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Récapitulatif des tests certifiés par des laboratoires indépendants des modules type plasma froid

présentés par la société *seril* DECRIL

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Le present test porte sur le **virus influenza A**
Il ne concerne pas une combinaison d'effet de traitement par Uv et plasma.

De nouveaux tests sont actuellement en cours, nous vous communiquerons les resultats sur demande.

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KRCES Report

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Test Report

Antiviral efficacy of ion generator

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1. **Aim of the test**

To investigate the antiviral efficacy of "ion generating device" using *Influenza A virus* (H1N1).

2. **Client**

3. **Testing organization**

Kitasato Research Center of Environmental Sciences

Address: 1-15-1 Kitasato, Minami, Sagamihara, Kanagawa, Japan

4. **Test device and condition**

Test device: ion generator

Test condition: Ion generator ON

Ion generator OFF

Exposure time: 0, 0.5, 1 and 2 hours

5. **Test virus**

Influenza A virus (A/PR/8/34, H1N1)

6. **Preparation of the test virus**

Influenza A virus was inoculated into the allantoic cavity of embryonated chicken eggs. These eggs were incubated at 37°C. After 2 days, the virus multiplying in the allantoic fluid was harvested and purified by the sucrose density gradient centrifugation method.

7. **Test condition**

1) Test chamber

A schematic representation of test chamber is shown in Figure 1. The acrylic test chamber (450 mm x 450 mm x 900 mm, approx 0.16m^3) was put into biological safety cabinet (BHC-1601 IIB$_3$, AirTech). The test device and test virus attach to the petri dish was put in test chamber.

2) Test procedure

One hundred of an influenza A virus suspension (virus titer; approx 1x10^{8}TCID$_{50}$/mL) was dripped and spread onto polystyrene petri dishes (IWAKI glass, ϕ60mm). The petri dishes were air-dried in a biological safety cabinet for 20 min. Test device was placed in the front of the virus attached petri dishes (Photo 1) in the test chamber, and the virus were test device for

Photo 2: Measurement of ion concentration by ion counter.

3) Measurement of infectivity

Viral infectivity titers in the recovery solution were determined by observation of a cytopathogenic effect of influenza virus in Madin-Darby canine kidney (MDCK) cells. Fifty µL of the 10-fold serial dilution of the mixtures and 50 µL of MDCK cell suspensions were transferred into 96-well micro-plates. After incubation for 4 days at 37°C in a CO_2 incubator, virus-induced cytopathogenic effect was observed using an inverted microscope. The virus titer was calculated by the Reed-Muench method as virus titers ($TCID_{50}$/mL). These $TCID_{50}$ values were then transformed [log_{10}] to express as log reduction values (LRV).

8. Test results

The antiviral efficacy of ion generator supplied by is summarized in Table 1, Table 2 and Figure 1. The initial virus titer was $4.5x10^{6}TCID_{50}$/mL. When the virus was exposed to the ion for 0.5, 1 and 2 h, initial virus infectivity was decreased to $8.9x10^{5}TCID_{50}$/mL, $2.9x10^{5}TCID_{50}$/mL and $4.5x10^{5}TCID_{50}$/mL, respectivly. The ozone was detected at the concentration of 0.05 ppm at 0.5, 1 h and 2 h.

9. Comments

In the present investigation, the antiviral efficacy of ion generator against influenza A virus was examined.

In this test method, it appears to be affective against influenza A virus, which indicates $1.2log_{10}$ reduction (the difference of log reduction value between ion generator OFF and ion generator ON) at 2 h.

During the experiment, the ozone concentration became up to 0.05ppm into the test chamber. Because ozone possessed antiviral activity, it is considered that the decreasing of viral infectivity by the device is presumably attributed to the combination effect of ozone and

Table 1: Antiviral efficacy of Ion generator

	Exposure time (h)			
	0 (initial)	0.5	1	2
Ion generator OFF(control)	4.5×10^6	7.2×10^5	8.4×10^5	7.9×10^5
Ion generator ON		8.9×10^5	2.9×10^5	4.5×10^4
Ozone concentration (ppm)	0	0.05	0.05	0.05

Units: $TCID_{50}$/mL

Table 2: Log reduction value in viral infectivity at each reaction time

	Exposure time (h)		
	0.5	1	2
Ion generator OFF(control)	0.8	0.7	0.8
Ion generator ON	0.7	1.2	2.0

Formula for calculating LRV: $\log_{10}$ (Initial viral infectivity/viral infectivity at each reaction time)

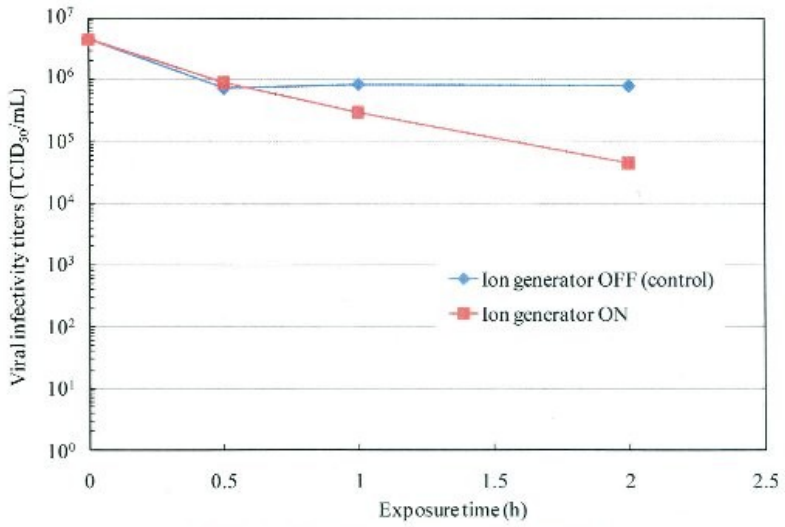

Figure 1: Antiviral efficacy of ion generator