceeds the actual data the researchers collected. Biologist Mary Mangan explained why in an email to the GLP:

Most cultured cells are tumor-origin because they need to be growing continuously in a dish. Normal cells just stop at some point. You can’t coax them to grow enough so you can keep testing things. And the source of the tumor—liver tumor, brain tumor, whatever—that’s just the source. In the dish they might still have some characteristics of that tissue (some genes turned on or off). But they should not be confused for a liver or a brain’s behavior.

Cell culture is an artificial system. It’s useful but you have to know that [the cells] are already messed up to even be growing. You just know what the limitations are. The title of that paper WAY overstated what cells in a dish really mean.

To bolster their assault against Roundup, activists have questioned the safety of ingredients in the herbicide besides glyphosate. According to the [popular website Natural News](#), founded by anti-GMO activist Mike Adams, “glyphosate is often mixed with chemical agents that increase glyphosate’s destructive power.” But both the Environmental Protection Agency and [independent scientists](#) say otherwise. After evaluating all the available evidence, these experts concluded that [the co-formulants in Roundup don’t pose](#) a risk to human health.

The next time you see anybody claim that chemical X could cause or cure disease Y, make sure their argument isn’t based on preliminary or incomplete in-vitro experiments. These kinds of studies can be informative, but they’re usually the beginning of a meaningful scientific investigation—not the end of it.

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