Short Communication

Can Wastewater-based Epidemiology Tool Trace COVID-19?

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Wastewater-based epidemiology (WBE) actions as an important device to trace the current of viruses in a population, providing opportunities to calculate their spread, genetic diversity, and geographic distribution.

Wastewater systems presentation a applied approach to identify viruses disposed in the feces of a through area.

Apply a WBE approach in developing an early warning or detection system and consequent effective intervention system will need a rapid analytical method for the on-place tracing of viruses at the wastewater collection location. presently, the most direct method for the detection of SARS-CoV-2 is a nucleic acid−based polymerase chain reaction (PCR) test, which is also a means for verification of COVID-19 patients.

Although PCR has high sensitivity and specificity, requirements for complicated sample handling in the laboratory, expert staff, and a long period of data processing and analysis are not favorable to real-time and effective monitoring of samples on site.

Researches of results showed that the applied of WBE for COVID-19 surveillance as a potential device for public safety monitoring at the population level(Table1) [1].

Conclusions and recommends of reported studies Wastewater-based epidemiology: [2-4]

1. The virus concentration method is another essential factor that needs consideration to preferment the quality of detection of SARSCoV-2 in wastewater

2. WBE cannot replace medical examination, it can serve to warning critical response teams to the presence of infected persons in cities, cities and specific drain areas of large metropolis regions down to the district and building mixed level.

3. A multidisciplinary approach on a global scale is required for timely and high impact results to help society.

4. The potentially infected patient will also benefit from paper analytical device detection SARS-CoV-2 sources with WBE, providing information for the correct and timely treatment of COVID-19.

5. Modelling and interpretation of environmental surveillance data and identifying triggers for public health actions.

6. The WBE approach as a possible way to monitor and supervision the prevalence of the COVID-19 and SARS-CoV-2.

7. Additional advantages to this approach (WBE) and call for a wastewater collection campaign involving national and international cooperation between environmental health, wastewater workers, and epidemiologists, aimed at preventing the spread of COVID-19.

8. WBE is especially important in cases where there is limited capacity for clinical testing and should be improved to be used in municipal wastewater corresponding to larger communities.

We hope that the findings of the present study can help researchers, health decision-makers, policy-makers, and people for comprehension and taking the proper behavior to control and prevent further spread of COVID-19.

Sample site	Infectious diseases/pathogens	Location	Detection method	References
Untreated wastewater	SARS-CoV-2, COVID-19	Netherlands	RT-qPCR	[5]
Sludge and waste water	SARS-CoV-2	Istanbul, Turkey	RT-qPCR	[6]
Wastewater	SARS-CoV-2	Valencia,Spain	RT-qPCR	[7]
wastewater and river water	SARS-CoV-2	Japan	RT-qPCR	[8]
Untreated wastewater	SARS-CoV-2, COVID-19	Australia	RT-qPCR	[9]
Untreated wastewater	SARS-CoV-2	Italy	RT-qPCR	[10]
wastewater	SARS-CoV-2, COVID-19	Murcia, Spain	RT-qPCR	[11]
Untreated wastewater	norovirus	Valencia, Spain	RT-qPCR	[12]
Untreated wastewater	hepatitis A virus [HAV], and hepatitis E virus)	Ryaverket, Gothenburg, Sweden	RT-qPCR	[13]
sewage and surface water	influenza A (H1N1)	Netherlands	RT-qPCR	[14]
wastewater	Hepatitis E virus (HEV)	Valencian region, Spain	RT-qPCR	[15]
wastewater	hepatitis E (HEV) virus	French island	RT-qPCR	[16]
wastewater	SARS-CoV-2	Massachusetts, USA	RT-qPCR	[17]
wastewater	SARS-CoV-2, COVID-19	India	RT-qPCR	[18]
wastewater	SARS-CoV-2	Padua, Italy	RT-qPCR	[19]
wastewater	SARS-CoV-2	United Arab Emirates	RT-qPCR	[20]
wastewater	SARS-CoV-2, COVID-19	Slovenia	RT-qPCR	[21]
Untreated wastewater	OVID-19	Chile	RT-qPCR	[22]
wastewater	SARS-CoV-2	Stockholm, Sweden	RT-qPCR	[23]
Sludge	SARS-CoV-2	India	RT-qPCR	[24]
wastewater	SARS-CoV-2	China	RT-qPCR	[25]
Untreated wastewater	SARS-CoV-2, COVID-19	Pakistan	RT-qPCR	[26]
wastewater	SARS-CoV-2	Louisiana, USA	RT-qPCR	[27]

Table 1: Details of reported studies wastewater-based epidemiology.

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