

# Copper iodide nanoparticles effective against 2009 pandemic H1N1 influenza virus

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Copper-iodide nanoparticles have long-lasting antiviral activity against the 2009 pandemic H1N1 influenza virus, according to a paper in the February issue of the journal *Applied and Environmental Microbiology*.

The copper iodide generates [reactive oxygen species](#) which kill viruses by degrading viral proteins. The particles can be applied to products such as filters, face masks, kitchen cloths, counter tops, and other products where people might come into contact with virus particles, says first author Yoshie Fujimori of NBC Meshtec, Inc., Tokyo, Japan. This is the first demonstration of antiviral activity in copper-iodide nanoparticles.

"Copper-iodide has antiviral activity against other viruses, and antibacterial activity as well," says Fujimori. "We have already sold some products, such as face masks, disposable protective clothing, antiviral sheets and blankets, and bannisters."

Copper has long been known to have antibacterial activity, and several copper compounds had previously been found to have antiviral activity, against both [avian influenza virus](#) and [human immunodeficiency virus](#). But the colors of copper metal and copper oxide would have altered the appearance of any products to which they might be applied, while the white copper iodide nanoparticles would not have done so, says Fujimori.

Copper iodide nanoparticles are stable in air and water, which accounts for their long-lasting antiviral activity, whereas the commonly used

alcohol hand-sanitizers are relatively ineffective against viruses.

The researchers showed that copper-iodide degrades [functional proteins](#), and they suspect that it does so by generating so-called reactive oxygen species, which are known to degrade proteins. A major advantage of this mechanism is that it would be extremely difficult for a virus to develop resistance to this mechanism, says Fujimori.

**More information:** Y. Fujimori, T. Sato, T. Hayata, T. Nagao, M. Nakayama, T. Nakayama, R. Sugamata, and K. Suzuki, 2012. Novel antiviral characteristics of nanosized copper(I) iodide particles showing inactivation activity against 2009 pandemic H1N1 influenza virus. *Appl. Environ. Microbiol.* 78:951-955.

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