

CORONASYS INNOVATION SHEET 11

LY-CoV555 ANTIBODY TREATMENT

Background

Neutralizing antibodies are one of the research foci in the search for a possible treatment for COVID-19¹. Several companies are researching different approaches to antibody treatment for the disease². Eli Lilly and Company published data from an interim analysis of the BLAZE-1 clinical trial³ on September 16. The data showed reduced hospitalization rates for patients treated with LY-CoV555, a SARS-CoV-2 neutralizing antibody. The randomized, double-blind, placebo-controlled Phase 2 study evaluated LY-CoV555 for the treatment of symptomatic COVID-19 in the outpatient setting. The trial enrolled mild-to-moderate recently diagnosed COVID-19 patients⁴.

Features

The antibody LY-CoV555 was originally produced by one of the first COVID-19 patients in America. It is one of about 500 antibodies that the patient's immune system had formed against SARS-CoV-2 after infection. Using a special method, the researchers were able to detect the B cells that produce the antibody, isolate the gene, and produce them in larger quantities using recombinant cells. Treatment consisted of a single intravenous infusion of the antibodies at a dose of 700 mg, 2,800 mg, or 7,000 mg. In a fourth group, patients received an infusion without antibodies⁵.

Potentials

A significant advantage over placebo in reducing viral load after 11 days was detectable only after the mean dose of 2,800 mg. In the three LY-CoV555 groups, only 1.7% had to be hospitalized or treated by an emergency physician. In the placebo group, this was required for 6% of patients. This corresponds to an absolute risk reduction of 4.3 % and a relative risk reduction of 72%. According to the press release, no patient had to be mechanically ventilated. There were also no deaths⁶. Most hospitalizations occurred for patients with underlying risk factors (age or BMI). The infusion was well tolerated by all patients. Serious side effects have not occurred, according to the manufacturer⁷. Some experts hope that the real benefit of neutralizing antibody treatments will be not only as a treatment of the sick but as a means of infection prevention⁸.

Points to consider

One limitation could be that only patients with mild to moderate symptoms were treated, who also remained without complications in the placebo- group. The efficacy in serious cases is therefore not yet proven. It is possible that the antibodies no longer have any effect if the disease is advanced and characterized by an excessive immune response. The manufacturer is still hoping for early approval by the U.S. Food and Drug Administration (FDA). A price has not been mentioned, but antibodies are usually high-priced drugs⁹.

Conclusion

The promising results still need to be peer-reviewed by independent researchers and published in a peer-reviewed journal. Further research is needed to determine whether the treatment is effective in patients suffering from advanced and severe clinical manifestations of COVID- 19.

State of information: 18/09/2020

Launch: September 2020

Country: USA, Canada

Focus area: Treatment

Developers:

- Eli Lilly and Company in collaboration with
- AbCellera Biologics Inc.
- Shanghai Junshi Bioscience Co., Ltd.

