



## **Novel Concepts Medical Ltd (NCM)**

### **Abstract**

#### **NCM develops new Plant-Based Treatment Modalities for the treatment of coronavirus disease 2019 (COVID-19)**

These plant-based natural mixtures are composed of safe to-use individual ingredients.

Plant based natural mixtures show significant decrease in the amount of coronavirus spike protein, the protein that connects the coronavirus to human cells.

Specifically , *in vitro* results show a significant decrease in the amount of the Covid-19 'spike protein' within a few hours of incubation.

### **Background**

#### **COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)**

There is evidence that SARS-CoV-2 utilizes ACE-2 as a cellular entry receptor

**ACE-2** is a type I transmembrane metalloprotease with homology to ACE, an enzyme long-known to be a key player in the Renin-Angiotensin system (RAS) and a target for the treatment of hypertension. Zhou et al. showed that SARS-CoV-2 could use ACE-2 from humans, Chinese horseshoe bats, civet cats, and pigs to gain entry into ACE-2-expressing HeLa cells.

*(Zhou, P., Yang, XL., Wang, XG. et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature 579, 270–273 (2020).*

**The spike (S) protein of SARS-CoV-2**, which plays a key role in the receptor recognition and cell membrane fusion process, is composed of two subunits, **S1 and S2**.

**The S1 subunit contains** a receptor-binding domain that recognizes and binds to the host receptor angiotensin-converting enzyme 2 (ACE-2).

**The S2 subunit** mediates viral cell membrane fusion by forming a six-helical bundle via the two-heptad repeat domain.

*Huang, Y., Yang, C., Xu, Xf. et al. Structural and functional properties of SARS-CoV-2 spike protein: potential antiviral drug development for COVID-19. Acta Pharmacol Sin 41, 1141–1149 (2020)*

### **Results**

**The natural mixtures developed by NCM revealed significant reduction in the S1 and S2 proteins' signals , with no reduction in Recombinant SARS Cov-2 Nucleocapsid protein signal**

#### **Recombinant SARS-Cov-2 S1 subunit**

- The test items were incubated with the **Recombinant SARS-Cov-2 S1 subunit** protein for 6 hours then run on SDS-page, stained with "instant blue" for the presence of proteins in the gel.
- Following incubation of the protein with **Mix B**, a **26%** reduction in the protein signal was observed.



## **Recombinant SARS-Cov-2 S2 subunit**

The test items were incubated with the Recombinant SARS-Cov-2 S2 subunit protein for 6 hours, then run on SDS-page, stained with "instant blue" for the presence of proteins in the gel.

The results showed that:

- Following incubation of the protein with **Mix B**, a **19%** reduction in the protein signal was observed.
- Following incubation of the protein with **Mix C**, a **27%** reduction in the protein signal was observed
- Following incubation of the protein with **Mix D**, a **47%** reduction in the protein signal was observed.

### **Recombinant SARS Cov-2 Nucleocapsid**

Following incubation of the protein with **Mix B**, **Mix C**, **Mix D**, no reduction in the protein signal was observed.

### **Summary and Conclusions :**

**In summary, NCM natural mixtures revealed:**

#### **Reduction in**

- **The SARS-Cov-2 S2 S1 subunit ; and**
- **The SARS-Cov-2 S2 S2 subunit ;**

**thereby suggesting to lead to a significant reduction in viral loads.**

**NCM aims to test these natural plant-based mixtures as a treatment for SARS-Cov-2 S2 patients.**