

GENOMICS

Proof of Concept Experiment: Paerosol Elimination of COVID Virus on Contaminated Surfaces

Mako Medical, in partnership with Pure Aqua Solution, LLC and Paerosol Group, LLC, performed proof of concept testing of Paerosol on the ability to eradicate COVID19 viral particles.

Mako Medical successfully demonstrated Paerosol's ability to eliminate COVID19 viral particles both through its micro-aerosol and spraying application methods. The results of the experiment are described after a brief introduction to Paerosol technology and Mako Medical's COVID19 testing.

About Paerosol

Paerosol is an air and surface disinfecting technology developed by the Department of Energy's Pacific Northwest National Laboratory (PNNL). The technology has been tested and validated over 20 years by leading research institutions including the World Health Organization, United States Department of Agriculture, United States Defense Threat Reduction Agency, Auburn University and the University of Colorado. Paerosol has consistently proven to be 99.99% – 99.9999% effective at eliminating a wide range of bacteria (*S. Aureus*, *E.Coli*, *Salmonella*, *C. diff*, *MRSA*, etc.), viruses (*H1N1*, *H5N1*, *PRRS*, *PEDv*), fungus and spores both in the air and on surfaces. The technology has also proven to be non-toxic to mice in high concentration environments. The technology has been commercialized and is ready for large-scale production to help control and mitigate COVID-19.

The Paerosol technology platform consists of two components: a proprietary HOCL liquid disinfectant and a patented high-volume micro-aerosol generator. The Paerosol liquid disinfectant is an electrochemically activated salt-water solution with hypochlorous acid (HOCL) as the active ingredient. The Paerosol disinfectant may be used as a traditional "spray and wipe" or may be applied using sprayers, foggers, and misting systems for eliminating surface-borne pathogens. The Paerosol disinfectant is organic, non-toxic and non-corrosive and is produced with a neutral pH and a .20% HOCL concentration.

The Paerosol HOCL disinfectant may also be applied as a micro-aerosol using a patented micro-aerosol generator. The micro-aerosol is a powerful air and surface disinfectant proven to eliminate 99.99% - 99.9999% of viruses, bacteria, and spores. The patented micro-aerosol generator converts the HOCL liquid into a high volume, gas-like micro-aerosol, which quickly diffuses everywhere in a room killing pathogens both in the air and on hard to clean surfaces (e.g.; equipment, bedding, curtains, ceilings, upper walls, drawers, fixtures, ventilation systems, etc.). The Paerosol micro-aerosol is all-natural (organic) with no known negative side effects. It is non-toxic to warm-blooded animals, safe and simple to use, inexpensive, and non-corrosive for sensitive electronic equipment. Paerosol requires no chemicals or consumable materials other than water and salt. Paerosol requires no technical training or certification and may easily be deployed with no required site preparation.

