SARS-CoV-2 B.1.1.529 variant (Omicron) evades neutralization by sera from vaccinated and convalescent individuals

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Sample selection

- B.1.1.7 convalescent (n=10)
- B.1.351 convalescent (n=8)
- B.1.617.2 convalescent (n=7)
- Spikevax/Spikevax vaccination (Moderna, n=10) → 4-6 months after boost
- ChAdOx1/ChAdOx1 vaccination (Vaxzevria, AstraZeneca) (n=10) → 1 month after boost
- BNT162b2/BNT162b2 vaccination (Comirnaty, Pfizer/BioNTech) (n=20) → 1 month after boost
- heterologous ChAdOx1 prime/BNT162b2 boost vaccination (n=20) → 1 month after boost
- super immune sera (n=5 for infected and subsequently vaccinated, n=5 for vaccinated and subsequently infected)
Virus isolates

- B.1.1.7 (Alpha): isolate C69.1, GISAID ID EPI_ISL_3277382;
- B.1.351 (Beta): isolate C24.1, GISAID ID EPI_ISL_1123262;
- B.1.617.2 (Delta): isolate SARS-CoV-2-hCoV-19/USA/NY-MSHSPSP-PV29995/2021, GISAID ID EPI_ISL_2290769;
- B.1.1.529 (Omicron): isolate E16.1, GISAID ID EPI_ISL_6902053

Accession ID: EPI_ISL_6902053
Type: betacoronavirus
Clade: GRA
Pango Lineage: BA.1 (Pango v.3.1.17 2021-11-25), Omicron (BA.1-like) (Scorpio)
Variant: VOC Omicron GRA (B.1.1.529+BA.*) first detected in Botswana/Hong Kong/South Africa

Passage details/history: Original

Sample information

- Collection date: 2021-11-28
- Location: Europe / Austria / Tyrol / Schwaz / Vomp
- Host: Human
Focus forming assy with immunofluorescence staining

Virus only

Non-neutralizing serum

Neutralizing serum
B.1.1.529 is neutralized worse compared to other VOC

a) Spikevax/Spikevax
b) ChAdOx1/ChAdOx1
c) ChAdOx1/BNT162b2
d) BNT162b2/BNT162b2

e) B.1.1.7 convalescent
f) B.1.351 convalescent
g) B.1.617.2 convalescent
h) super immune

- □ = Spikevax/Spikevax vaccinated; ★ = ChAdOx1/ChAdOx1 vaccinated; ○ = BNT162b2 vaccinated; ● = BNT162b2/BNT162b2 vaccinated
Summary

- Sera from convalecent patients neutralize B.1.1.529 only weakly.
- No cross-neutralization 1 months after homologous ChAdOx1 vaccination.
- Low level B.1.1.529 neutralizing antibodies after homologous BNT162b2 or heterologous ChAdOx1/BNT162b2 immunization.
- Super immune sera were able to neutralize B.1.1.529, although to a lesser degree than B.1.617.2.
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