

# Study shows first proof that a safer UV light effectively kills virus causing COVID-19

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Hiroshima University researchers found that using Ultraviolet C light with a 222 nm wavelength, which doesn't harm living cells in the human eye and skin, effectively kills the SARS-CoV-2. This is the first study in the world that proves its potency against the virus which causes COVID-19. Credit: Hiroshima University

A study conducted by Hiroshima University researchers found that using

Ultraviolet C light with a wavelength of 222 nanometers which is safer to use around humans effectively kills SARS-CoV-2—the first research in the world to prove its efficacy against the virus that causes COVID-19.

Other studies involving 222 nm UVC, also known as Far-UVC, have so far only looked at its potency in eradicating seasonal coronaviruses that are structurally similar to the SARS-CoV-2 but not on the COVID-19-causing [virus](#) itself. A nanometer is equivalent to one billionth of a meter.

An in vitro experiment by HU researchers showed that 99.7% of the SARS-CoV-2 viral culture was killed after a 30-second exposure to 222 nm UVC irradiation at  $0.1 \text{ mW/cm}^2$ . The study is published in the *American Journal of Infection Control*.

Tests were conducted using Ushio's Care222™ krypton-chloride excimer lamp. A 100 microliter solution containing the virus (ca.  $5 \times 10^6$  TCID<sub>50</sub>/mL) was spread onto a 9-centimeter sterile polystyrene plate. The researchers allowed it to dry in a biosafety cabinet at [room temperature](#) before placing the Far-UVC lamp 24 centimeters above the surface of the plates.

## 222 nm vs 254 nm UVC

A wavelength of 222 nm UVC cannot penetrate the outer, non-living layer of the human eye and skin so it won't cause harm to the living cells beneath. This makes it a safer but equally potent alternative to the more damaging 254 nm UVC germicidal lamps increasingly used in disinfecting healthcare facilities.

Since 254 nm UVC harms exposed [human tissues](#), it can only be used to sanitize empty rooms. But 222 nm UVC can be a promising disinfection

system for occupied [public spaces](#) including hospitals where nosocomial infections are a possibility.

The researchers, however, suggest further evaluation of the safety and effectiveness of 222 nm UVC irradiation in killing SARS-CoV-2 viruses in real-world surfaces as their study only investigated its in vitro efficacy.

**More information:** Hiroki Kitagawa et al, Effectiveness of 222-nm ultraviolet light on disinfecting SARS-CoV-2 surface contamination, *American Journal of Infection Control* (2020). [DOI: 10.1016/j.ajic.2020.08.022](#)

Provided by Hiroshima University

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