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Sílvia Monteiro has a PhD in Environmental Sciences with the University of Brighton. She is a researcher at Técnico. Her main focuses are environmental microbiology and virology, source tracking, antimicrobial resistance and water reuse.



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Wastewaters as “watch-dogs” for the health of the population



Abstract

Wastewater has always been mainly considered as a “lesser-evil”, something that was necessary but that wasn’t really useful. In the last years, wastewater has proven to be more than just the collection of sewage, industrial and livestock wastewater. With improvement of the treatments, it is now possible to fully reuse wastewater for agricultural and landscape irrigation, street washing, and even for beer and drinking water production. Additionally, raw wastewater has been used for a few decades to trace a few diseases in the community, including poliomyelitis and the H1N1 flu or “swine flu”, through the detection of oseltamivir (Tamiflu). However, the COVID-19 pandemic exacerbated the need for complementary diagnosis tools to the clinical surveillance, given the high number of asymptomatic patients and the severity of the pandemic. This has been called wastewater-based surveillance. Raw wastewater was thoroughly employed during the pandemic and is still being used in several countries (The European Wastewater Surveillance Dashboard, for example) continuing to investigate the presence of SARS-CoV-2 and its variants but moving past SARS-CoV-2.

We will show the work that we have been doing in wastewater-based surveillance looking not only into the presence of SARS-CoV-2, but also of other targets, including antibiotic resistant bacteria and antibiotic resistance genes, particularly in the bacteriophage fraction, the circulation of arboviruses (Dengue and Chikungunya viruses) in Portugal, a country in which only travel-associated infections have been reported so far.

Raw wastewater is a very important tool for tracing the health of a community, not only including the microbiological part, but also looking for instance for monitoring the presence and levels of radioactive materials used in cancer treatment, particularly those from nuclear medicine.

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