



Emergencies preparedness, response

First data on stability and resistance of SARS coronavirus compiled by members of WHO laboratory network

The below table provides the first compilation of data on resistance of the SARS Coronavirus against environmental factors and disinfectants. This information has been provided by Members of the [WHO multi-center collaborative network on SARS diagnosis](#). More detailed information on methods utilized and material used is being compiled and will be available shortly. The major conclusions from these studies are:

Virus survival in stool and urine

Virus is stable in faeces (and urine) at room temperature for at least 1-2 days.
 Virus is more stable (up to 4 days) in stool from diarrhea patients (which has higher pH than normal stool).

Disinfectants

Virus loses infectivity after exposure to different commonly used disinfectants and fixatives.

Virus survival in cell-culture supernatant

Only minimal reduction in virus concentration after 21 days at 4°C and -80°C.
 Reduction in virus concentration by one log only at stable room temperature for 2 days. This would indicate that the virus is more stable than the known human coronaviruses under these conditions.
 Heat at 56°C kills the SARS coronavirus at around 10000 units per 15 min (quick reduction).

Fixatives (for use in laboratories only)

SARS virus fixation (killing) on glass slides for immunofluorescence assays in room temperature does not kill virus efficiently unless the acetone is cooled down to -20°C.

Lab*	Substrate	Initial viral count log ₁₀ PFU	Condition	Survival time	Method of testing viability
GVU	virus spiked in baby stool	1.00E+03	pH 6-7	3 hr	Virus isolation in cell culture
	virus spiked in normal stool	7.50E+03	pH 8	6hr	Virus isolation in cell culture

	virus in diarrheal stool	7.50E+03pH 9	4days	Virus isolation in cell culture
QMH	stool	1.00E+03Room Temperature	at least 2 days	Virus isolation in cell culture
	urine	1.00E+03Room Temperature	at least 24 hr	Virus isolation in cell culture
	Virus culture medium+ 1% bovine serum	1.00E+03on plastic surface in room temperature	at least 2 days	Virus isolation in cell culture
	Virus culture medium+ 1% bovine serum	1.00E+0430-37°C	at least 1hr	Virus isolation in cell culture
	Virus culture medium+ 1% fetal calf serum	1.00E+0456°C	degration of titre over time (10 000 infectious virus units in 15 min)	Virus isolation in cell culture
	virus in Acetone, 10% Formaldehyde and Paraformaldehyde, 10% Clorox, 75%ethanol, 2% phenol	1.00E+06Room Temperature	less than 5 min	Virus isolation in cell culture
NIID	Virus culture+ 2% bovine serum	1.00E+06minus 80°C	at least 4 days	Virus isolation and RT-PCR
	Virus culture+ 2% fetal calf serum	1.00E+064°C	at least 4 days	Virus isolation and RT-PCR
	Virus culture+ 2% fetal calf serum	1.00E+0637°C	less than 4 days	Virus isolation and RT-PCR
	Virus culture+ 2% fetal calf serum	1.00E+0556°C	less than 30min	
UniM	Virus culture	1.00E+064°C	at least 21 days	Virus isolation
	Virus culture	1.00E+06minus 80°C	at least 21 days	Virus isolation

CUHK

Virus in phosphate buffered saline (PBS) Virus in sterilized stool	9.00E+04	Room Temperature on	PBS	Stool	Virus isolation in cell culture
		plastered wall	24h	36h	
		plastic surface	36h	72h	
		formica surface	36h	36h	
		stainless steel	36h	72h	
		wood	12h	24h	
		cotton cloth	12h	24h	
		pig skin	≥24h	≥24h	
		glass slide	72h	96h	
		paper file cover	24h	36h	

CUHK Chinese University Hong Kong
 GUV: Government Virus Unit, Dept. of Health, Hong Kong, SAR China
 QMH: Queen Mary Hospital, The University of Hong Kong, Hong Kong, SAR China
 NIID: National Institute of infectious Diseases, Tokyo, Japan
 UnivM: University Marburg, Germany

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