



Catalog #

Aliquot Size

C19S1-653L-20

20 µg

C19S1-653L-100

100 µg

Anti-2019-nCoV Spike Protein Neutralizing Nanobody (NBX20025)

Recombinant Llama VHH Antibody

Catalog # C19S1-653L

Lot # F4011-5

Cited Applications

ELISA

For studying neutralization of SARS-CoV-2

Ideal working dilutions for each application should be empirically determined by the investigator.

Specificity

Recognizes the 2019-nCoV Spike protein

Neutralizing activity validated for wild type Spike protein RBD

Host/Isotype/Clone

Llama VHH

Formulation

Recombinant protein stored in 50mM sodium phosphate, pH 7.5, 300mM NaCl, 150mM imidazole

Alternative Name(s)

Anti 2019-nCoV Spike Protein Single-domain Antibody

Concentration

1.0 µg/µl

Stability

1yr at -20°C from date of shipment

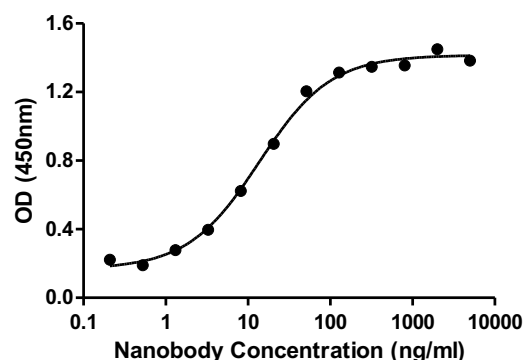
Scientific Background

The severe acute respiratory syndrome related novel coronavirus SARS-CoV-2 has caused the pandemic of the respiratory diseases (COVID-19) around the world in 2020 (1). The spike glycoprotein (S) of coronavirus belongs to the type I transmembrane protein containing two subunits, S1 and S2 (2), which is also known to be the key component to bind with host cells through the interaction with angiotensin-converting enzyme 2 (ACE2). A receptor binding domain (RBD) of S1 can recognize the cell surface receptor and the mutation of RBD could cause higher motility rate (3).

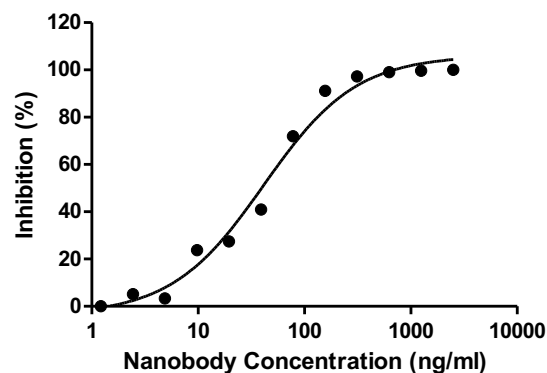
References

1. Zhou P, et al: A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*. 2020, 579:270-89.
2. Xiao X, et al: The SARS-CoV S glycoprotein. *Cell Mol Life Sci*. 2004, 61 (19-20): 2428-30.
3. Lan J, et al: Crystal structure of the 2019-nCoV spike receptor-binding domain bound with the ACE2 receptor. *bioRxiv*. doi: <https://doi.org/10.1101/2020.02.19.956235>

Assay Data



Binding ability measured in a functional ELISA. Anti-2019-nCoV Spike Protein Neutralizing Nanobody (C19S1-653L) binds 2019-nCoV Spike protein RBD (C19SD-G241H).



Inhibitory activity of Anti 2019-nCoV Spike Protein Neutralizing Nanobody (C19S1-653L) against 2019-nCoV RBD (C19SD-241H) binding to ACE2(19-740) protein (A51C2-G341F) determined by ELISA.

Related Products

Binding (Bind)/ Neutralizing (NT) Activity

	501Y.V1*		501Y.V2**		WT RBD	
	Bind	NT	Bind	NT	Bind	NT
NBX20014	Y	Y	N	N	Y	Y
NBX20025	Y	N	N	N	Y	Y
NBX20038	Y	Y	Y	Weak	Y	Y

*501Y.V1 activity vs. C19SD-G231H: RBD (N501Y)

**501Y.V2 activity vs. C19SD-G232H: RBD (K417N E484K N501Y)

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SAFETY DATA SHEET

Article 1 - Product Identification

Product Name: Anti-2019-nCoV Spike Protein Neutralizing Nanobody (NBX20025)**Catalog # C19S1-653L**

This product is sold only for research use by qualified laboratory personnel, and is not to be used as a drug, medical device, food additive, cosmetic, nor household chemical. It is not to be used in diagnostic, therapeutic, consumer, agricultural, nor pesticidal applications.

Manufacturer's Name: SignalChem Biotech Inc.
Street Address: 110-13120 Vanier Place
City, Prov. Postal Code: Richmond, BC, V6V 2J2
Fax: 604-232-4601
EMERGENCY PHONE: 604-232-4600

Article 2 - Hazard Identification

Emergency Overview: The product contains no substances which at their given concentration, are considered to be hazardous to health.

WHMIS Classification: Not WHMIS controlled

GHS Classification: Not a dangerous substance according to GHS.

Article 3 - Composition/Information on Ingredients

Chemical Characterization: Mixtures.

Description: This product consists of the substances listed below.

