Glyphosate - A Silent, Slow Killer?

Hira Saleem,[1] Abdul Rafeh Awan[2]

Madam, Glyphosate, commercially known as Round Up, is one of the most widely used herbicides and pesticides worldwide. As a synthetic organophosphate compound, it comes in a crystalline, odourless and colourless form. Most of the human exposure to this compound occurs during the process of its manufacturing, formulation and transport. Further exposure may come from the inhaling toxic fumes of nitrogen gas and phosphorus oxides produced when this pesticide undergoes decomposition, when farmers and gardeners use it on their crops, and when individuals come in contact with products containing it as the active ingredient[1].

As of right now, there is a multitude of studies that link glyphosate to several morbidities.

When a combined 9229 cases of farmers from North America, the European Union and Australia were assessed, glyphosate was directly linked to an increase in the onset of follicular lymphoma[2]. It was also associated with allergic and non-allergic wheezing among farm women in the Agricultural Health Study (2005-2010), which focused on farmers in Iowa and North Carolina[3]. Additionally, when tested on mice, exposure to glyphosate was found to increase TNFα in the brain and plasma, and the levels of soluble Amyloid Beta in the brain, suggesting a detrimental role to general health. Furthermore, glyphosate was one of the 11 pesticides[4] studied and then found to have a direct correlation with the increase in overall cancer cases in Brazil.[5]

Taking into consideration the aforementioned facts, it is vital to regulate the exposure of individuals to glyphosate to reduce the rising rate of morbidities. More guidelines and policies should be formulated to protect the health of individuals involved in glyphosate manufacturing, due to their exposure risk being high. Pesticide leching into water sources should also be prevented to ensure that the general population does not end up consuming them indirectly.

[1]4th Year MBBS Student, Allama Iqbal Medical College, Lahore, Pakistan, [2]Nishtar Medical University, Multan, Pakistan.
Correspondence: Hira Saleem. Email: hirasaleem190@gmail.com
ORCID ID. 0000-0003-4916-0358.
DOI: 10.47391/JPMA.8475

Submission completion date: 24-11-2022
Acceptance date: 27-04-2023

Disclaimer: This manuscript has never been presented or published in a conference, and has never been a part of a research, PhD or thesis project.

Conflict of Interest: None.

Source of Funding: None.

References

1. National Center for Biotechnology Information. PubChem Compound Summary for CID 3496, Glyphosate. [Online] 2022 [Cited 2022 October 2022]. Available from URL: https://pubchem.ncbi.nlm.nih.gov/compound/Glyphosate.
2. De Roos AJ, Fritschi L, Ward MH, Monnereau A, Hofmann J, Bernstein L, et al. Herbicide use in farming and other jobs in relation to non-Hodgkin's lymphoma (NHL) risk. Occup Environ Med 2022: 795-806. doi: 10.1136/oemed-2022-108371.
3. Islam JY, Mohamed A, Umbach DM, London SJ, Henneberger PK, Beane Freeman LE, et al. Allergic and non-allergic wheeze among farm women in the Agricultural Health Study (2005-2010). Occup Environ Med 2022:oemed-2022-108252. doi: 10.1136/oemed-2022-108252.
4. Winstone JK, Pathak KV, Winslow W, Piras IS, White J, Sharma R, et al. Glyphosate infiltrates the brain and increases pro-inflammatory cytokine TNFα: implications for neurodegenerative disorders. J Neuroinflammation 2022;19:193. doi: 10.1186/s12974-022-02544-5.
5. Panis C, Candiotto LZP, Gaboardi SC, Gurzenda S, Cruz J, Castro M, et al. Widespread pesticide contamination of drinking water and impact on cancer risk in Brazil. Environ Int 2022;165:107321. doi: 10.1016/j.envint.2022.107321.