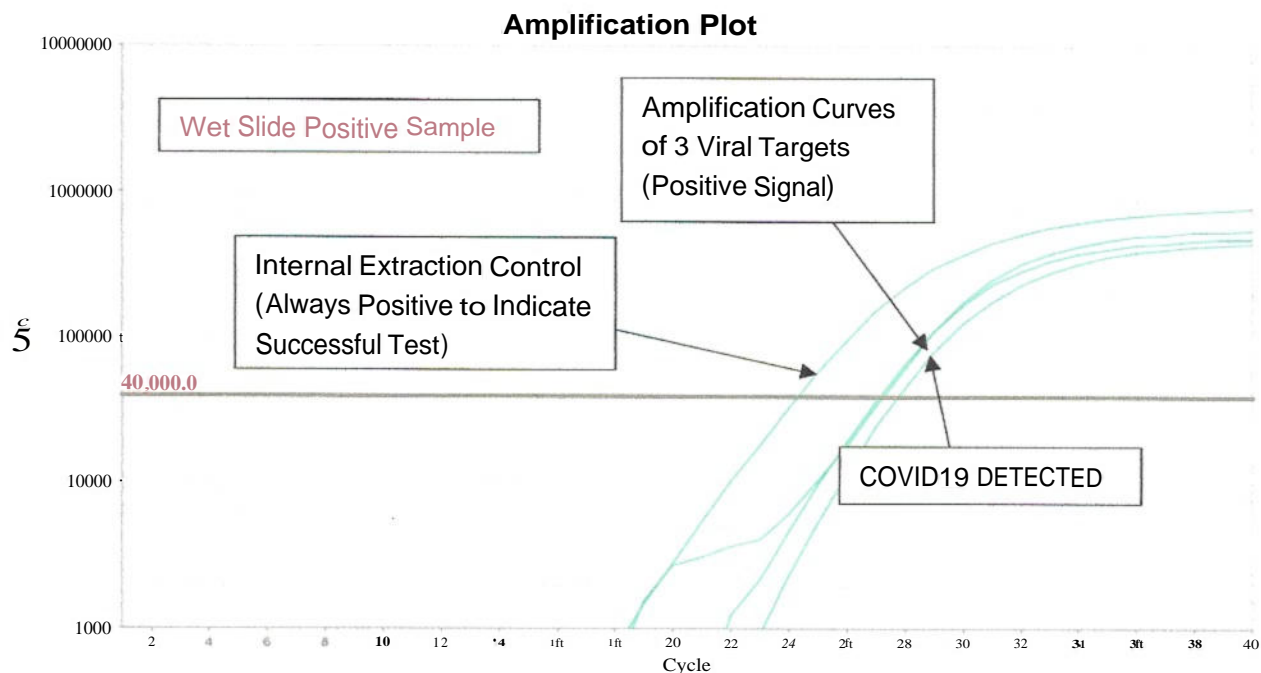
About Mako Medical

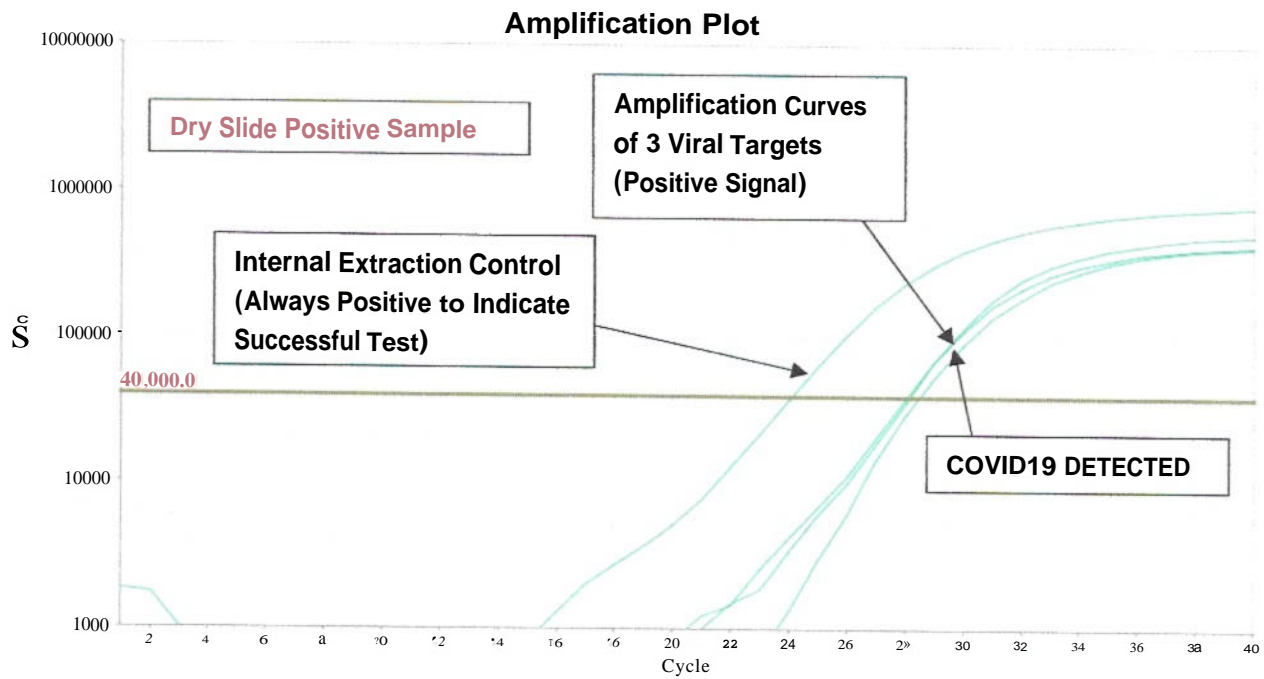
Mako Medical is a clinical diagnostic laboratory that performs COVID19 testing. Mako Medical utilizes RNA extraction and qPCR to detect COVID19 in nasopharyngeal swab samples in a clinical setting. Since the outbreak of COVID19, Mako Medical has processed and released thousands of COVID19 tests and results. Mako Medical utilizes ThermoFishers Emergency Use Authorization (EUA) FDA-approved assay. Mako Medical has a Laboratory Developed Test (LDT) based on ThermoFisher's EUA workflow and submitted its own validated test to the FDA for EUA and was granted the ability to test patient samples based on the extensive in-house validation. Mako Medical has been performing COVID19 testing since April 3rd, 2020.

