CONFIDENTIAL

Determination of the decontamination efficiency of the ViralSafe coating device on inox surfaces contaminated by RSV, H1N1 and SARS-CoV-2.

NeoVirTech SAS

1 place Pierre Potier, Oncopole, entrée B
31106 Toulouse

France

www.neovirtech.com

Tel: 0033 972 405 414

January 2021

NeoVirTech
1, place Pierre Potier
31106 Toulouse
France
+33 (0)972405413
contact@neovirtech.com

Table of contents

I. FOREWORD

This document and associated results are the exclusive property of Clean Touch Medical, Finland.

In this document are enclosed data and analyses referring to quote DEV58NVTCTM001v1, ordered in December 2020. NeoVirTech makes no warranties on the ability of this device to achieve other stages of development.

NeoVirTech applies strong confidential policies for this document. The customer however can share this document to its own discretion on a need-to-know basis. Any public disclosure of this document (or part of it) must be subjected to NeoVirTech approval.

NeoVirTech will keep archived of raw and processed data. All raw data are available on demand. Extraction or generation of new data can lead to extra fees.

II. DEVICE AND TESTS CONDITIONS

The device from Clean Touch Medical, called ViralSafe was received in December 2020 and stored until use in assays. All experiments were performed either in BSL-2 or BSL-3 facilities in strict compliance with biosafety procedures.

Inox surfaces were contaminated with 5.10^7 TCID50 of a SARS-CoV-2 clinical isolate (25 µl of viral solution), 5.10^7 TCID50 of an influenza H1N1 PR8 (25 µl of viral solution) or 3.10^4 ffu of RSV Long strain (25 µl of viral solution).

Two replicates were tested for each condition: 30 seconds or 1 min of incubation at room temperature on surface coated or not with ViralSafe.

For RSV, a viral solution was recovered and used directly to infect permissive cells (Hep-2). Cells are grown in DMEM medium-high glucose (D6429; Sigma Aldrich) supplemented with 2% FBS (Eurobio-Scientific), and 1% Penicillin-Streptomycin solution (P0781; Sigma Aldrich). 3 days post-infection, cells are fixed with formalin and processed for immunofluorescence using an anti-RSV antibody (Abcam 20745). Cells are imaged using a Cell Insight CX7 high content screening microscope. Number of cells and presence of RSV infected cells are assessed using an internal detection algorithm.

For SRAS-CoV-2, leftover contaminations were recovered in 100 µl of culture medium. For each sample, viral titers were determined by the TCID50 method on Vero-E6. Cells are grown in DMEM medium-high glucose (D6429; Sigma Aldrich) supplemented with 2% FBS (Eurobio-Scientific), and 1% Penicillin-Streptomycin solution (P0781; Sigma Aldrich). TCID50 titres were calculated after 4 days of incubation by the Spearman & Kärber algorithm. Results are expressed in per cent of infectious SARS-CoV-2 decrease.

For H1N1, leftover contaminations were recovered in 100 µl of culture medium. For each sample, viral titers were determined by the TCID50 method on MDCK. Cells are grown in DMEM medium-high glucose (D6429; Sigma Aldrich) supplemented with 2% FBS (Eurobio-Scientific), and 1% Penicillin-Streptomycin solution (P0781; Sigma Aldrich). TCID50 titres were calculated after 4 days of incubation by the Spearman & Kärber algorithm. Results are expressed in per cent of infectious H1N1 decrease.

III. RESULTS

a. Visual protocol

b. Decontamination efficiency

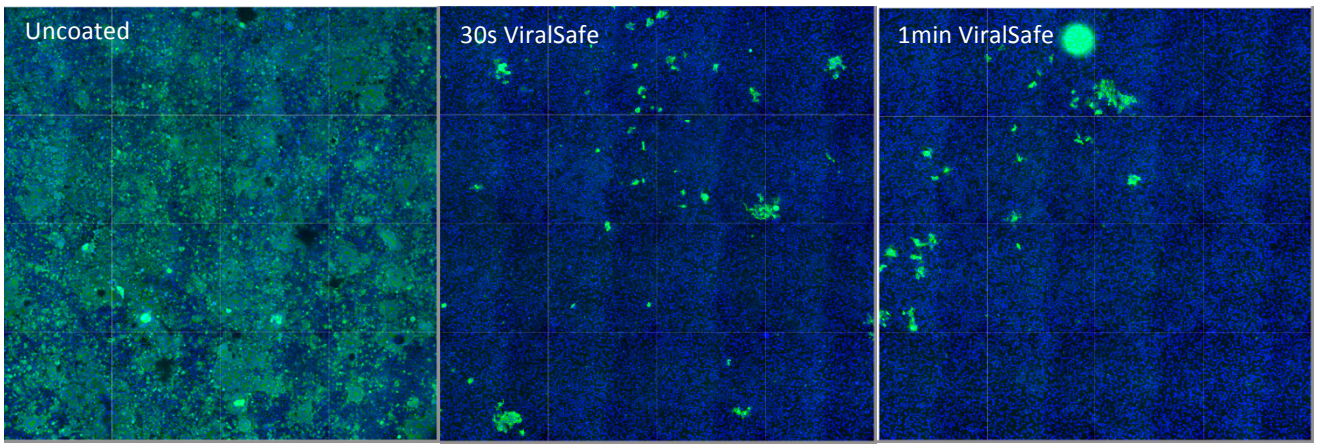

FIGURE 1: DECONTAMINATION EFFICIENCY OF VIRALSAFE COATED ON INOX SURFACES CONTAMINATED BY RSV INVESTIGATED BY HIGH CONTENT MICROSCOPY. BLUE NUCLEI, GREEN INFECTED CELLS.