Common name	Chemical name	CAS-No.	Concentration
Sodium Chloride	Sodium Chloride	7647-14-5	0.72%
Sodium Phosphate, Dibasic	Sodium Phosphate, Dibasic	7782-85-6	0.248%
Potassium Phosphate, Monobasic	Potassium Phosphate, Monobasic	7778-77-0	0.024%
Potassium Chloride	Potassium Chloride	7447-40-7	0.02%
Protein	-	-	0.1%

Article 4 - First-aid Measures

- **General information:** Consult a physician by providing the SDS.
- **After inhalation:** Move to fresh air. If cannot breathe, give artificial respiration and consult a physician.
- **After skin contact:** Remove contaminated clothing. Immediately wash with soap and plenty of water and rinse thoroughly. Wash contaminated clothing before re-use.
- **After eye contact:** Check for and if possible, remove contact lenses. Rinse opened eyes with plenty of water for at least 15 minutes.
- **After swallowing:** If the patient is conscious, rinse the mouth with plenty of water and consult a physician.

Article 5 - Fire-fighting Measures

- **Suitable extinguishing media:** Use water spray, extinguishing powder, carbon dioxide, or other appropriate measure that is suitable to the environment.
- **Specific hazards arising from the substance or mixture:** None known.
- **Special protective equipment and precautions for fire-fighters:** Self-contained breathing apparatus if necessary.

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Article 6 – Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:** Apply standard laboratory practices and personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation.
- **Environmental precautions:** Do not allow to enter drains.
- **Methods and materials for containment and cleaning up:** Absorb on sand or vermiculite and place in closed containers for disposal.

Article 7 - Handling and Storage

- **Precautions for safe handling:** Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.
- **Conditions for safe storage:** Store in a dry and well-ventilated place in -20 °C. Keep container upright and tightly closed.

Article 8 - Exposure Controls/Personal Protection

- **Components with limit monitoring values at workplace:** N/A
- **Appropriate engineering controls:**
Apply adequate ventilation including mechanical exhaust or laboratory fume hood. Follow standard laboratory practices.
- **Individual protection measures:**
- **Respiratory protection:**
Use appropriate respirator if there is inadequate ventilation by following the government standards.
- **Hand protection:**
Wear gloves and use proper glove removal technique to avoid skin contact. Discard gloves after use by following the applicable laboratory regulations. Wash and dry hands.
- **Eye/face protection:**
Safety goggles with side-shields approved under appropriate government standards.
- **Skin/body protection:**
Use appropriate clothing, footwear and any additional protection measures to protect from splashing or contamination.

Article 9 – Physical and Chemical Properties

Appearance: Colorless fluid.	Danger of explosion: Product does not present an explosion hazard.
Odour/Odour Threshold: Not determined.	Explosion limits: Not available.
pH: Not available.	Decomposition temperature: Not available.
Melting point/freezing point: Not determined.	Vapor pressure at 20 °C: Not determined.
Boiling point/Boiling range: Not determined.	Density: Not determined.
Flash point: Not determined.	Relative density: Not determined.
Flammability (solid, gaseous): Not determined.	Vapor density: Not determined.
Ignition temperature: Not determined	Evaporation rate: Not determined.
Auto-igniting: Product is not self-igniting.	Solubility in / Miscibility with Water: Fully miscible.

Article 10 - Stability and Reactivity

- **Reactivity:** Stable under recommended transport and storage conditions.
- **Chemical stability:** Stable under recommended transport and storage conditions.
- **Possible hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** None determined.
- **Incompatible materials:** Avoid contact with metals (aluminum, mercury, copper, lead, zinc) and acids. Do not dispose of Sodium Azide or other chemicals down the drain.
- **Hazardous decomposition products:** May emit toxic fumes under normal fire conditions. Sodium azide can react with heavy metals to form explosive azides.

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Article 11 - Toxicological Information

- **Acute toxicity:** Not available.
- **LD/LC50:** Sodium azide: LD50 Oral: 27mg/kg (rat); LD50 Skin: 20mg/kg (rabbit).
- **Skin corrosion/irritation:** May cause mild irritation. Prolonged and extensive skin contact may result in absorption with systemic symptoms similar to ingestion.
- **Serious eye damage/eye irritation:** May cause irritation.
- **Respiratory or skin sensitization:** Not available.
- **Germ cell mutagenicity:** Not available.
- **Carcinogenicity:** No components are listed in IARC, or NTP, or OSHA, or ACGIH.
- **Reproductive toxicity:** Not available.
- **Teratogenicity:** Not available.
- **Specific target organ toxicity - single exposure/ - repeated exposure (GHS):** Not available.
- **Aspiration hazard:** Not available.
- **Potential health effects:**
 - Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.
 - Ingestion:** Ingestion of sodium azide has been reported to cause shortness of breath, nausea, vomiting, restlessness, diarrhea, lowering of blood pressure (hypotension) and collapse.
 - Skin:** May be harmful if absorbed through skin. May cause skin irritation.
 - Eyes:** May cause eye irritation.
- **Signs and Symptoms of Exposure:** Not available.
- **Synergistic effects:** Not available.

Article 12 - Ecological Information

- **Eco-toxicity:** Not applicable.
- **Biodegradability:** Not applicable.
- **Bio-accumulative potential:** Not applicable.
- **Mobility in soil:** Not applicable.
- **PBT and vPvB assessment:** Not applicable.
- **Other adverse effects:** Not applicable.

Article 13 - Disposal Considerations

- **Disposal methods:** In accordance to applicable national, regional, or local laws and regulations. For additional handling information and protection of employees please refer to Article 7 and 8.
- **Contaminated packaging:** Disposal should be made in accordance to official regulations. Use water or cleansing agents to clean the area.

Article 14 - Transport Information

- **DOT:** Not dangerous goods.
- **IMDG:** Not dangerous goods.
- **IATA:** Not dangerous goods.

Article 15 - Regulatory Information

- **WHMIS Classification:** Non-hazardous.
- **GHS label elements:** Not applicable.
- **Signal word:** Not applicable.
- **Hazard statements:** Not applicable.

Article 16 - Other Information

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. SignalChem shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalog for additional terms and conditions of sale.

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