Mako Medical tested Paerosol's efficacy against COVID19 viral particles using the same LDT workflow and testing protocols approved by the FDA. The experiment tested Paerosol's HOCL-based liquid disinfectant both as a micro-aerosol and as a spray application. The Paerosol liquid disinfectant was produced on site and measured 2250 Free Available Chlorine and 6.5 pH. The disinfecting fluid was applied at a rate of 13-15 mis per minute of micro-aerosol and .2ml per spray application.

Micro-Aerosol Experiment:

Positive COVID19 samples suspended in 0.45% saline transport solution were smeared onto glass slides. To estimate the amount of viral material present in the smear, the positive COVID19 sample smeared on the glass slide was recaptured and processed through Mako Medical's COVID19 RNA extraction and qPCR process. Slides were also dried at 40°C for <5 minutes and the drying process of the glass slides was used to prepare samples for the aerosol experiment. The dried slides were also processed using the same COVID19 testing. Comparison of the wet slides and dry slides would investigate the possibility of viral particles being destroyed during the drying process. Summary figures are presented below.

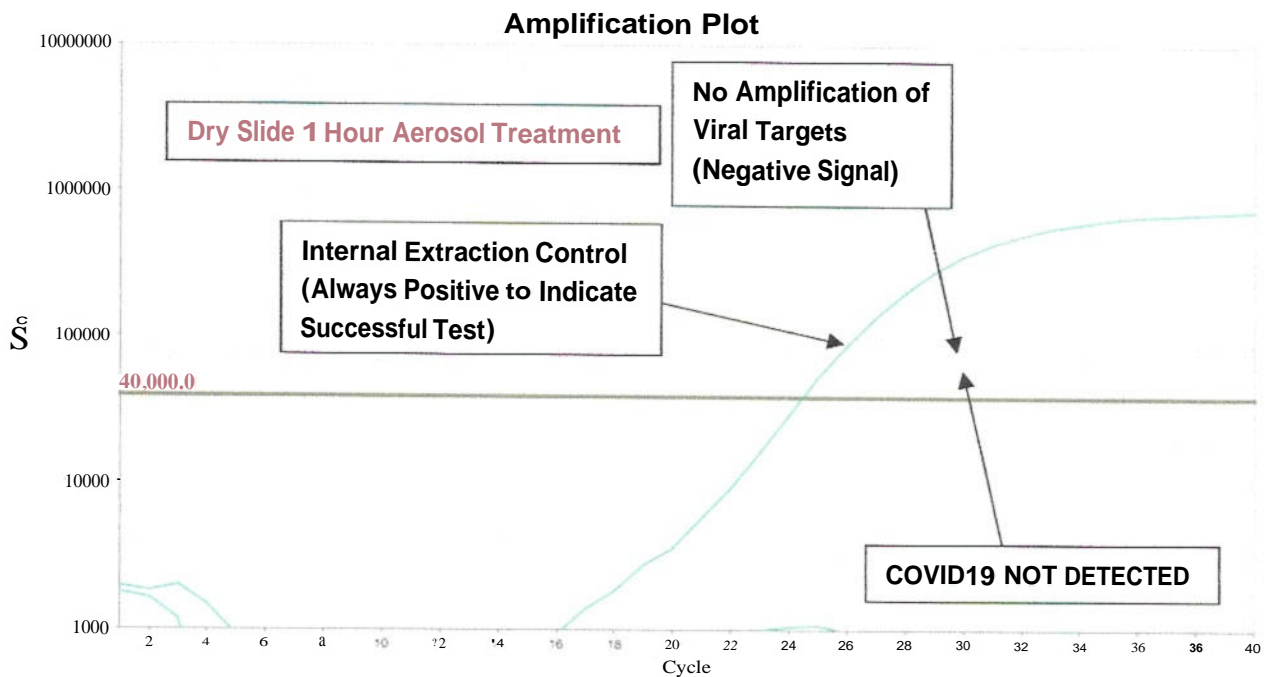


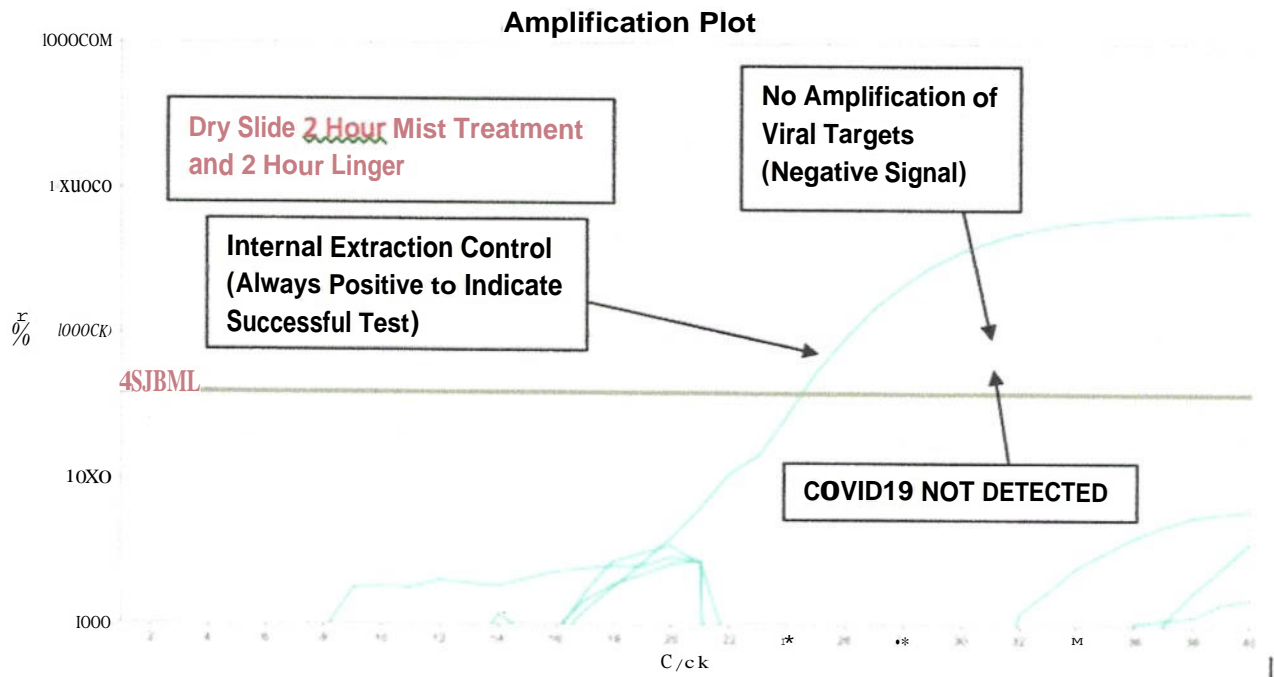


There was minimal signal loss from the drying process. The amount of viral copies estimated to be on the dry slides is <1,000. Virus present at this amount would be representative of virus present in the environment.

After confirming the drying process had no effect on COVID19 detection ability, dry slides processed at the same time of evaluation were also treated with HOCl micro-aerosol.

A 12x8.5-foot enclosed room was used to treat the room with micro-aerosol. Two dry slides were left in the room on a table while the instrument was treating the room. One slide was taken out and processed for COVID19 detection after sitting for 1 hour in the room. The second slide was in the room for 2 hours during treatment and allowed to sit in the room for an additional “linger” time of 2 hours and then processed for COVID19 detection. Summary figures are presented below.





In both treatment scenarios, the micro-aerosol treatment effectively eliminated the COVID19 virus at detectable levels.

Spraying Experiment

Following the same procedure described above, two dry viral samples on slides were sprayed with two HOCl solutions (Pure and Clean and Paerosol brand solutions) and let set for 30 minutes before collecting and evaluating samples. Paerosol's liquid disinfectant effectively eliminated the COVID19 virus at detectable levels.

Conclusion

Mako Medical was able to successfully demonstrate that Paerosol effectively eliminated COVID19 viral particles through both a micro-aerosol and spray application.

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