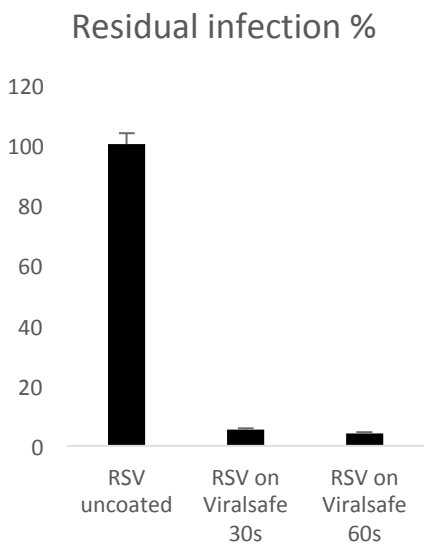

FIGURE 1: DECONTAMINATION QUANTIFICATION OF VIRALSAFE ON INOX SURFACES CONTAMINATED BY RSV. AUTOMATIC ANALYSIS WAS USED TO DETECT THE NUMBER OF INFECTED CELLS IN EACH CONDITION. RESULTS ARE MEAN+SD OF THE DUPLICATE NORMALIZED OVER UNCOATED CONDITION.

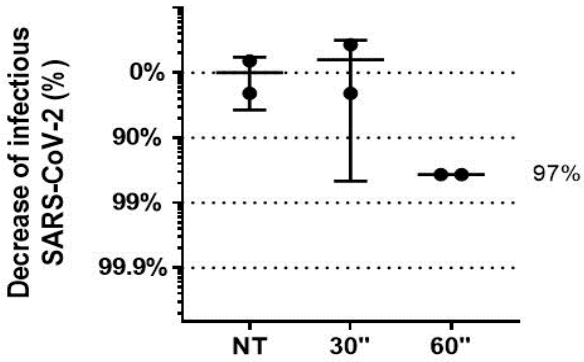

FIGURE 3: DETERMINATION OF THE DECONTAMINATION EFFICIENCY OF VIRALSAFE SURFACE ON SARS-COV-2.

SURFACES WERE CONTAMINATED WITH A CLINICAL ISOLATE OF SARS-COV-2 (5.10^7 TCID50; 25 µL OF VIRAL SOLUTION). TWO REPLICATES WERE TESTED FOR EACH CONDITION: 30 AND 60 SEC OF CONTACT WITH THE VIRALSAFE SURFACE AND 60 SEC OF CONTACT WITH THE NON TREATED SURFACE (NT). LEFTOVER CONTAMINATIONS WERE RECOVERED IN 100 µL OF CULTURE MEDIUM. FOR EACH SAMPLE, VIRAL TITERS WERE DETERMINED BY THE TCID50 METHOD ON VERO-E6 CELLS AND CALCULATED BY THE SPEARMAN & KÄRBER ALGORITHM. RESULTS ARE EXPRESSED IN PER CENT OF INFECTIOUS SARS-COV-2 DECREASE.

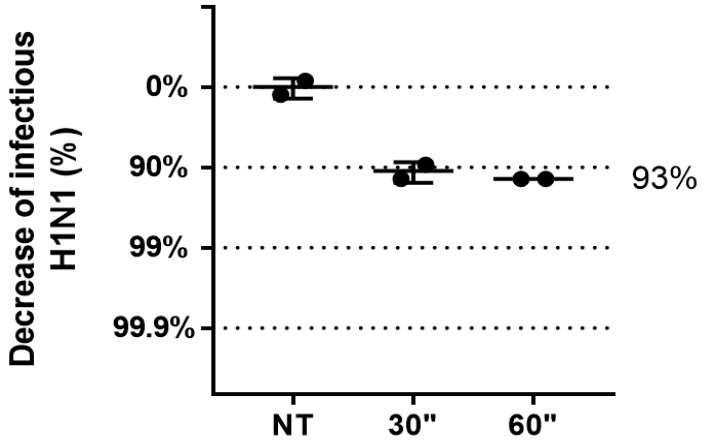

FIGURE 4: DETERMINATION OF THE DECONTAMINATION EFFICIENCY OF VIRALSAFE SURFACE ON H1N1.

SURFACES WERE CONTAMINATED WITH AN H1N1 VIRUS (5.107 TCID50; 25 µL OF VIRAL SOLUTION). TWO REPLICATES WERE TESTED FOR EACH CONDITION: 30 AND 60 SEC OF CONTACT WITH THE VIRALSAFE SURFACE AND 60 SEC OF CONTACT WITH THE NON TREATED SURFACE (NT). LEFTOVER CONTAMINATIONS WERE RECOVERED IN 100µL OF CULTURE MEDIUM. FOR EACH SAMPLE, VIRAL TITERS WERE DETERMINED BY THE TCID50 METHOD ON MDCK CELLS AND CALCULATED BY THE SPEARMAN & KÄRBER ALGORITHM. RESULTS ARE EXPRESSED IN PER CENT OF H1N1 DECREASE.

IV. CONCLUSION

ViralSafe achieved a maximal decrease of 95% reduction of RSV, 93% reduction of influenza H1N1, 97% reduction of SARS-CoV-2 under the used experimental conditions (1min).

Extremely powerful and rapid virucidal effect on all viruses tested. Note: virus concentration used in this study is extremely high to challenge the maximal activity of the ViralSafe coating device. Virus concentration in non-laboratory conditions can be assumed to be greatly lower.

V. DATA RELEASE AND APPROVAL

Name: Thomas Figueroa
Franck Gallardo

Title: RNA and respiratory viruses project manager
CEO NeoVirTech SAS

Date: January 18th, 2021

Signature: