Introduction of World 1st Inhalation Vaccine
11th COVID-19 Vaccine Approved as WHO EUL

COVID-19 Vaccines with WHO Emergency Use Listing

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>WHO EUL Holder</th>
<th>NRA of record</th>
<th>Date of EUL Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMIRNATY® COVID-19 mRNA Vaccine (nucleoside modified)</td>
<td>BioNTech Manufacturing GmbH-I</td>
<td>European Medicines Agency</td>
<td>31 December 2020</td>
</tr>
<tr>
<td>CONVIDECIA COVID-19 Vaccine (Ad5-nCoV/S [Recombinant])</td>
<td>CanSino Biologics Inc.</td>
<td>National Medical Products Administration (NMPA)</td>
<td>19 May 2022</td>
</tr>
</tbody>
</table>

https://extranet.who.int/pqweb/vaccines/vaccinescovid-19-vaccine-eul-issued
Current Vaccine Cannot Stop the Virus

New Covid variant BF.7 spreading rapidly and could be dominant within weeks

The variant comes as we head into winter, when case numbers could surge.

*changed to F486I in BF.1.2*
Fight Virus in Local Lung Area: IgA-Invisible MASK!
Turning the liquid injectable vaccine to small droplet

Vaccine mist size under 5um

Aerosolizer (Aerogen®)

Droplet Vaccine

Directly use 0.1ml IM vaccine

1 cup=7 billion droplets

Lung Covered!

Inhale—美zzzzz
Heterologous booster Safety and Cellular immunity

- **Safety**
  The total incidents of adverse effects lower than Inactivated vaccine

- **Cellular immunity**
  Induce a high level of cellular immunity than inactivated vaccine

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**Adverse events 14 days after immunization**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Grade 1</td>
<td>40%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>30%</td>
</tr>
<tr>
<td>Grade 3</td>
<td>20%</td>
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**EliSPOT spot/100K PBMC**

- 2xInact
- 2xInact+0.1ml IH
- 2xInact+0.2ml IH
- 3xInact

**Lancet Respir Med (Accepted)**
Heterologous booster (NCT05043259) – S-RBD IgA Antibody

CoronaVac: inactivated COVID-19 vaccine

0.1 or 0.2ml IH booster dose can stimulate high levels of serum and secretory IgA (slgA) antibody, much higher than the level of Inactivated vaccine as homologous booster.
Heterologous booster Humoral Immune response IgG and Neutralizing Antibody
Prolonged NAb Level (1 year) Against Original Strain (Boost Schedule)

Wild type virus neutralizing antibody level

Proportion of antibody titer ≥1: 16
Summary

• Vaccination in Lung Area by Inhalation is safety and effective
• Break down the Vaccine to microdroplet by Nebulizer can reduce the dose
• Inhalation Vaccination can induce sIgA, which potentially Stop the Virus entry
• Inhalation Vaccination can induce the better system immune response then muscle injection
• The prove of concept can be applied to all other respiratory related infection virus vaccine development
• Everybody Love No-Needle World!