

Simultaneous distribution to the Nara Prefecture Government and Economy Press Club, Nara Prefecture Culture and Education Press Club, Kashihara City Administration Press Club, and Osaka University of Science Press Club

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Nara Medical University, a public university
MBT Consortium, a general incorporated association

To whom the press may concern

(First in World) New Coronavirus (COVID-19) Inactivation by Ozone Confirmed

(First in World) Conditions for New Coronavirus (COVID-19) Inactivation by Ozone Clarified

Overview

A research group of Nara Medical University (Led by Professor Yano Juichi and Director of the Infectious Diseases Center Kasahara Kei) and the MBT Consortium (Infectious Diseases Section member companies: QOL Corporation, Sanyu Shoji Corporation and Tamurateko Corporation) confirmed the inactivation of COVID-19 by exposure to ozone gas for the first time in the world. In addition, by experimentally clarifying the conditions for its inactivation, we demonstrated its practicality from an academic point of view.

Background

In order to prevent the spread of infection in examination rooms and meeting rooms, disinfection was performed manually by wiping with alcohol after use, which was labor-intensive and time-consuming. Ozone gas sterilization was proposed as one of the means to solve this problem, but there was no medical evidence for it.

A research group led by Nara Medical University conducted an experiment on the inactivation of the new coronavirus by exposure to ozone gas, and found that the new coronavirus was inactivated by ozone and that the relationship between the ozone concentration and exposure time conditions and the inactivation of the new coronavirus was clarified experimentally.

Experiment Procedure

New coronavirus cell lines are cultured, and stainless -steel plates are placed in an ozone-proof airtight box (acrylic) installed in a safety cabinet, and the new coronavirus to be tested is applied.

The ozone generator (PMDA -certified medical device: ozone generator) installed in the ozone-proof airtight box (acrylic) is used to control and maintain the ozone concentration in the ozone-proof box from 1.0 to 6.0 ppm.

The amount of ozone exposure is set by CT value. (The CT value of 330, which is the experimental value for medical device certification by the PMDA of the Ministry of Health, Labor and Welfare, and the CT value of 60, which is the operational value for ozone decontamination of ambulance units by the Fire Department of the Ministry of Internal Affairs and Communications.)

After exposure, the virus is inoculated into the cells to determine if the virus has infected the cells and the amount of virus is calculated. This experiment was made possible because the University has a Biosafety Level 3 laboratory and virus culture technology.

Research Results

1. Inactivation rates ranged from 1/1,000 to 1/10,000 at a CT value of 330 (55 minutes of exposure at 6 ppm ozone concentration).
2. Inactivation rates ranged from 1/10 to 1/100 at a CT value of 60 (60 minutes of exposure at 1 ppm ozone concentration).



Experimental Equipment

Conclusion

Through the study, we confirmed that the inactivation rate could be up to 1/10,000 by ozone. This shows that the new coronavirus can be inactivated under practical conditions of ozone.

Nara Medical University (Kashihara City)

Founded in April, 1945, incorporated as a local independent administrative corporation in April, 2007.
(Number of Students: 1,020, Chairman and President: Hosei Yuji)

MBT Consortium (Kashihara City)

Founded in April, 2016, working on MBT activities with Nara Medical University.
(With 104 member companies, Chairman: Hosei Yuji)

QOL Corporation (Minato Ward, Tokyo City)

Founded in April, 2017, develops dispensaries and undertakes business process from R&D to sales.
(Capital: JPY 300 million-yen, President and Representative Director: Araki Isao)

Sanyu Shoji Corporation (Chuo Ward, Osaka City)

Founded in March, 1972, planning and wholesale of health-related products and housing-related products.
(Capital: JPY 10 million-yen, Representative Director: Daimon Masayoshi)

Tamurateko Corporation (East Osaka City)

Founded in April, 2003, develop, design, produce and sell products related to ozone, UV and oxygen.
(Capital: JPY 20 million-yen, Representative Director: Tamura Kozo)

Contact Information

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