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# Test report

Orb Tech Co., Ltd.

Evaluation of the inactivating effect of “SUPER BLAST OFF”  
disinfectant on SARS-CoV-2



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Department of Microbiology and Infectious Diseases

Nara Medical University



We hereby report on the above-mentioned matters related to your contract research.

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1. Research purpose:

To clarify whether the target disinfectant has an inactivating effect on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

2. Test material:

SUPER BLAST OFF (contains 1.3% sodium fatty acid).

3. Test microorganism: SARS-CoV-2

VeroE6/TMPRSS2 cells were infected with SARS-CoV-2, and those showing confirmed cytopathic effects were collected and cryopreserved in a freezer at  $-80^{\circ}\text{C}$ . The product obtained from two freeze-thaw procedures was then centrifuged, and the supernatant was concentrated and purified using an ultrafiltration membrane. This material was then used as the virus test solution and stored frozen at  $-80^{\circ}\text{C}$  until the test.

SARS-CoV-2 was obtained from the National Institute of Infectious Diseases, and VeroE6/TMPRSS2 cells were obtained from the JCRB Cell Bank of the National Institute of Biomedical Innovation, Health and Nutrition.

4. Test details

- Test product (180  $\mu\text{L}$ ) was mixed with 20  $\mu\text{L}$  of the virus test solution and allowed to stand for 1 min or 10 min.
- After the reaction, 1,800  $\mu\text{L}$  of SCDLP medium containing EDTA was added to stop the reaction.
- The virus infectivity titer (PFU/mL) was measured by the plaque method using the recovered solution.
- The reaction temperature was 20 – 25° C (room temperature).
- Procedures were conducted twice each.

The inactivating effect was calculated as follows:

$$\begin{aligned}\text{Inactivating effect (Mv)} &= \log(\text{Ct}/\text{C}_0) - \log(\text{Nt}/\text{N}_0) \\ &= \log\text{Ct}/\text{Nt}\end{aligned}$$

Ct: Infection titer after t hours of control

C<sub>0</sub>: Infection titer after 0 hours of control

Nt: Infection titer after t hours of test product

N<sub>0</sub>: Infection titer after 0 hours of test product

The rate of decrease was calculated from the logarithmic decrease as follows:

$$\text{Rate of decrease rate} = (1 - 1/10^{\text{logarithm reduction value}}) \times 100\%.$$

All tests were conducted at a biosafety level 3 (BSL3) experimental facility on campus under appropriate pathogen containment measures.

## 5. Results

The results are shown in Tables 1 and 2 and Fig. 1. The numerical value is the average value of two tests. The infectious titer of SARS-CoV-2 decreased from  $8.50 \times 10^6$  PFU/mL to  $<5.00 \times 10^2$  PFU/mL (rate of decrease  $> 99.993\%$ ) in 1 min, reaching the detection limit.

Table 1. Change in virus infection titer by the SUPER BLAST OFF

	0 min	1 min	10 min
Control (PBS)	8.50E+06	7.75E+06	7.50E+06
SUPER BLAST OFF	8.50E+06	$<5.00E+02$	$<5.00E+02$

Detection limit:  $<5.00E+02$ .

Table 2. Inactivating effect of the SUPER BLAST OFF on SARS-Cov-2

	1 min	10 min
Inactivating effect (Mv)	4.19	4.18
Rate of decrease (%)	$>99.993\%$	$>99.993\%$

The rate of decrease (%) is rounded down to the fourth decimal place.

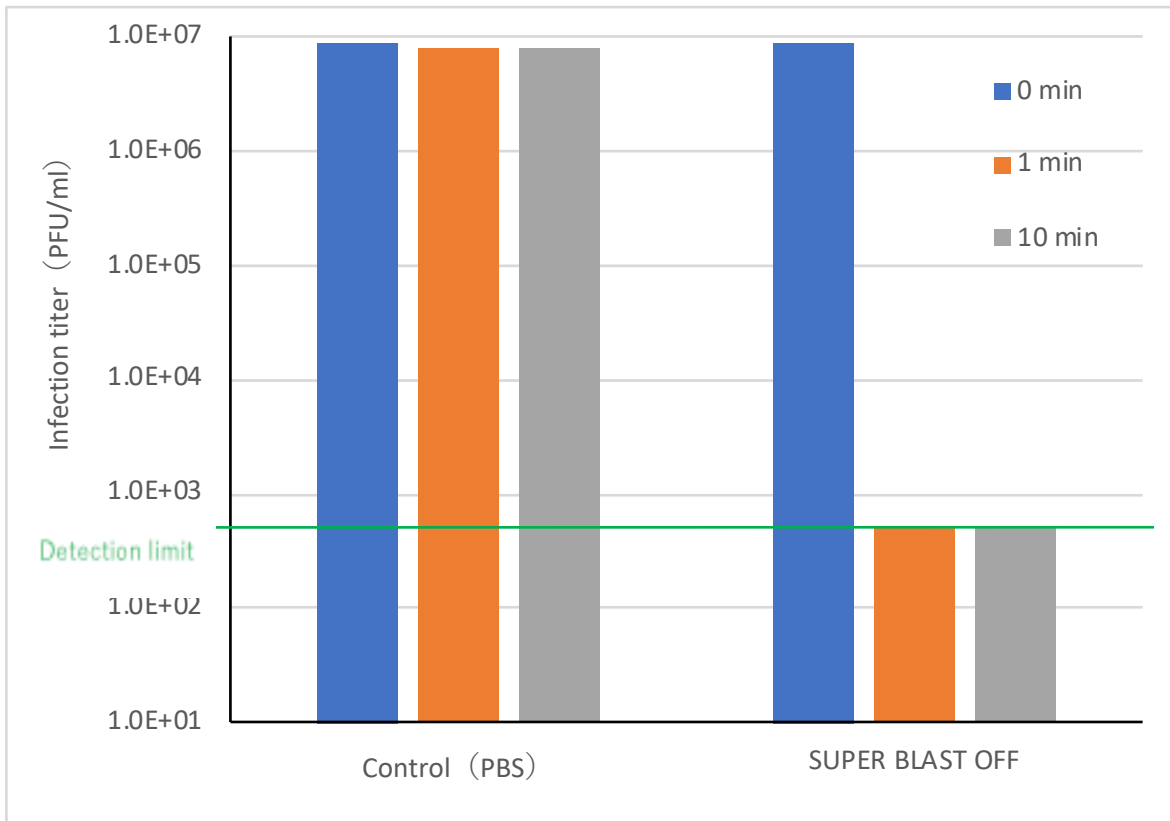


Figure 1. Changes in SARS-Cov-2 infection titer by SUPER BLAST OFF

## 6. Summary

The SUPER BLAST OFF disinfectant (containing 1.3% fatty acid sodium) used in this test was found to have an inactivating effect on SARS-CoV-2. The use of this experimental product may be effective in preventing contact transmission of SARS-CoV-2 from material surfaces. Its effects on floating viral particles and on the human body have not been verified.

We certify that the results of this test are as presented in this report.

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