

# Monsanto's Roundup 'Weedkiller' (Glyphosate) Feeds Antibiotic Resistant Bacteria, Study Finds

By [Sayer Ji](#)

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Theme: [Biotechnology and GMO](#),  
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***The [nightmarish toxicological profile of Roundup herbicide \(glyphosate\)](#) continues to emerge within the peer-reviewed research, this time revealing its role in supporting the growth of a pathogenic bacteria of great medical significance.***

A concerning new study published in the *Brazilian Journal of Microbiology* titled, "[Influence of glyphosate in planktonic and biofilm growth of \*Pseudomonas aeruginosa\*](#)," indicates that the world's most widely used [herbicide Roundup](#) (glyphosate) may be contributing to the enhanced growth of the pathogenic bacteria *P. aeruginosa* in our environment.

The Brazilian team responsible for the study expressed concern over the "virtual nonexistence" of research evaluating glyphosate herbicide-pathogenic microbiota interactions, and conducted a series of microbial experiments to fill this data gap. They noted:

"Glyphosate is probably the herbicide most discharged into the environment. Due to its extensive use in the protection of crops, it is inevitable that it will reach surface and deep waters (Pournaras et al., 2007), especially after rainfalls."

****P. aeruginosa* is commonly found in watercourses and reservoirs in both oxygen (aerobic) and non-oxygen preferring forms (anaerobic), and can be a source of waterborne infection.***

The results of the new study indicate that when exposed to varying concentrations of both glyphosate ([a common contaminant found in GM agricultural runoff](#)) and oxygen, both the aerobic the anaerobic and biofilm forming strains of this bacteria can thrive:

"Aerobic planktonic growth was superior to anaerobic one. This points to the possibility of *P. aeruginosa*, although a facultative organism (Davies et al., 1989; Yoon et al., 2002), has its growth significantly favored by the presence of molecular oxygen. Continuous bacterial exposure to low concentrations of glyphosate leads to increased rates of aerobic growth, which is somehow in agreement with previously published findings (Fitzgibbon and Braymer, 1988). By the contrary, in conditions of inaccessibility of molecular oxygen, the bacterium started to grow better in a concentration-dependent manner. It is possible that this phenomenon results from the use of the molecule as a source of phosphorus, as previously reported for the genus *Pseudomonas* (Peñaloza-Vazquez et al., 1995; Moore et al., 1983; Talbot et al., 1984).

Glyphosate could also serve as a carbon source, which would be processed by both aerobic and anaerobic metabolisms (Rueppel et al., 1977), with increased rates in presence of oxygen. To support such theory, it has been found that different bacterial genera may promote catalysis of glyphosate using C-P lyases (van Eerd et al., 2003). Once broken up this connection, *Pseudomonas* spp. can produce glycine (Kishore and Jacob, 1987), which can also enhance growth.”

The researchers also focused on the ability of glyphosate to support the growth of so-called biofilms, a closely adhering colony of bacteria embedded in a self-produced matrix of a “slimy” extracellular polymeric substance (EPS), revealing:

“Our results revealed that the xenobiotic tends to favor the formation of biofilms of *P. aeruginosa*, especially those anaerobic and that such increase seems to be concentration-dependent.”

This finding has significant medical implications, as *P. aeruginosa* biofilm colonies are far more virulent and exhibit the kind of antibiotic resistance found in serious infections in humans, such as skin infections and pulmonary complications associated with fatal conditions such as cystic fibrosis.[1]

The study concluded:

“The results from this study point to the fact that the indiscriminate use of agricultural formulations containing glyphosate may result in an increase in growth rates of planktonic and biofilm phenotypes of *P. aeruginosa* in watercourses or reservoirs.”

As Roundup – now a [\*\*ubiquitous agrochemical contaminant found in our rain, air and water\*\*](#)— continues to accumulate in larger amounts in the environment, concern grows that it may be upsetting the natural microbial balance upon which our own microbial health depends on.

Previously, we have looked at the way that Roundup herbicide is altering the microbial biodiversity of our environment [\*\*by destroying soil microbes that have indispensable importance in the production of food\*\*](#). Research also now exists showing this agrochemical can [\*\*shift the gut bacteria of animals towards pathogenic strains of bacteria\*\*](#), including the deadly botulism-associated *Clostridium botulinum* strain. Also, a new study raises concern that as a water pollutant glyphosate [\*\*may be contributing to the decline of the coral reefs\*\*](#), underscoring how profoundly this environmental contaminant may be affecting the future health of our planet as a whole.

As the public continues to rally behind the non-GMO movement, expending the bulk of its political efforts on labeling GMO-containing foods, it is important to also focus on the clear and present danger of Roundup herbicide, which a growing number of groups support banning entirely. When we understand the true extent of harm represented by this agrochemical (and which [\*\*research now links to over 50 adverse health effects\*\*](#)), then the argument that [\*\*GM foods and non-GM \(e.g. organic\) foods are ‘substantial equivalent’\*\*](#) is immediately disproved. GM foods are universally contaminated with glyphosate and [\*\*AMPA \(a glyphosate metabolite\)\*\*](#) residue and owing to the fact that

infinitesimal (parts-per-trillion) concentrations of [glyphosate may have endocrine disrupting/carcinogenic properties](#) present regulations on glyphosate are not protecting the public or environment at large from its known risks. (Learn more by reading: '[EPA to the Public: Let Them Eat Monsanto's Roundup Ready Cake](#)').

To get more involved follow the [Global GMO Free Coalition](#).

**Sayer Ji** is the founder of [GreenMedInfo.com](#), an author, educator, Steering Committee Member of the [Global GMO Free Coalition \(GGFC\)](#), and an advisory board member of the National Health Federation.

*He founded [Greenmedinfo.com](#) in 2008 in order to provide the world an open access, evidence-based resource supporting natural and integrative modalities. It is widely recognized as the most widely referenced health resource of its kind.*

## Notes

[1] Antibiotic Susceptibilities of Pseudomonas aeruginosa Isolates Derived from Patients with Cystic Fibrosis under Aerobic, Anaerobic, and Biofilm Conditions *J. Clin. Microbiol.* October 2005 vol. 43 no. [10 5085-5090](#)

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