World Health Organization

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 and fixatives (for use in laboratories)

- 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).

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				Virus isolation in

	stool	7.50E+03	pH 8	6hr	cell culture
	virus in diarrheal stool	7.50E+03	pH 9	4days	Virus isolation in cell culture
QMH	stool	1.00E+03	Room Temperature	at least 2 days	Virus isolation in cell culture
	urine	1.00E+03	Room Temperature	at least 24 hr	Virus isolation in cell culture
	Virus culture medium+ 1% bovine serum	1.00E+03	on plastic surface in room temperature	at least 2 days	Virus isolation in cell culture
	Virus culture medium+ 1% bovine serum	1.00E+04	30-37°C	at least 1hr	Virus isolation in cell culture
	Virus culture medium+ 1% fetal calf serum	1.00E+04	56°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+06	Room Temperature	less than 5 min	Virus isolation in cell culture
NIID	Virus culture+ 2% bovine serum	1.00E+06	minus 80°C	at least 4 days	Virus isolation and RT-PCR
	Virus culture+ 2% fetal calf serum	1.00E+06	4°C	at least 4 days	Virus isolation and RT-PCR
	Virus culture+ 2% fetal				Virus isolation and

	calf serum	1.00E+06	37°C	less than 4 days	RT-PCR
	Virus culture+ 2% fetal calf serum	1.00E+05	56°C	less than 30min	
UniM	Virus culture	1.00E+06	4°C	at least 21 days	Virus isolation
	Virus culture	1.00E+06	minus 80°C	at least 21 days	Virus isolation

GVU: 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