

Efficacy of NitroPep Treated Surfaces against SARS-CoV-2 Virus

Background

A new coronavirus disease (COVID-19) is responsible for the current worldwide pandemic, which is creating major issues around the globe. The disease is spread through droplets containing the SARS-CoV-2 virus. A significant amount of the disease is transmitted through an airborne route. However, the disease has been detected on surfaces around infected people and the extent to which people can infect themselves through touching contaminated surfaces is currently unquantified.

There are a number of experiments which can be used to determine the level of viral titre on a surface. These have limited use in determining the danger of contracting Covid-19 via surface contamination with the SARS-CoV-2 virus as it doesn't distinguish between viable virus and inactivated virus. In order to demonstrate that the NitroPep surface treatment can completely inactivate the SARS-CoV-2 virus we carried out a number of experiments on NitroPep treated metals, plastics and porous materials, to determine that the surfaces can inactivate the virus and completely sever the chain of transmission.

Experimental Work

To carry out this work, we used a stock solution of 1×10^6 of SARS-CoV-2 virus. We applied the virus to the surfaces and left the virus for a range of times from 30 seconds to 5 minutes. We then lifted the virus solution off the surface and inoculated a culture of lung cells with the virus solution. We then used antibodies to determine the level of infection in the lung cells. This allows us to determine the level of inactivation of the SARS-CoV-2 virus. Inactivated virus will not be able to infect the lung cells.

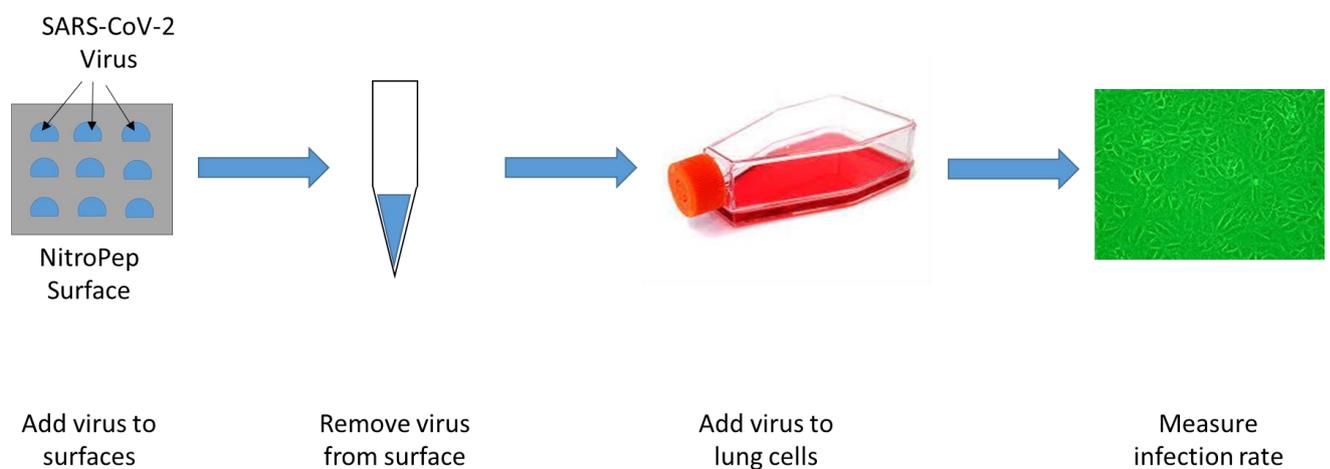


Figure 1: Experimental protocol for determining inactivation of SARS-CoV-2 virus.

Results

In all experiments the NitroPep surfaces rapidly inactivated the SARS-CoV-2 virus. Metal surfaces were carried out on 304 stainless steel coated using the standard NitroPep treatment (Figure 2). The virus inactivation is excellent demonstrating a 6 log reduction in virus titre in 5 minutes.

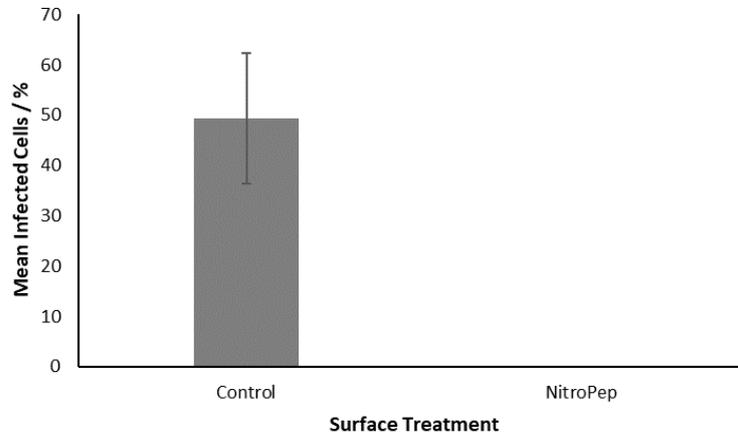


Figure 2: Antiviral efficacy of NitroPep treated metal surfaces against SARS-CoV-2 virus.

Once the efficacy on NitroPep treated metal had demonstrated the antiviral efficacy of NitroPep treated plastic was determined (Figure 3).

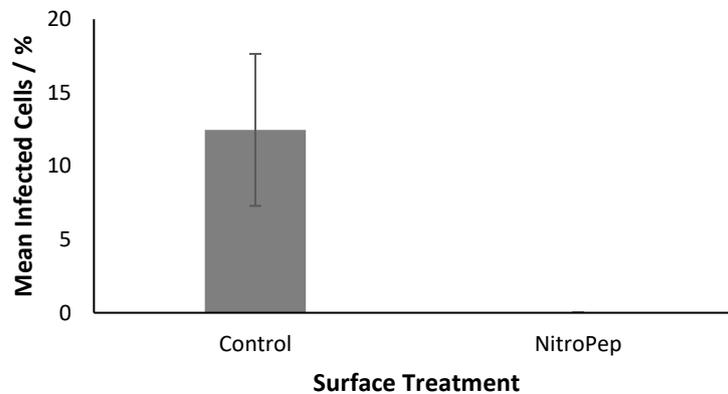


Figure 3: Antiviral efficacy of NitroPep treated plastic surfaces against SARS-CoV-2 virus.

While the NitroPep surface treatment showed complete virus inactivation on both metal plastic surfaces. Interestingly, the virus survived better on control stainless steel surfaces with a 50% infection rate observed, compared to 12% infection rate on plastics. Demonstrating the NitroPep treatment is especially valuable on metal surfaces.

Conclusions

The NitroPep treated surfaces are excellent at inactivating the SARS-CoV-2 virus and have the potential to break the chain of transmission of Covid-19 from surface to person.