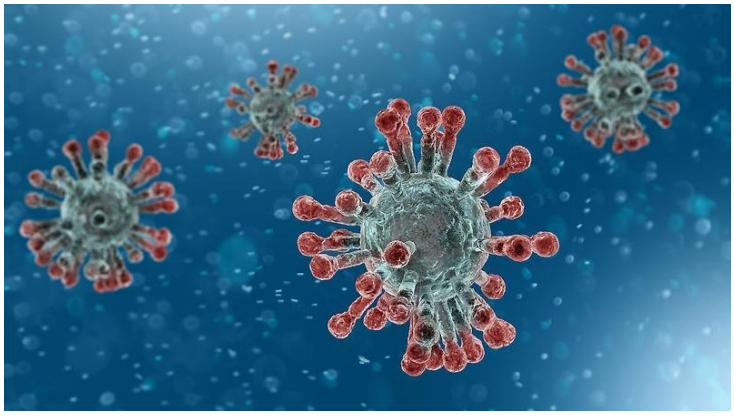
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Genomic surveillance of wastewater to identify new emergent virus variants: Study

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Surveillance of pathogens in wastewater is a cost-effective technique to track and understand the viral load of an infection in a community



In a new study, scientists from Tata Institute for Genetics and Society (TIGS), National Centre for Biological Sciences (NCBS) and Biome Environmental Trust have shown that genomic surveillance of wastewater can effectively be used to understand COVID-19 trends and also for early detection of new viral emergents.

The study was conducted in Bengaluru, a city with a population of 11 million inhabitants. Wastewater samples were collected once every week from 28 sewer sites across the city, between January 2022 and June 2022. A total of 422 samples were found to test positive for the presence of SARS- CoV-2 virus that causes the COVID-19 infection. The samples were then subjected to RT-qPCR tests to detect viral RNA and identify different variants of the virus within the sample. RT-qPCR method is a demonstrated economical surveillance tool used to track the dynamics and spread of infections and has been used globally to trace the spread of COVID-19.

The findings of this study divulge real-time genomic surveillance of wastewater as a key tool to understand the emerging patterns of virus populations and of new virus variants in densely populated areas.

The scientists compared the viral load of the SARS-CoV-2 virus in both wastewater samples and clinical samples obtained from individuals affected by COVID-19 infections and found them to be positively correlated with each other.

Wastewater was also found to have a higher number of virus variants in it than found in clinical samples. The emergence of new variants in wastewater is indicative of a significant number of individuals in the community to have been already infected by new viral strains. Many new variants were observed at different intervals of time along the duration of the study. However, these variant types and their time of detection were consistent across all sampling sites in the city.

The scientists believe the insights gained from this study will significantly improve public health surveillance, both for the ongoing COVID-19 pandemic and also other infections which may adversely affect in the future.

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