Beneficiaries: patients with mild to moderate symptoms

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- ¹ Zhou, Guangyu, and Qi Zhao. "Perspectives on Therapeutic Neutralizing Antibodies against the Novel Coronavirus SARS-CoV-2." *International Journal of Biological Sciences* 16, no. 10 (March 15, 2020): 1718–23. <https://doi.org/10.7150/ijbs.45123>.
- ² Meredith, Sam. "Eli Lilly Reports a Reduced Rate of Hospitalization for Coronavirus Patients Using Its Antibody Treatment." *CNBC*, September 16, 2020. <https://www.cnn.com/2020/09/16/coronavirus-eli-lilly-reports-a-reduced-rate-of-hospitalization-for-patients-using-its-antibody-treatment.html>.
- ³ U.S. National library of medicine. "A Study of LY3819253 (LY-CoV555) and LY3832479 (LY-CoV016) in Participants With Mild to Moderate COVID-19 Illness - Full Text View - ClinicalTrials.gov." *ClinicalTrials.gov*. Accessed September 19, 2020. <https://clinicaltrials.gov/ct2/show/NCT04427501>.
- ⁴ Eli Lilly and Company. "Lilly Announces Proof of Concept Data for Neutralizing Antibody LY-CoV555 in the COVID-19 Outpatient Setting | Eli Lilly and Company." *investor.lilly.com*, September 16, 2020. <https://investor.lilly.com/news-releases/news-release-details/lilly-announces-proof-concept-data-neutralizing-antibody-ly>.
- ⁵ Deutsches Ärzteblatt. "COVID-19: Erstes Antikörperpräparat erzielt Schutzwirkung bei..." *Deutsches Ärzteblatt*, September 17, 2020. <https://www.aerzteblatt.de/nachrichten/116592/COVID-19-Erstes-Antikoerperpraeparat-erzielt-Schutzwirkung-bei-leichteren-Erkrankungen>.
- ⁶ Eli Lilly and Company. "Lilly Announces Proof of Concept Data for Neutralizing Antibody LY-CoV555 in the COVID-19 Outpatient Setting | Eli Lilly and Company." *investor.lilly.com*, September 16, 2020. <https://investor.lilly.com/news-releases/news-release-details/lilly-announces-proof-concept-data-neutralizing-antibody-ly>.
- ⁷ Deutsches Ärzteblatt. "COVID-19: Erstes Antikörperpräparat erzielt Schutzwirkung bei..." *Deutsches Ärzteblatt*, September 17, 2020. <https://www.aerzteblatt.de/nachrichten/116592/COVID-19-Erstes-Antikoerperpraeparat-erzielt-Schutzwirkung-bei-leichteren-Erkrankungen>.
- ⁸ Griffin, Riley, and Christin Flanagan. "Eli Lilly Says Its Antibody Therapy May Reduce Covid Hospitalisations." *NDTV.com*. Accessed September 19, 2020. <https://www.ndtv.com/world-news/eli-lilly-says-its-antibody-therapy-may-reduce-covid-hospitalisations-2296684>.
- ⁹ Deutsches Ärzteblatt. "COVID-19: Erstes Antikörperpräparat erzielt Schutzwirkung bei..." *Deutsches Ärzteblatt*, September 17, 2020. <https://www.aerzteblatt.de/nachrichten/116592/COVID-19-Erstes-Antikoerperpraeparat-erzielt-Schutzwirkung-bei-leichteren-Erkrankungen>.

Background on Innovation Sheet Series

As part of a real-time evaluation of the SARS CoV 2 pandemic (with focus on epidemiological, medical, economical, societal, technical, and cultural developments in Germany and Armenia) the CoronaSys research team, under the leadership of Prof. Dr. Martin Voss, is conducting a continuous monitoring of developments and medical, technical, and social innovations concerning Covid-19.

Multiple national and international media outlets, research platforms, and scientific and organizational guidelines, briefs, and updates are screened to feed into this outlet. The rationale behind this is to support the projects' network partners in Armenia and Germany with short summaries of key developments and promising innovations that are shaping the global, German, and Armenian outbreak response and recovery.

The aim of these short briefs is to give condensed and structured information on selected innovations emerging out of the conducted horizon scanning. This could be mainstream big-ticket items or fringe subjects that are easily overlooked in the global flood of information. Some innovations will be followed through their evolution in time while others may only appear once. While subjectively selected, the briefs are descriptive in nature and leave analysis and critical interpretation to the reader. Network partners in both countries are invited to provide feedback on their interest areas and suggest particularly relevant topics for the CoronaSys Workshop series.

The CoronaSys Innovation Sheet Series is published by the [Academy of the Disaster Research Unit](#), which is, as a non-profit limited liability company, a spin-off of the [Disaster Research Unit](#) at the Free University of Berlin. The series is part of the research project "[CoronaSys](#): Addressing the corona pandemic in Armenia through systemic risk management", sponsored by the German Federal Ministry of Education and Research.

If you have any questions, suggestions, or if you wish to be taken on (or off) the project mailing list for CoronaSys updates, innovation sheets, and workshop invitations, please send a message to Janina Schäfer (schaefer@a-kfs.de). For general project inquiries, you may contact the team lead Sara Merkes (merkes@a-kfs.de) or the project lead Martin Voss (voss@a-kfs.de).

Previous CoronaSys Innovation Sheets

- 1 "New" Antiviral Face Masks
- 2 "Dyphox" Surface Coating
- 3 MOVES SLC Portable ICU
- 4 Portable TRI- KLEEN 500UV
- 5 Convalescent Plasma Therapy
- 6 ASIC- App
- 7 BinaxNOW Antigen Test
- 8 Corona Traffic Light
- 9 Aproof at Home Antibody Test
- 10 IVAT Hygiene Tower

All previous CoronaSys Innovation Sheets are available online:

<http://coronasys.a-kfs.de/category/innovation-stream/>

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