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LETTER TO THE EDITOR

Your mycotoxins in water paper

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Dear Editor,

We were surprised by the paper on mycotoxin production in water published in your journal (Oliveira et al. 2018). It reports that *Aspergillus fumigatus* and *Purpureocillium lilacinum* produce aflatoxins and ochratoxin A, which have never before been recorded to produce these most important mycotoxins. These would be major discoveries if the results were valid. However, it is likely that the fungi were contaminated before inoculation into the reactors and/or during the experiment. The purity of the cultures in the reactors should have been determined when the results were obtained, and the experiments repeated, but these were unreported. Furthermore, the details of the reactors are poor and how exactly the water control was employed is unclear: Was it collected as part of the batch used for the inoculation experiments, or was it collected separately? A day 0 set of results requires to have been obtained after inoculation.

The rationale for the experiments is illogical. Why would researchers use these fungi to test for the mycotoxins and not the known producers? *A. flavus* or *A. parasiticus* would be the logical choices if aflatoxins were of interest: Paterson et al. (1997) had demonstrated aflatoxins in water from which *A. flavus* was isolated. Conversely, *A. fumigatus* could be used rationally for gliotoxin production, so why was this compound not determined? Employing *A. niger* for ochratoxin A is plausible, but why test the *A. fumigatus* or *P. lilacinum* cultures for the molecule? In the event, only fumonisin B_3 was detected from the *A. niger* which is also controversial.

Oliveira et al. (2018) provide insufficient background for research on mycotoxins in water. For example, one of the current authors (RRMP) (a) detected aflatoxins in water (Paterson et al. 1997) as mentioned and (b) discovered zearalenone production in water inoculated with *Fusarium graminearum* (Russell and Paterson 2007; Paterson 2007). The zearalenone data proved that toxin production can be achieved in water, offering an alternative source of mycotoxins in water to agricultural "runoff" for example. RRMP continues to be involved in the field where isolation of mycotoxigenic fungi from water have been reported (Oliveira et al. 2016), although again uncited by Oliveira et al. (2018). Unfortunately, Oliveira et al. (2018) have numerous shortcomings and mistakes.

I would be grateful if our letter is published in your journal, and we assume a response by the authors will be forthcoming.

Yours faithfully,

R. Russell M. Paterson and Alan Buddie

References

Oliveira HMB, Santos C, Paterson RRM, Gusmão NB, Lima N (2016) Fungi from a groundwater-fed drinking water supply system in Brazil. Int J Environ Res Public Health 13:304. https://doi.org/10.3390/ijerph13030304

Oliveira BR, Mata AT, Ferreira JP, Barreto Crespo MT, Pereira VJ, Bronze MR (2018) Production of mycotoxins by filamentous fungi in untreated surface water. Environ Sci Pollut Res 25:17519–17528. https://doi.org/10.1007/s11356-018-1952-z

Paterson RRM (2007) Erratum: Zearalenone production and growth in drinking water inoculated with *Fusarium graminearum* (Mycological Progress https://doi.org/10.1007/s11557-007-0529-x). Mycol Prog 6:115. https://doi.org/10.1007/s11557-007-0531-3

Paterson RRM, Kelley J, Gallagher M (1997) Natural occurrence of aflatoxins and *Aspergillus flavus* (link) in water. Lett Appl Microbiol 25:435–436. https://doi.org/10.1111/j.1472-765X.1997.tb00012.x

Russell R, Paterson M (2007) Zearalenone production and growth in drinking water inoculated with *Fusarium graminearum*. Mycol Prog 6:109–113. https://doi.org/10.1007/s11557-007-0529-x

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