

TECHNICAL BULLETIN: Coronavirus (COVID-19) and TECcare PROTECT

To Whom it may concern.

Please be advised that whilst TECcare PROTECT is an alcohol free hand sanitiser it is proven to be highly effective against both enveloped and non-enveloped viruses.

In formal testing at accredited laboratories to the internationally recognised EN14476 Virucidal Efficacy test protocol, TECcare PROTECT is proven to kill 99.9% of both enveloped viruses (such as COVID-19) and non-enveloped viruses within seconds of contact.

Since Coronavirus (COVID-19) is a new virus there is NO commercially available virucidal efficacy test that can be used for any hand rub against this specific virus at this point in time (March 2020).

Since a specific COVID-19 efficacy test does not currently exist, no antimicrobial hand rub on the market can claim to be effective against the specific COVID-19 virus.

However, having said that, Coronavirus (COVID-19) is classified as an 'enveloped virus' i.e. its physical structure is therefore similar to other 'enveloped viruses' which in this case means that the COVID-19 capsid containing the nucleic acid essential to viral replication is surrounded by a lipid membrane, similar to other enveloped viruses such as influenza.

The lipid based membrane 'envelope' of all enveloped viruses (including COVID-19) contains lipids and proteins and it is these proteins which bind to receptors on host cells and enable the virus to 'infect' the host cells (i.e. result in a human infection).

Any hand rub which physically disrupts the structure of the lipid envelope surrounding the virus will essentially mean that it cannot bind to host cell receptors and therefore cannot infect the host cells. As a solvent alcohol interrupts the lipid membrane which is why alcohol rubs will work on COVID-19.

Whilst alcohol hand rubs will work on COVID-19 they must contain high levels of alcohol – typically between 60 – 70% and this can cause skin sensitisation, irritation and potential toxicity issues. Furthermore, laboratory tests require alcohol hand rubs to have a contact time of 30 seconds or more and in reality the rate of alcohol evaporation from the skin on the hands means that in-use the average contact time is approximately 8 seconds before the concentration of alcohol evaporates to sub-therapeutic levels.

The benefit of TECcare PROTECT above and beyond alcohol based rubs is that in addition to the physical disruption of the lipid envelope surrounding the COVID-19 virus TECcare PROTECT will also denature the binding proteins within the envelope and the capsid itself, essentially giving a 'belt and braces' result of pulling apart the physical structure of enveloped viruses and rendering them ineffective and therefore unable to cause infection.

Whilst current UK government, WHO and NHS guidelines recommend the use of alcohol hand rubs to reduce the risk of COVID-19, formal laboratory testing demonstrates that at very least TECcare PROTECT offers equivalent virucidal performance to alcohol rubs and in many instances it significantly outperforms alcohol rubs with its virucidal efficacy.

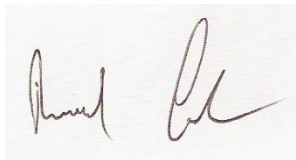
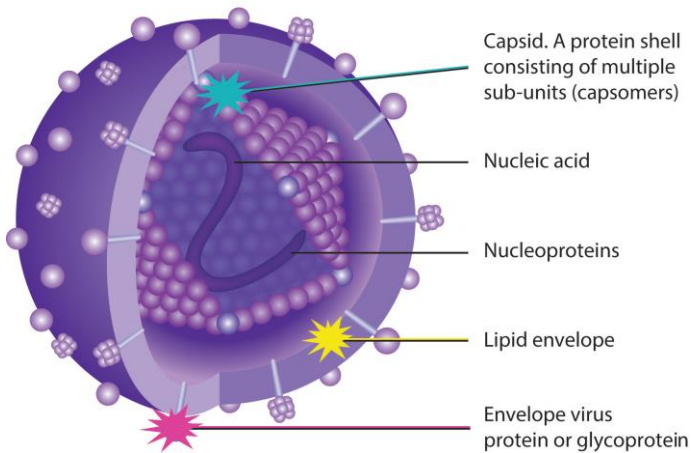
How does TECcare[®] PROTECT affect microbes?

TECcare[®] PROTECT is a strong lytic agent based upon the quaternary ammonium compound benzalkonium chloride. Quaternary ammonium compounds have multiple affects and points of action within viruses (see Figure 1 of enveloped virus below) which include:-

- Inactivation of energy-producing enzymes
- Denaturation of essential microbial proteins
- Physical disruption of membrane lipids

Proteins and lipids are essential components of bacteria, viruses, and fungi. Significant damage to these key microbial components is often fatal for the organism. TECcare[®] PROTECT causes rapid and significant changes at multiple sites within the virus. The magnitude of this affect is so great that it is typically lethal to the virus within seconds of contact

Figure 1. The enveloped virus structures affected by TECcare PROTECT are highlighted in blue, yellow and pink below.



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