

## **Stability of SARS-CoV-2 in different environmental conditions.**

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**Alex W. H. Chin, MD, University of Hong Kong, Hong Kong, China, and colleagues conducted various experiments to test the stability of SARS-CoV-2 at different temperatures, on various surfaces, and its susceptibility to disinfection methods.**

**First, the researcher measured the stability of SARS-CoV-2 at different temperatures. SARS-CoV-2 in virus transport medium (final concentration ~6.8 log unit of 50% tissue culture infectious dose [TCID50] per mL) was incubated for up to 14 days and then tested for its infectivity.**

**Results showed that SARS-CoV-2 is highly stable at 4 degrees Celsius, but sensitive to heat. At 4 degrees Celsius, there was only around a 0.7 log-unit reduction of infectious titre on day 14. When the incubation temperature increased to 70 degrees Celsius, the time for virus inactivation was reduced to 5 mins.**

**The researchers then investigated the stability of this virus on different surfaces, including paper, tissue paper, wood, cloth, glass, banknotes, stainless steel, plastic, and surgical masks. Briefly, a 5 µL droplet of virus culture (~7.8 log unit of TCID50 per mL) was pipetted on a surface and left at room temperature (22 degrees Celsius) with a relative humidity of around 65%. The inoculated objects retrieved at desired time-points were immediately soaked with 200 µL of virus transport medium for 30 mins to elute the virus.**

**No infectious virus could be recovered from printing and tissue papers after a 3-hour incubation, whereas no infectious virus could be detected from treated wood and cloth on day 2. By contrast, SARS-CoV-2 was more stable on smooth surfaces. No infectious virus could be detected from treated smooth surfaces on day 4 (glass and banknote) or day 7 (stainless steel and plastic).**

**Strikingly, a detectable level of infectious virus was still present on the outer layer of a surgical mask on day 7 (~0.1% of the original inoculum).**

**The researchers also tested the virucidal effects of disinfectants by adding 15 µL of SARS-CoV-2 culture (~7.8 log unit of TCID50 per mL) to 135 µL of various disinfectants at working concentration. Disinfectants included household bleach, hand soap, ethanol, povidone-iodine, chlorhexidine, and benzalkonium chloride. With the exception of a 5-minute incubation with hand soap, no infectious virus could be detected after a 5-minute incubation at room temperature.**