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Nov 1, 2021

Panasonic Announces Verification of Inhibitory Effect of Hydroxyl Radicals Contained in Water (Nano-Sized Electrostatic Atomized Water Particle) on 4 novel Coronavirus (SARS-CoV-2) Variants

Osaka, Japan – Panasonic Corporation today announced it has verified the inhibitory effect of hydroxyl radicals contained in water on novel coronavirus variants, namely Alpha, Beta, Gamma, and Delta, in collaboration with the Japan Textile Products Quality and Technology Center.

Many viruses constantly change through mutation with some generating variants that may significantly affect viral infectivity and toxicity, which could lead to a global pandemics. Currently on a worldwide rampage, novel coronavirus also generated variants, four of which, as described above, have been designated as Variants of Concern by the World Health Organization (WHO), namely, Alpha, Beta, Gamma, and Delta.

In July 2020, Panasonic verified the inhibitory effect of hydroxyl radicals contained in water on novel coronavirus (SARS-CoV-2)[*1]. Prior to this announcement, in 2012, Panasonic conducted a virus clearance test with a third-party organization and confirmed the effectiveness on each of the 4 categories in terms of biological characteristics. Based on this result, Panasonic announced that "hydroxyl radicals contained in water" technology could be expected to have a inhibitory effect on new viruses[*2]. In light of these facts, hydroxyl radicals contained in water can be expected to have an effect on novel coronavirus variants. The company conducted a verification again in view of the current status of the spread of viral infection.

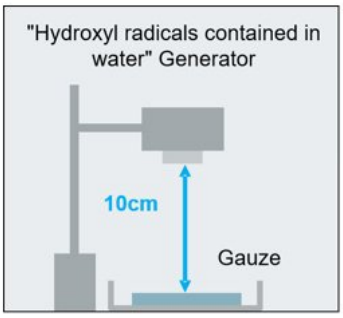
During the latest verification test, the virus titers of novel coronavirus (SARS-CoV-2) and its four variants (Alpha, Beta, Gamma, and Delta) were compared in a 45-liter test space with and without exposure to hydroxyl radicals contained in water. As a result, the test confirmed an inhibitory effect of more than 99% on all five types of viruses after two hours of exposure. Note that the verification results are based on the test in a closed test environment and not in a space actually in use.

Panasonic will continue to pursue the potential of the “hydroxyl radicals contained in water“ technology and verify its various effects in order to contribute to society.

*1 Verified jointly with Osaka Prefecture University
*2 Verified jointly with the German test laboratory, Charles River Biopharmaceutical Services GmbH

■Test details

・Organization: Japan Textile Products Quality and Technology Center
・Period: September 2021
・Subjects: Novel coronavirus (SARS-CoV-2) and
its four variants (Alpha, Beta, Gamma, and Delta)
・Equipment: hydroxyl radicals contained in water generator
・Method: In a 45-liter test space, install the hydroxyl radicals
contained in water generator 10 cm above the floor.
Place a piece of gauze saturated with the virus solution
in a Petri dish and expose it to hydroxyl radicals
contained in water for two hours.
Measure the virus infection titer and
calculate the inhibition rate.



Test ambient

・Results:

Test subject		Time	Inhibition rate*
Novel coronavirus (SARS-CoV-2)		2 hours	99.7%
Novel coronavirus variants	Alpha	2 hours	99.7%
	Beta	2 hours	99.8%
	Gamma	2 hours	99.8%
	Delta	2 hours	99.8%

* Calculated by Panasonic

■Conclusion

The reduction in virus infection titer of more than 99% against four novel coronavirus variants by means of "Hydroxyl radicals contained in water" technology was verified.
"Hydroxyl radicals contained in water" technology demonstrated the same decreasing trend regardless of the strain of the novel coronavirus (SARS-CoV-2) and its four variants.

■Opinion from Professor Masafumi Mukamoto of Osaka Prefecture University about the results of verification

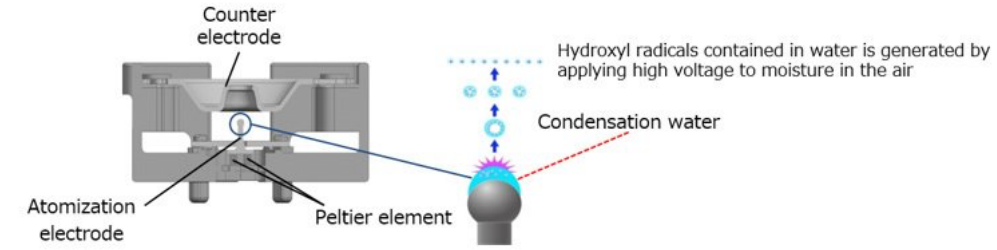
The novel coronavirus binds to host cells through a spike protein that exposes outward, enters the cells, and then propagates. Some antibodies, such as neutralizing antibodies produced by vaccination or infection, bind to the spike protein thereby preventing the virus from binding to host cells, hence the propagation of virus and pathogenesis are inhibited. Viruses, on the other hand, make incorrect copies of viral genes as they multiply in cells. This is called mutation. In particular, a virus with mutation in amino acid of spike protein, as a variant, increases its binding capacity to cells and makes it difficult for it to bind to neutralizing antibodies, causing a resurgence of COVID-19.

Although the antiviral effect of the hydroxyl radicals contained in water is not completely understood, but it is not a highly specific reaction (the property that an antibody reacts only with a specific antigen) like an antibody. In fact, based on the results of this verification, there was no difference in the inhibition rate of hydroxyl radicals contained in water among the novel coronavirus variants. Therefore, it is considered that viral mutations caused by some amino acid substitutions do not affect the inactivation effect.

Accordingly, it is expected that the "Hydroxyl radicals contained in water" technology will produce the same experimental results when tested under the same experimental conditions as this time for mutants that are expected to appear in the future.

■Principle of generation of hydroxyl radicals contained in water

The atomizing electrode is cooled with a Peltier module, which condenses moisture in the air. Afterwards, a high voltage is applied across the atomizing and the opposite electrodes to generate hydroxyl radicals contained in water of approx. 5 to 20 nm in size.



"Hydroxyl radicals contained in water" Generator

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https://news.panasonic.com/global/contacts/

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Panasonic Corporation is a global leader developing innovative technologies and solutions for wide-ranging applications in the consumer electronics, housing, automotive, and B2B sectors. The company, which celebrated its 100th anniversary in 2018, operates 522 subsidiaries and 69 associated companies worldwide and reported consolidated net sales of 6,698.8 billion yen for the year ended March 31, 2021. Committed to pursuing new value through collaborative innovation, the company uses its technologies to create a better life and a better world for customers. Learn more about Panasonic: https://www.panasonic.com/global.

Panasonic Corporation
Category: Technology/R&D, Others - Business Field
Country: Global

Relevant Information (Last updated Oct 31, 2021)

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Press Release for Others - Business Field

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November 1, 2021

Panasonic Corporation
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