



ST Pharm Begins Developing Korea's 1st LNP-based mRNA COVID-19 Vaccine

2021-06-11

ST Pharm said it would develop the nation's first lipid nanoparticle (LNP)-based Covid-19 mRNA vaccine that can respond to variant cases.

In developing the vaccine, the company plans to apply Genevant Science's LNP technology, used in developing Pfizer and Moderna's mRNA vaccine, and its patented 5'-capping mRNA platform technology.

In addition to the spike protein antigen, a viral protrusion that binds to the host cell, the homegrown vaccine will reinforce the second antigen and add a T cell epitope. This peptide fragment can increase the response of immune T cells, according to the company.

[ST Pharm](#) expects that the vaccine will have superior efficacy to the existing mRNA vaccine using the spike protein as a single antigen and maintain high effectiveness in preventing variant cases.

"We have selected three candidate materials -- STP2104, STP2108, STP2120 -- with excellent efficacy out of the initial 22 candidate substances discovered," the company said. "Once we decide on a final candidate material, we will begin phase 1 clinical trials within this year."

ST Pharm plans to apply for emergency use approval in the first half of 2022 by maximizing the fast development advantages of mRNA vaccines, it added.

During the candidate material selection process, ST Pharm applied Smartcap, its proprietary 5'-capping technology, and confirmed an efficacy equal to or higher than TriLink's CleanCap.

The company stressed that as Smartcap can mass-produce substances independently, it is 30 percent cheaper than CleanCap.

"Using the technology, we have developed a total of 16 capping types so far. Besides, using capping library screening has the advantage of selecting capping optimized for new drug candidates," the company said. "Although CleanCap is the platform used exclusively for developing new mRNA drugs worldwide, there is a delay in supply due to its explosive interest."

The company expects that its Smartcap will acquire a significant share of the market in the future.

ST Pharm said it could also produce ionizable lipids and polyethylene glycol (PEG)-lipid, core lipids used in LNP, at a scale of over a ton annually, allowing the company to produce more than one billion Covid-19 mRNA vaccine doses per year.

"ST Pharm is the only company in the world that can independently develop capping technology, LNP drug delivery technology, and raw materials necessary for the development and production of new mRNA drugs," a company official said. "We are ready to develop a Covid-19 mRNA vaccine."

The company anticipates that the vaccine will maintain the Covid-19 prevention effect and plans to develop the vaccine to target the induction of cross-neutralization reactions against variant cases originating from the U.K., [South Africa](#), [Brazil](#), and [India](#), the official added.

As the development of mRNA-based new drugs with various advantages that can overcome the shortcomings of existing protein-based drugs increases, the company expects that its contract development and manufacturing organization (CDMO) business will also grow.

Read the [original article](#) on Korea Biomedical Review (KBR).

