Salvagene GROUP

Business Unit: SARS-CoV-2 Task Force
Keynote: #91

September 2021

Salvagene SARS CoV-2 Task Force: Current status and news of new concepts such as antibody therapy and vaccination by inhalation against COVID-19 infection

KEYNOTE

We at Salvagene have a special interest in this topic, because for some of our premium members the conventional vaccination against Covid-19 is not an option or even can be counterproductive. We see these new concepts as possible solutions for additional protection against coronavirus infection without the need for vaccination.
In certain cases, monoclonal antibodies (MAK) are considered to be a promising drug against severe disease progression in SARS-CoV-2 infection and have been used in the clinical setting for some time. In this context, we are particularly interested in the question of whether and, if so, when antibody therapy might also be used in the context of prophylaxis against a covid infection.

What exactly are monoclonal antibodies (MAK)?

Monoclonal antibodies (MAK) against the SARS-CoV-2 coronavirus are proteins of the immune system that have been biotechnologically engineered to dock to specific surface structures of the SARS-CoV-2 coronavirus. The engineered antibodies bind structures on the coronavirus or block receptors on human cells, preventing SARS-CoV-2 viruses from entering human cells. MAK-containing drugs may also contain combinations of multiple monoclonal antibodies.
Monoclonal antibodies were previously only intended as drugs for early therapy in persons infected with SARS-CoV-2 at risk of a severe course, but in August of this year, the FDA approved the first monoclonal antibody therapy for post-exposure prophylaxis as part of the emergency use authorization (EUA).

The FDA revised the EUA for REGEN-COV, which consists of the monoclonal antibodies casirivimab and imdevimab administered together, authorizing REGEN-COV for emergency use as post-exposure prophylaxis (prevention) for COVID-19 in adults and adolescents (12 years of age and older) who are at high risk of progression to severe COVID-19, including hospitalization or death. It remains the case that REGEN-COV has not been authorized for pre-exposure prophylaxis to prevent COVID-19 (i.e. before being exposed to the SARS-CoV-2 virus) – only after exposure to the virus.
REGEN-COV was already approved earlier this year for the treatment of mild-to-moderate COVID-19 in adults and adolescents (12 years of age and older) who have tested positive for SARS-CoV-2 and are at high risk of progression to severe COVID-19, and it remains authorized for that.

The FDA emphasizes that prophylaxis with REGEN-COV is not a substitute for vaccination against COVID-19. REGEN-COV may only be used as post-exposure prophylaxis for adults and adolescents who are:
- at high risk of progression to severe COVID-19, including hospitalization or death, and
- not fully vaccinated or who are not expected to mount an adequate immune response to complete SARS-CoV-2

vaccination (for example, people with immunocompromising conditions, including those taking immunosuppressive medications), and
- have been exposed to an individual infected with SARS-CoV-2 consistent with close contact criteria or
- who are at high risk of exposure to an individual infected with SARS-CoV-2 because of other individuals in the same institutional setting becoming infected with SARS-CoV-2

How is close contact to an individual infected with SARS-CoV-2 defined?

The CDC defines close contact as someone who has been within six feet of an infected person (laboratory-confirmed or a clinically compatible illness) for a cumulative total of 15 minutes or more over a 24-hour period.

What are the possible side effects of receiving a treatment with monoclonal antibodies, such as REGEN-COV?

The most common side-effects were injection site reactions. The signs and symptoms of injection site reactions which occurred in at least 1% of subjects in the REGEN-COV group were skin redness (erythema), pruritus, and ecchymosis (discoloration of the skin resulting from bleeding underneath, caused by bruising). There were no cases of severe hypersensitivity reactions, or potentially life-threatening allergic reactions such as anaphylaxis.

Vaccination by inhalation:

Inhaled vaccines aren't unheard of — they exist for other viruses such as flu. But they are a relatively new technology, arriving on the market in the early 2000s. The Covid-19 pandemic, however, requires the largest mass-vaccination campaign in history, which means all options need to be on the table for first-round vaccines and any boosters that may be required. Inhaled vaccines should be easier to administer as

well as being more accessible and are claimed to have fewer systemic side-effects.

There are currently several research facilities and drug companies testing and evaluating possible intranasal and inhaled COVID-19 vaccines. CanSino Biologics, a Chinese drug company; just finished their phase 1 clinical trial on the world's first aerosolized adenovirus type-5 vector-based COVID-19 vaccine (Ad5-nCoV) and announced its safety and effectiveness after administration of two doses. Phase 2 clinical studies of the vaccine are ongoing.

In the UK, scientists at the University of Oxford have begun phase 1 clinical trials on 54 healthy adults to investigate intranasal vaccination with Covishield following positive findings from studies done on hamsters, while Codagenix, a biotech startup, is currently evaluating a novel inhaled COVID-19 vaccine candidate called COVI-VAC in phase 1 clinical trials involving 48 participants. COVI-VAC is a single-dose, intranasal, live-attenuated vaccine against COVID-19. Unlike many other COVID-19 vaccines, COVI-VAC is designed to produce immunity against all SARS-CoV-2 proteins, not just the spike surface protein, positioning it to protect against a range of SARS-CoV-2 strains.

And in the US, the startups Phage Novo Bio and Precision Virologics have also shown through animal trials that their inhaled candidates for Covid-19 vaccines were safe and effective. In a new study assessing the potential of a single-dose intranasal COVID-19 vaccine, a team from the University of Iowa found that the vaccine fully protects mice against lethal COVID-19 infection. The vaccine also blocks animal-to-animal transmission of the virus.

So far, all of the inhaled Covid-19 vaccine candidates are either in the animal testing phase, or the first stages of clinical trials testing the safety and effectiveness of these sprays in a small group of healthy people. We can therefore only provide

an overview of this topic but will continue to keep an eye on what is happening. The publications and findings to date seem promising. Ordinarily, it can take years for vaccines to go from early clinical trials to the market. At the moment, drug regulators have accelerated the authorization process by laying out the exact kinds of data companies need to generate to prove their products are safe and effective. The urgency of vaccinating the world may keep these high-speed processes in place to get the much-needed approvals.

SALVAGENE HQ
Université Paris Sorbonne
125 Rue Saint-Jacques, 75005 Paris

SALVAGENE UK
52 Grosvenor Gardens • SW1W 0AU London UF
Tel: 0044 20 3287 0644

SALVAGENE USA
101 Avenue of the Americas, 8th floor • 10013 New York
Tel: +1 646 583 0370

info@salvagene.com • www.salvagene.com