Public Health England

SARS-CoV-2 Inactivation Testing: Interim Report

Report identifier	HCM/CoV2/075/v1
Report issue date	17 February 2021
Undertaken by High Containment Microbiology, NIS Laboratories, National Infection Service, Public Health England N.B. This is an interim report and may be updated as further results are obtained	

Product/treatment details	
Product/treatment	Hypochlorous acid 500ppm
Concentration	Product tested undiluted and diluted in 1 part product to 4 parts deionised water
Manufacturer	F & K Holdings
Product code	LOG6
Manufacturer's recommended ratio of sample to product	1 volume sample to 10 volumes product

Sample details	
Sample type tested	Tissue culture fluid containing 5% (v/v) foetal calf serum
Virus strain tested	SARS-CoV-2 England 2
Ratio of spiked virus stock to sample matrix	Not applicable; tissue culture fluid used undiluted

Experimental conditions	
Ratio of sample to product tested	1 volume sample to 10 volumes product
Contact time/s	1 minute; 5 minutes
Temperature of incubation	Ambient temperature
Brief description of tests performed	Triplicate samples were treated with undiluted or pre-diluted test buffer for indicated contact time/s, or mock-treated in triplicate with an equivalent volume of PBS. Samples were immediately titrated on Vero E6 cells to establish virus titre. This test is quantitative and reports the titre of virus in each treatment condition in TCID50 per ml. Reduction in virus titre following treatment is given as the difference between the mean log_{10} TCID50/ml for treated conditions and the PBS control.

Table of results			
	Mean virus titre in log_{10} TCID50/ml [95% confidence interval]	Titre reduction in log_{10} TCID50/ml [95% confidence interval]	Virus detectable in titration: Yes/No (no. of replicates positive)
PBS-treated	5.8 [5.5-6.1]	-	Yes (3/3)
Undiluted (1 minute)	≤0.7*†	≥5.1 [4.8-5.4]	No
Undiluted (5 minutes)	≤0.7*†	≥5.1 [4.8-5.4]	No
1:4 diluted (1 minute)	4.2 [4.0-4.5]	1.6 [1.2-2.0]	Yes (3/3)
1:4 diluted (5 minutes)	4.4 [4.1-4.6]	1.4 [1.0-1.8]	Yes (3/3)

*Limit of detection for test was 0.7 log10 TCID50/ml. Mean titres are reported as ≤ when at least one replicate was below the limit of detection.
†95% confidence interval cannot be calculated

Interpretation

Treatment with undiluted product for 1 minute or 5 minutes reduced SARS-CoV-2 titre by ≥5.1 $\log_{10}$ TCID50/ml, to below the limit of detection for the test.

Treatment with 1:4 diluted product for 1 minute or 5 minutes reduced SARS-CoV-2 titre by 1.6 $\log_{10}$ TCID50/ml and 1.4 $\log_{10}$ TCID50/ml, respectively. Considerable levels of virus were detectable in all sample replicates treated with diluted product.

Here, effectiveness of this product for SARS-CoV-2 inactivation has been assessed in virus suspension tests. Performance in other types of inactivation tests (e.g. in surface tests) may differ.

Demonstrating complete inactivation is dependent on the starting titre of virus used for testing. Complete inactivation may occur if samples contained lower levels of infectious virus than those tested here, but sample treatments that inactivate virus effectively in our testing may fail to inactivate samples containing higher levels of virus than those evaluated in this study.

This test has been performed using tissue culture fluid. The effectiveness of this treatment against SARS-CoV-2 may vary when used to inactivate clinical samples or other types of sample matrix. Any results of inactivation testing using other sample matrices will be released as they become available.

Inactivation reagents should not be assumed to be 100% effective against SARS-CoV-2.

Suitability of products and treatments for inactivation of other pathogens has not been evaluated in this study.

All COVID-19 laboratory testing workflows must be subjected to suitable and sufficient risk assessment, with consideration given to any inactivation step. Risk assessments should be reviewed regularly as new information on the inactivation of SARS-CoV-2 becomes available.

The impact of chosen inactivation method on the sensitivity of subsequent SARS-CoV-2 detection should also be assessed locally.

Disclaimer
PHE's evaluations of commercial products and treatments for inactivating SARS-CoV-2 have been carried out primarily for PHE's own internal use and the reports of such evaluations are shared solely for readers information; PHE does not in any way recommend any particular product for virus inactivation; and PHE shall not be responsible for the choice of product or treatment for virus inactivation, and it is the responsibility of the testing laboratory to ensure that any such product or treatment implemented has undergone the necessary verification and validation; and PHE shall not be liable, to the greatest extent possible under any applicable law, for any claim, loss or damage arising out of or connected with use of this and related reports and choice of virus inactivation products or treatments. PHE is an Executive Agency of the Department of Health and Social Care. Unauthorised use of the PHE name and/or logo is prohibited.

Summary of revisions
Version 1: New document

Queries regarding this report or HCM inactivation testing should be directed to HCMgroup@phe.gov.uk