DEFENSE INSTITUTE FOR BIOMEDICAL SCIENCES

Final report on a prototype of LED lamp (UV free) Biovitae devices efficacy in Influenza A inactivation

Introduction

To evaluate the virucidal activity of the prototype of LED lamp (UV free) with Biovitae® technology supplied by the company Nextsense srl, preliminary tests have been conducted by Dr. Riccardo De Santis by the Defense Institute for Biomedical Sciences, under the direction of General Florigio Lista.

Description of test

Pandemic influenza virus A/(H1N1) pdm09, isolated from a nasopharyngeal swab and propagated in MDCK cells, was used in the test. The virus titration was performed by $TCID_{50}$. The device under test was a prototype of LED lamp (UV free) Biovitae (Nextsense S.r.l) tested at 900 mA (Figure 1).

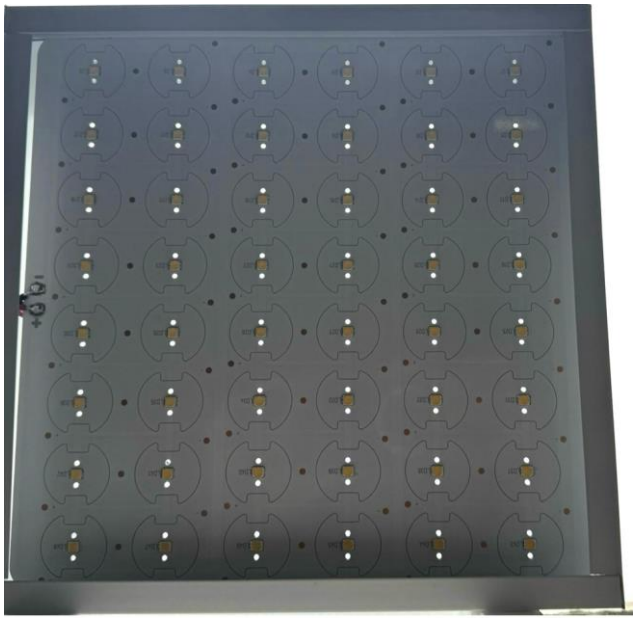

Figure 1. Prototype of LED lamp (UV free) Biovitae (Nextsense S.r.l)

The exposure was performed placing a 96 wells plate containing the viral suspensions (titer was $10^{3.8}$ TDCI50/ml corresponding to 7 x 10^3 PFU/ml), perpendicularly to the light for 1 hour at a distance of 20 cm (Figure 2 and 3).

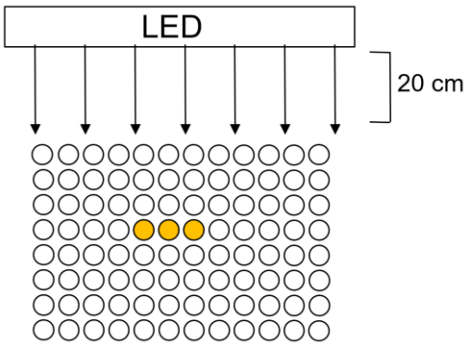

Figure 2. Experiment design. A viral suspension of flu virus was aliquoted in a 96 wells plate (100 µl/well) placed perpendicularly to the device at 20 cm.

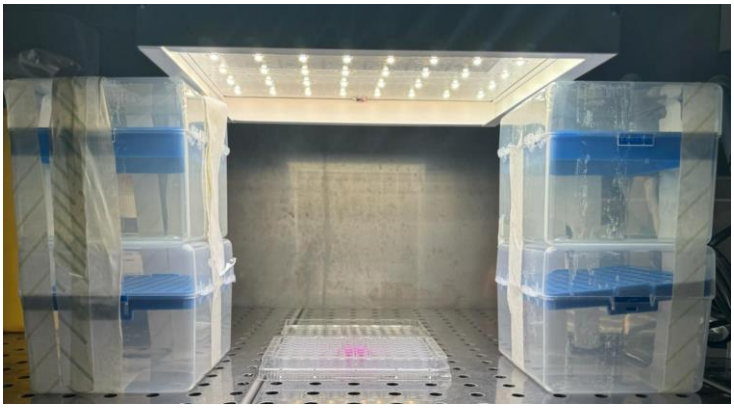

Figure 2. Illustrative LED device placed at 20 cm from the viral suspension aliquoted in a 96 well plate.

After the exposure, viral suspension was ten-fold diluted and titrated by $TCID_{50}$. Virucidal effects generated by the device, have been determined by Reed–Muench method.

Results

A viral suspension of pandemic influenza virus A/(H1N1) pdm09 ($10^{3.8}$ TDCI50/ml) was exposed to the lamp prototype (900 mA) for 1 hour at a distance of 20 cm. Results show an inhibition percentage of 95%.

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