Public Health England

SARS-CoV-2 Inactivation Testing: Interim Report

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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	Salicovgel-2
Manufacturer	LGC
Product code	Not known
Manufacturer's recommended ratio of sample to product	1ml saliva to be added to tube containing Salicovgel-2 gel

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 resuspended Salicovgel-2 (generated by resuspending Salicovgel-2 gel in 1ml PBS)
Contact time/s	1 hour; 3 hours
Temperature of incubation	Ambient temperature
Brief description of tests performed	Tubes containing Salicovgel-2 were thoroughly resuspended in PBS (1ml per tube) and then immediately spiked with SARS-CoV-2 and incubated for the indicated times. Mock-treated samples were prepared in triplicate with an equivalent volume of PBS and incubated for 3 hours. All samples were then subjected to a purification step to remove cytotoxic buffer components. PBS-treated samples were subjected to the same purification procedure in parallel. Purified samples were 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	4.8 [4.6-5.1]	-	Yes (3/3)
Test buffer-treated (1 hour)	1.7†	3.1 [2.9-3.4]	Yes (3/3)
Test buffer-treated (3 hours)	≤1.4†*	≥3.4 [3.2-3.7]	Yes (2/3)

†95% confidence interval cannot be calculated

*Mean titres are reported as ≤ when at least one replicate was below the limit of detection

Interpretation

Treatment with LGC Salicovgel-2 (resuspended according to the manufacturer's instructions) reduced mean SARS-CoV-2 titre by 3.1 log_{10} and ≥3.4 log_{10} TCID50/ml after 1 and 3 hour treatment, respectively. Low levels of residual virus were detectable by virus titration in all sample replicates by virus titration after 1 hour treatment, and in 2/3 sample replicates after 3 hour treatment.

While this represents a considerable reduction in virus titre, this product should not be relied upon to completely inactivate infectious samples.

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.

Summary of revisions

Version 1: New document

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