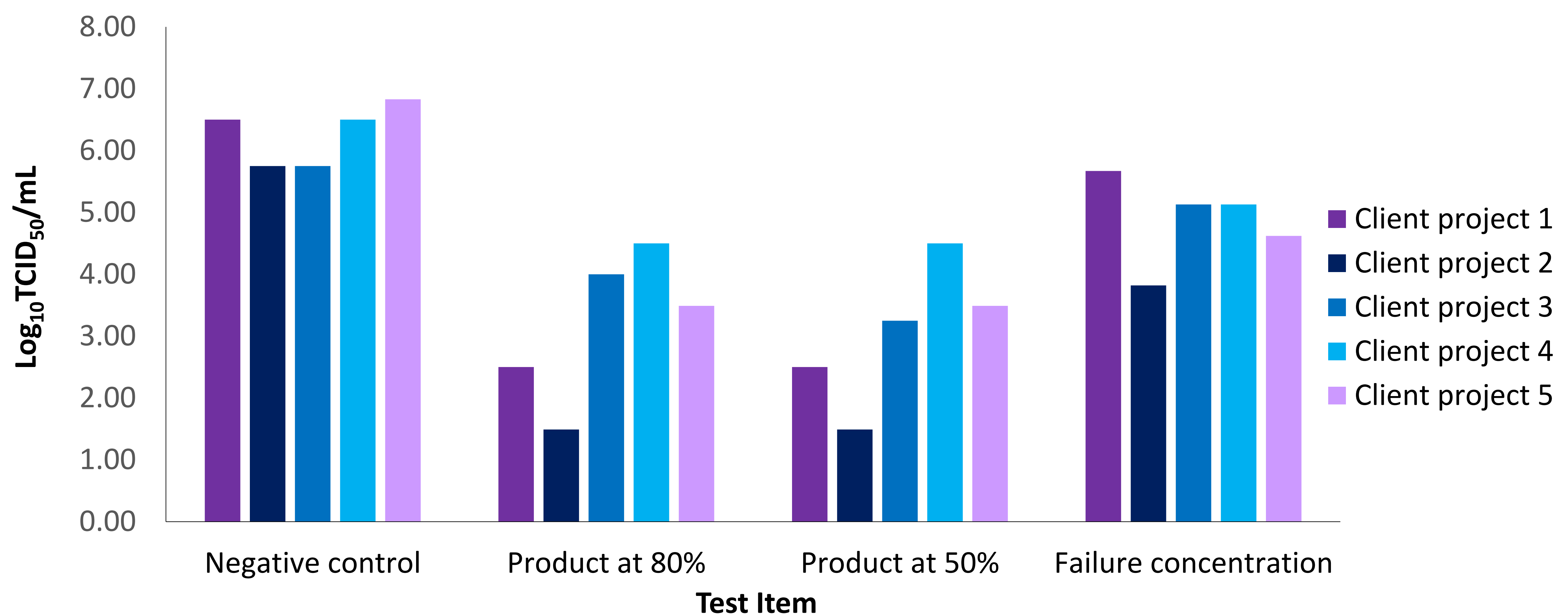


## Introduction

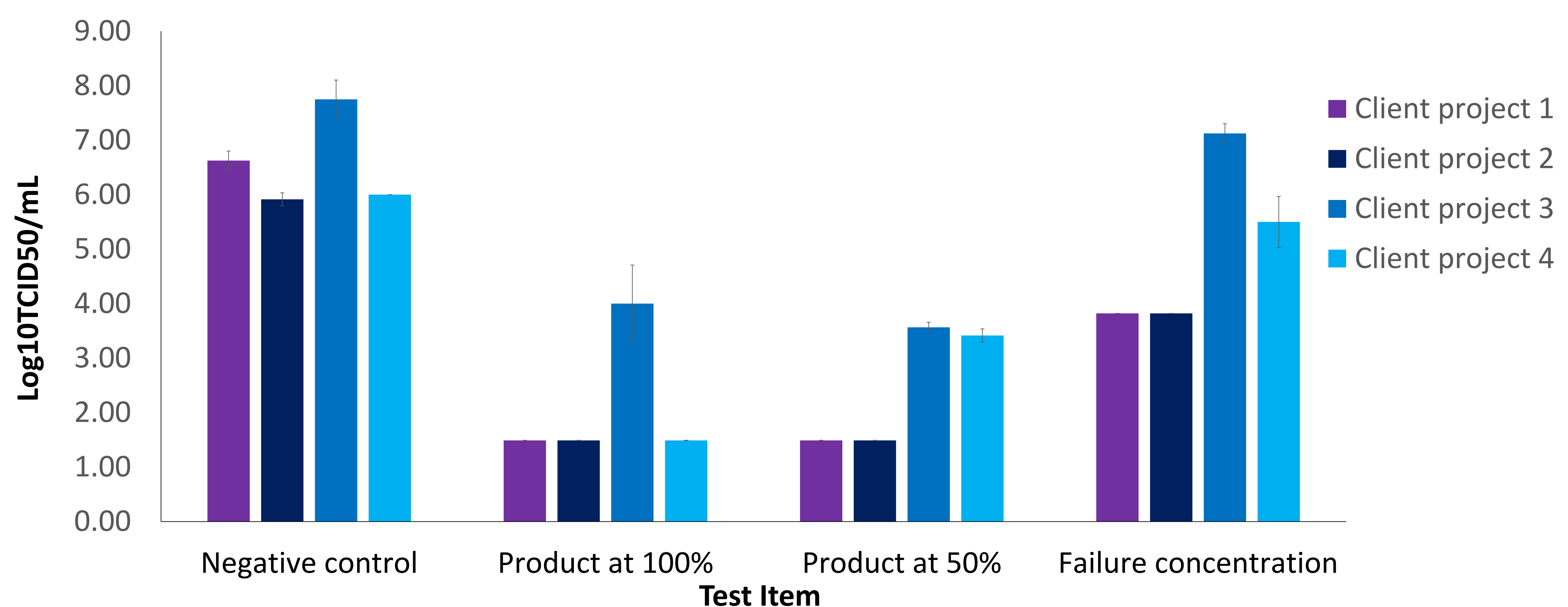
The outbreak of respiratory infection with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus has emerged as a serious global public health threat. It is the third time in the last two decades that an animal coronavirus has emerged to cause epidemic infection in humans. The World Health Organization (WHO) declared a pandemic on 11 March 2020. The challenge for category 2 laboratories across the globe was to find a closely related surrogate to enable rapid testing and allow companies to bring more anti-viral products to market.

## Methodology

Following the announcement, a closely related Human Coronavirus, 229E, which causes upper respiratory tract infection in healthy individuals and serious disease in patients with comorbidities, was rapidly obtained. The strain was utilised in suspension (EN 14476) and carrier (EN 16777) test methods and was used to demonstrate the activity of a wide range of products.



**Figure 1.** Human coronavirus 229E recoveries (N=1) following suspension (EN 14476) test method. Failure concentration = concentration of test product low enough to not achieve a <4 log reduction



**Figure 2.** Human coronavirus 229E recoveries (N=2) following carrier (EN 16777) test method. Failure concentration = concentration of test product low enough to not achieve a <4 log reduction.

## Results

Stock titres of between  $1 \times 10^6$  and  $1 \times 10^8$  TCID<sub>50</sub>/mL were utilised across the assays. The virus remained stable during each assay in suspension or when dried onto surfaces. Between  $1 \times 10^5$  and  $1 \times 10^6$  TCID<sub>50</sub>/mL Human Coronavirus, 229E was recovered from the negative controls outlined in each standard. Across each standard tested, high, mid and low effectiveness was observed following testing with a range of products.

## Discussion and Conclusions

Chemical disinfectants and biocides have played a crucial part in controlling the spread of COVID-19. Utilising the 229E surrogate either helped companies to claim activity against coronaviruses or aided them in the development of their products. The data gathered over 12 months demonstrated the reproducibility of the assays with the Human Coronavirus 229E and the ability of the virus to present a wide range of activity following treatment with surface-sprays, antimicrobial wipes and pre-treated surfaces.